MAY 1979/$3

AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

AIR FORCE ALMANAC

Air Force Power

TF34-POWERED A-10 CLOSE AIR SUPPORT AIRCRAFT

CF6-50-POWERED KC-10A ADVANCED TANKER/CARGO AIRCRAFT

CF6-50-POWERED E-4A ADVANCED AIRBORNE COMMAND POST

GE engines: The superior performance and reliability needed, whatever the mission

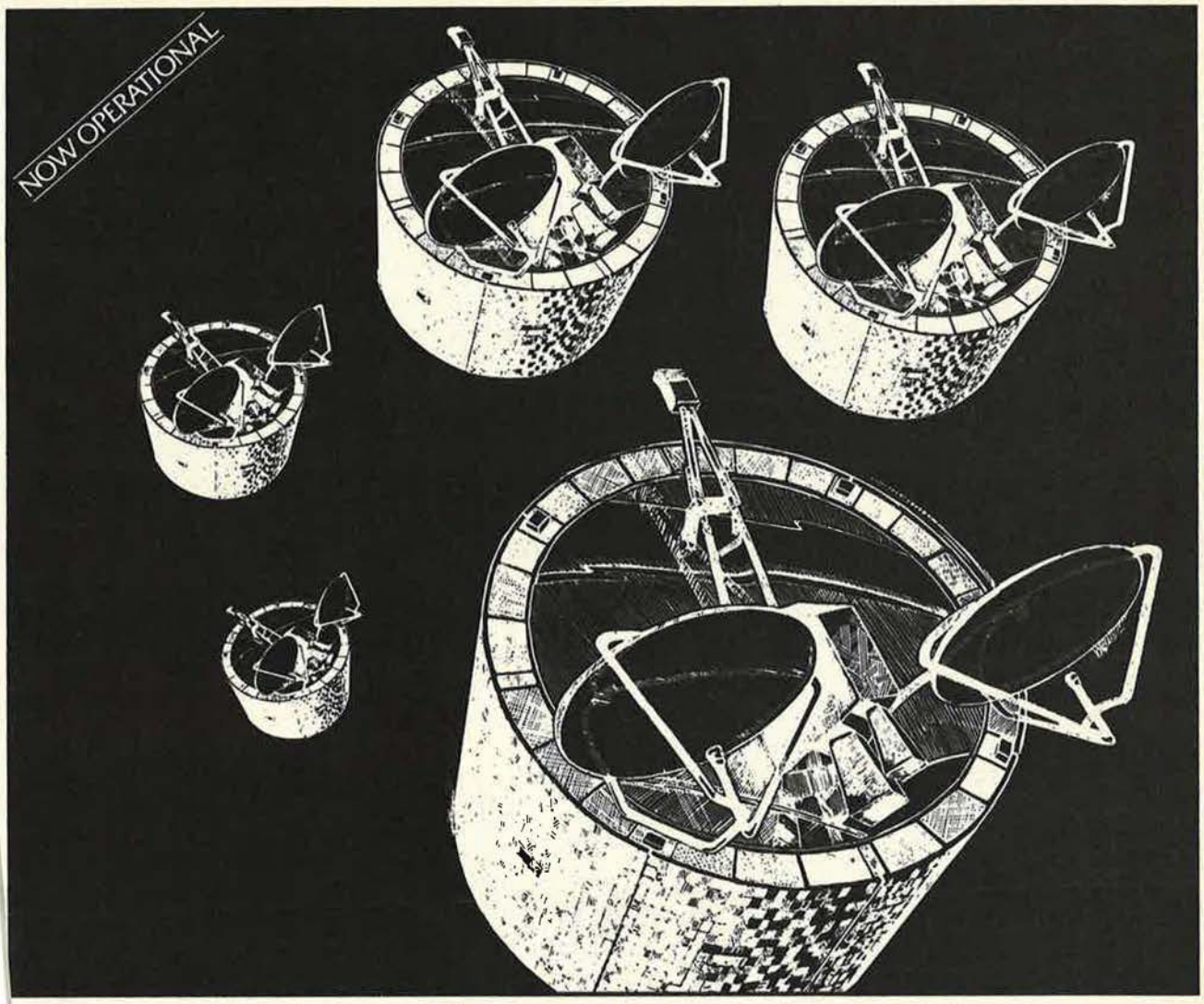
General Electric high bypass turbofans are continuing to prove their performance capabilities in key USAF missions.

Twin TF34 engines help provide Fairchild's A-10 with the short-field performance, maneuverability and extended loiter time needed for its close air support mission.

Two other advanced aircraft are powered by thoroughly proven CF6-50 engines. For the McDonnell Douglas KC-10A Advanced Tanker/Cargo Aircraft, they help provide excellent mission range and payload capabilities. And for Boeing's E-4 Advanced Airborne Command Post, CF6-50 engines offer the reliability and low fuel consumption necessary to meet varied and complex mission objectives.

GENERAL ELECTRIC

TWO MORE PARTNERS IN NATIONAL DEFENSE



Two more spacecraft in the Defense Satellite Communications System (DSCS II) were successfully placed in orbit December 13, 1978. Joining those already in space, these TRW-built telecommunications satellites form the first high capacity, worldwide, military space communications system for command and control.

DSCS II greatly improves our capacity for keeping our worldwide forces in close touch with strategic commanders throughout the Department of Defense. DSCS II is being acquired by the U.S. Air Force Space and Missile Systems Organization for the Defense Communications Agency.

TRW also builds FleetSatCom, the most powerful telecommunications satellite in orbit...and is developing the Tracking and Data Relay Satellite System (TDRSS) of telecommunications satellites for Western Union to serve NASA and commercial users.

TRW is the nation's leader in military and government telecommunications satellites.

TWO MORE SUCCESSFUL SPACECRAFT

from a company called **TRW**

Under joint development by The Garrett Corporation and Volvo Flygmotor AB, the new TFE1042 brings turbofan economy to the world of lightweight military aircraft.

An engine that's economical enough for a full syllabus trainer, yet powerful and reliable enough for twin-engine ground attack and lightweight fighters.

For maximum design flexibility, the TFE1042 is available either with an afterburner (6,790 lbs. thrust) or dry (4,260 lbs. thrust).

Compared with similar sized turbojets, the TFE1042 burns 30% less fuel. Maintenance man-hours are reduced, an logistic support costs are c as much as 50%.

From Garrett comes the basic core of the commerc TFE731, an engine that's al been proven in *over 1,000 hours* of operation—in 15 ent civilian and military airc

From Volvo Flygmotor,

A commercial solutio

Introducing the TFE10

burner technology gained
manufacturing the highly
essful powerplants for the
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e afterburning engines have
dy seen *over 1,000,000*
s of service.
r complete details and
fications, write or contact:
ger, TFE1042 Program

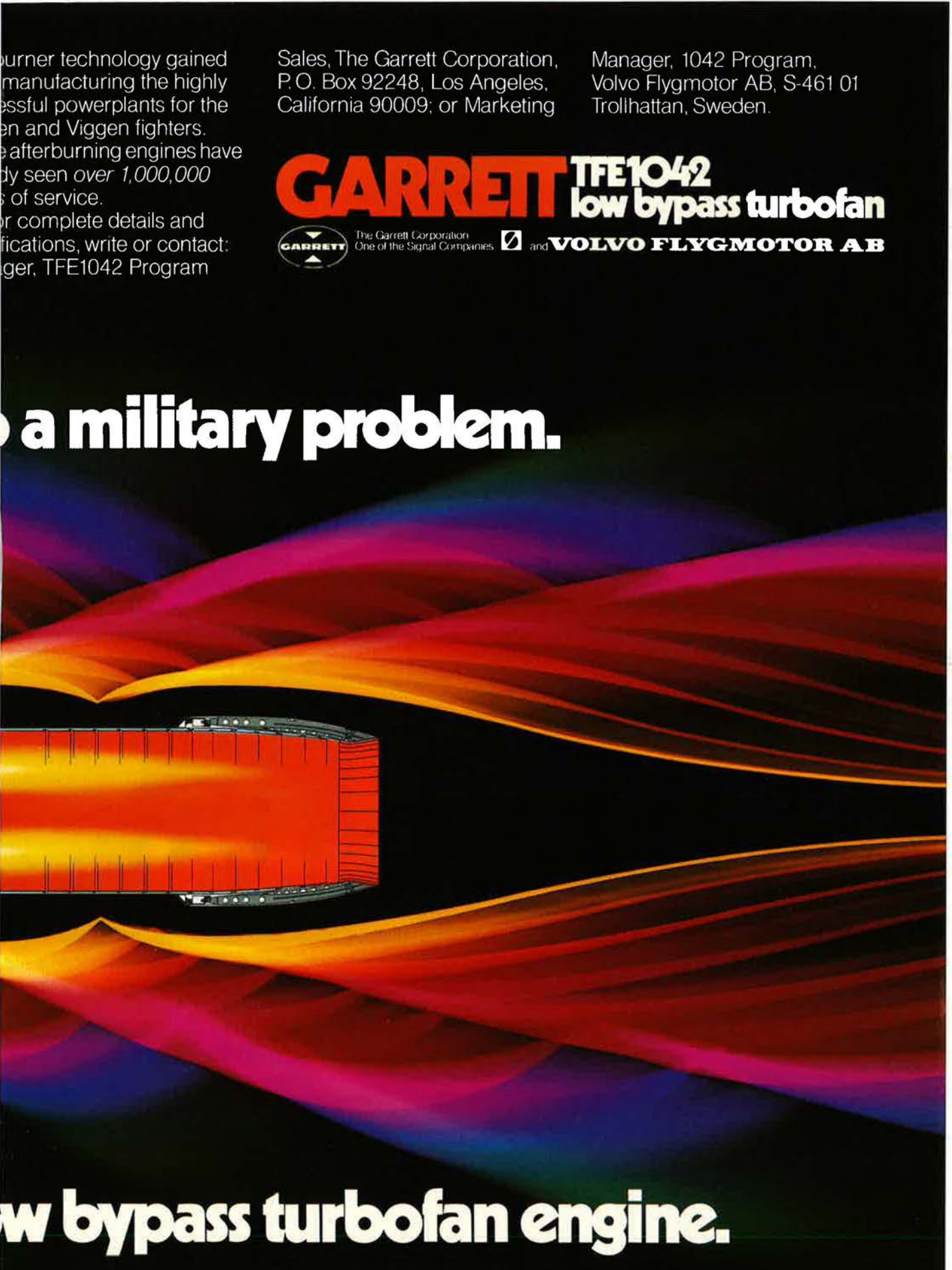
Sales, The Garrett Corporation,
P.O. Box 92248, Los Angeles,
California 90009; or Marketing

Manager, 1042 Program,
Volvo Flygmotor AB, S-461 01
Trollhattan, Sweden.

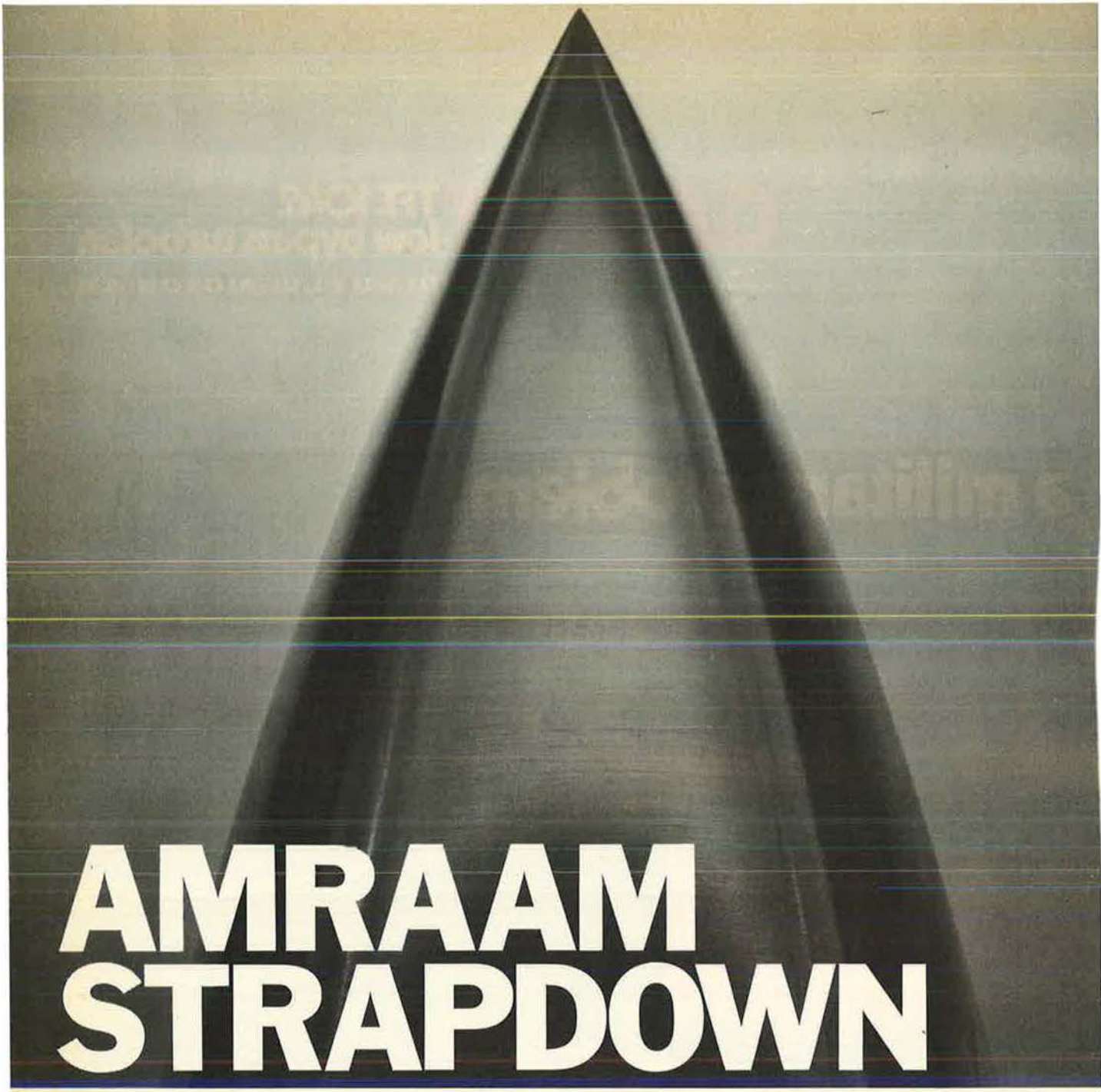
GARRETT TFE1042 low bypass turbofan

The Garrett Corporation
One of the Signal Companies and **VOLVO FLYGMOTOR AB**

a military problem.



w bypass turbofan engine.



AMRAAM STRAPDOWN

Simple, low-cost inertial guidance system for the Hughes Advanced Medium Range Air-to-Air Missile (AMRAAM) for the U.S. Air Force and Navy. From Northrop's Precision Products Division, a leader in strapdown technology.

Hughes Aircraft Co. selected Northrop to provide mid-course guidance for AMRAAM because proven "off-the-shelf" sensors in high volume production and demonstrated microprocessor technology result in precision inertial performance with assured reliability.

Working to bring strapdown guidance technology to other tactical missile programs, Northrop is under contract to provide digital strapdown units for the Navy's Phoenix air-to-air missile and for the Navy's Harpoon and Tomahawk anti-ship missiles.

Also, Northrop is first to develop small, lightweight standard strapdown inertial package for broad range of precision navigation and guidance applications. For aircraft, helicopters, ground vehicles torpedoes and tactical missiles.

Northrop Corporation, Precision Products Division, 100 Morse Street, Norwood, Mass. 02062.

NORTHROP

Making advanced technology work

AIR FORCE MAGAZINE
PUBLISHED BY THE AIR FORCE ASSOCIATION

MAY 1979
VOLUME 62, NUMBER 5

ANNUAL AIR FORCE ALMANAC ISSUE

ABOUT THE COVER

This annual Almanac issue is the most concise but comprehensive unclassified reference work available on the organization, missions, bases, personnel, equipment, and financing of the United States Air Force. The cover design is by Art Director William A. Ford.

Departments

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(USPS 010-280)

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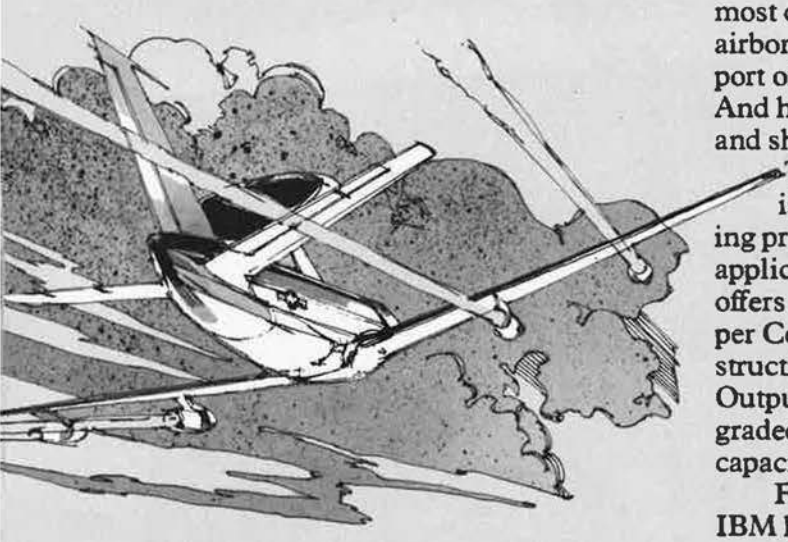
Real-time airborne data processing...

With an IBM system on the E-3A Sentry, the big picture gets a sharper focus.

IBM

Creating systems that work



Eyes that see beyond the horizon. Eyes that can look deep into hostile territory. That's what the E-3A Sentry provides a tactical ground commander.

The E-3A Sentry integrates radar, identification, data processing, display and communications functions in a single airframe—and reduces the need for complex data interchange among many elements.

With its breakthrough in radar technology, the E-3A Sentry can detect and track at extremely long range, over land and water—despite ground clutter.

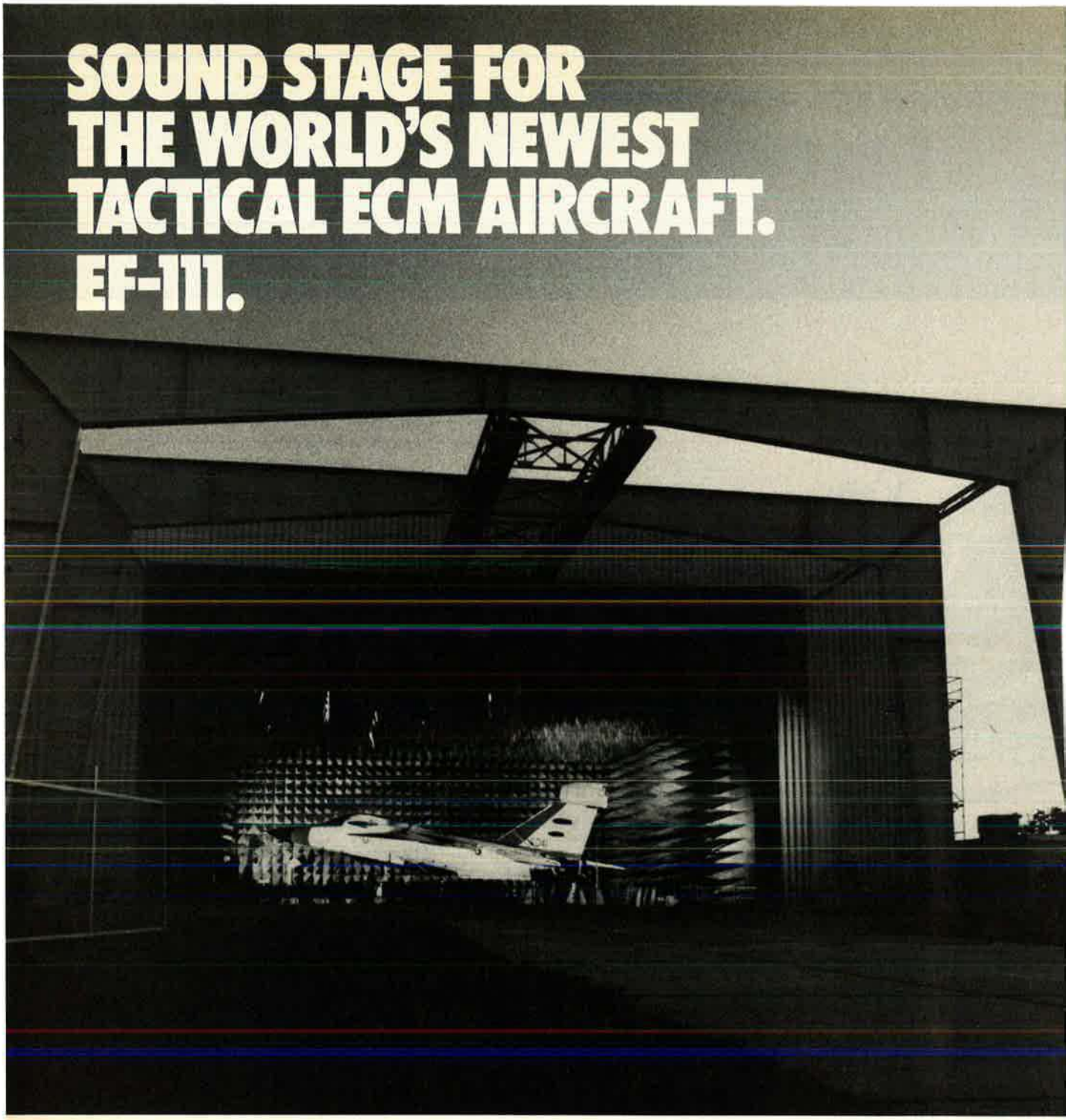
With its proven Boeing 707 airframe, the E-3A Sentry can solve surveillance requirements on a long-term mission basis without establishing large numbers of ground-based sites.

And with IBM on board, one of the largest, most complete data processors ever qualified for airborne use helps provide direct, real-time support of the E-3A Sentry's missions and operations. And helps give the big picture a wider perspective and sharper focus than ever before.

The IBM Advanced System/4 Pi Model CC is designed to solve the large, real-time processing problems that exist in command and control applications such as the E-3A Sentry. While it offers nearly one million operations per second per Computer Arithmetic Unit depending on instruction mix, as well as an extensive Input/Output channel capacity, it is presently being upgraded to significantly increase speed and memory capacity in the same amount of space.

From the B-52 through the space shuttle, IBM has applied management, engineering, manufacturing, integration and programming skills to produce effective systems for military and space agencies. Whether it's integrating the data processing function of the E-3A Sentry, or managing an entire complex multi-platform weapon system, IBM applies its capabilities from problem to solution. We put information to work. IBM Federal Systems Division, Bethesda, MD 20034.

SOUND STAGE FOR THE WORLD'S NEWEST TACTICAL ECM AIRCRAFT. EF-111.



You're looking at the USAF EF-111 tactical jamming system getting a total EW system check-out in Grumman's anechoic chamber. Suspended in the chamber, the aircraft is completely isolated from the "outside world" so that it can be fine-tuned for its operational environment.

You're looking at the only USAF-destined tactical aircraft dedicated specifically to electronic countermeasures.

You're also seeing the best answer to the other side's development of the densest thicket of electronic defenses found anywhere in the world.

EF-111 can overwhelm and blind such defenses. And even if multiple, hostile radars switch to a variety of frequencies, the EF-111's jamming capabilities can handle them immediately.

EF-111 can accompany any strike aircraft. Take any mission, from close air support to deep penetration.

Finally, the EF-111 is adaptable. Its electronic systems can be converted quickly to counter new threats as they develop.

EF-111 is just one illustration of our capability to design, manage and integrate total systems.

It is also another example of how we work to provide real answers to real needs.

Grumman Aerospace Corporation, Bethpage, Long Island, New York 11714.

GRUMMAN

The reliable source

Airmail

ow to Win the Game

his March issue article, "Soviet trategic Vulnerabilities," Colin S. ray writes, "Our central strategic lanning vis-à-vis the USSR prob-ly should be to encourage that ountry to destroy itself from ithin."

Amen to that. But from the start e have done the reverse. As Wil-am Simon wrote in *A Time for ruth,* "The truth is that the Soviet conomic system . . . has functioned om beginning to end by relying on /estern capitalism, above all, on merican capitalism. . . ."

We know that after sixty years of ommunism the Soviets cannot feed eir people, nor can they run any the components of a modern in-ustrial society without massive ipport from the Western democra-es. Now, after thirty years of aoist-Leninist communism, China as made the same admission. The ystem doesn't work, and its advo-ates are forced to appeal to the nited States for help. Instead of xploiting this breathtaking propa-anda opportunity, we let it appear at China has done us a favor.

Why does the West, especially e USA, neglect this obvious weap-n? Why does it not *bargain*? No echnology without open borders. o truck assembly plants unless at wall is dismantled. No wheat ithout UN-sponsored free elections what's sauce for Namibia should be auce for the Ukraine). Why does it ot use the otherwise useless nited Nations as the propaganda rum it has become and refuse to ke refugees from Vietnam unless e USSR and China take equal umbers?

We're giving away the two games e're good at—inventing and mar-eting in freedom—because we're arful of starting the only game the talitarian Communists are inter-sted in playing.

Kenneth McDonald
Willowdale, Ontario, Canada

rong Motto?

the Air Force becoming the vic-m of its own rhetoric? Do a major-y of its people believe that the *raison d'être* of our nation's armed forces is to preserve peace rather than fight our nation's wars? When I read words such as those of Maj. Roger L. Gounaud, Jr. [February issue "Airmail"], I fear the answer to these questions might be yes.

"Peace Is Our Profession" is a lofty phrase, but should it really be the motto for a military organization that has as its "primary function" the waging of war, to paraphrase Sir John Winthrop Hackett's little classic, *The Profession of Arms* (p. 67)? Doesn't such a slogan create in the members of a military organization a false idea of what their mission is? Can an organization which has lived by this motto successfully change gears once it has failed in its prime function, deterrence, and execute what, in the words of Major Gounaud, would seem to be a secondary part of its mission, winning the war? How does a commander explain to his pilots what they are doing while engaged in the conventional wars such as Korea and Vietnam, which are fought under the nuclear umbrella?

Are we not undermining the strength of the Air Force through a subtle, even insidious, psychological change caused by claiming that deterrence is the military's primary reason for existence? Does such a claim not make it easy for every member of the service to elevate his or her function to the same level of importance as that of our small group of warriors, our pilots who are the primary element in the Air Force's *fragilely* thin cutting edge, and lead to discontentment when pilots are given an ever-so-small advantage before promotion boards?

We must come to realize that the bottom line in deterrence and the profession of arms is the ability to fight and win our nation's wars. After all, isn't deterrence a state of mind in Soviet leaders that is dependent upon whether or not our armed forces can outfight and outfly Soviet armed forces? Slogans that emphasize peace may make the military more palatable to our traditionally peace-loving society and, indeed, express a sincere, strong desire on the part of America's professional soldiers for everlasting peace; but these slogans become dangerous when they confuse us as to the nature of our primary purpose and lead us to believe that . . . the constabulary state of military life is the essence of the calling.

George S. Patton had a favorite quotation that one finds oft repeated in Martin Blumenson's *Patton Papers.* Our brother officers in the Army are also fond of it, and you will find it often on the pages of *Military Review:* "Wars means fighting and fighting means killing." Neither this slogan nor the Air Force motto on fighting and flying means that the officers who mouth them are bloodthirsty beasts who cannot wait for the outbreak of the next war. . . .

The fighting slogans of our nation's armed forces, crude rhetoric though they also may be, serve an important function in time of peace. Like beacons in the night, they focus the attention of military men on the essence of their profession. The mission of the United States Air Force is still to fly and fight, but I fear we *are* forgetting it.

Lt. Col. Donald R. Baucom
Keesler AFB, Miss.

We Keep Trying

I would like to express my appreciation for your work in attempting to awaken the people of this country to the role the Air Force plays in their security and the increasing threat posed by the Soviet Union. The people can make their feelings and opinions felt through their representatives, but they need reliable information to make intelligent decisions. Your magazine presents a message that is required by those who want to know what the Air Force does, but do not have day-to-day contact with it.

T. W. Apple
San Angelo, Tex.

Another Avenue Open

Ed Gates's fine article on the Air Force grievance system ["USAF's Growing Grievance System," January '79 issue] did not mention a most important grievance remedy.

When an airman has been wronged by his commander and is refused redress after first making a complaint, the airman can file a complaint of wrong under Article 138, Uniform Code of Military Jus-

Airmail

tice. If the commander does not redress the wrong, the airman may appeal the case. If the case is appealed, the general court-martial convening authority must investigate and take proper measures to redress a meritorious complaint.

Details are set forth in AFR 110-19 and Article 138, UCMJ.

John M. Economidy
San Antonio, Tex.

The "Brown Thesis"

In its May 1964 issue, AIR FORCE Magazine published my first, and until now only, letter to the editor. In it, I exposed the "Brown Thesis" on officer retention . . . "let the guy go, and let him come back."

Times were similar then to now. Society apathetic to a military career, no real war to stir the blood (Vietnam was just a small cloud on the horizon), and normal desire on the part of most of the junior officers to try their wings in the civilian world.

In the "Brown Thesis," I suggested that the Air Force would be wise to let the young officer go if he wanted to, but make it equally easy for him to return to active duty once he had had a chance to sample that great, wide civilian world. If he wanted to come back, let him, I said.

In all of the conversation and hand-wringing we are now hearing about pilot retention, I have yet to hear anyone offer this same idea . . . let 'em go, and let 'em come back.

It costs a lot of real dollars to train a junior officer, flying or nonflying. Once he has finished his first obligation, he is just barely beginning to pay off on this investment. On the other hand, if we make it easier for him to return voluntarily, without a war, we can recoup this investment and put him to work very quickly.

The Air Force did try this a few years ago during the big cutbacks of 1974. How many of those who left on that program are asking to come back?

One real caution, however. If we should adopt this program as a permanent thing, there must be a commitment on the part of the Air Force leadership that the break in service is not going to be a bar to future promotion. My own break, and recall in 1962, put me up for O-5 in 1974, when almost no one over forty got promoted. A lot of recallees, and officers with prior enlisted time, got the ax that year. As they say in the wine business, that was a bad year.

As I said in 1964, let's turn the thinking around, from *retention* to *long-term officer manning.* Looked at in that way, the man (or woman) we have trained who wants to come back to us can be much more valuable and more dedicated than the brand-new brown bar whom we have laboriously shepherded through the Academy, ROTC, or OTS. They know what it is like, and have made an educated decision on the basis of actual comparison.

Maj. Charles A. Brown
Redlands, Calif.

"His" Air Force

I could not turn one more page of the March issue without commenting on the letter by Lt. Col. Bert Sanborn, under the caption, "A Sense of Belonging."

As a Reserve recruiter for the 434th Tactical Fighter Wing and the 931st Air Refueling Group, both located at Grissom AFB, Ind., that sense of belonging is usually what brings most of my prior-service applicants back into the blue suit. Indeed, it was that very thing that brought me back in 1975, after being away from the Air Force family for about seven years.

Although I never had a pilot, a crew, or a plane to call my own, I did have my base, my squadron, and my work. Looking back on my four years with the Regular Air Force, I now realize that it was a combination of pride and respect for all levels that made me and my teammates excel at whatever task was assigned to us.

Over the years, my thoughts drifted from *the* Air Force to *my* Air Force. In fact, when I was totally confused as to the course American society was taking in the late sixties, I had only to look up at the sky and view the contrails from one of *my* aircraft and assure myself th everything was for the best. Son might say that I was sticking n head in the sand, but I prefer think of it as having faith in bo God and *my* Air Force.

Rest easy, Colonel Sanbor When my wife returned from h technical school training at Kee ler a few months go, and I aske her how it was, she immediately to me about *her* squadron, *her* instru tors, *her* classes. She picked rig up on it, and so *my* Air Force ha become *our* Air Force, and Co Billy Henderson in *our* wing com mander. Pride, love, and respect a the key elements here—*our* A Force and Air Force Reserve cou not operate any other way.

TSgt. Pete Snyd
South Bend, Ind

Good Response

Thank you very much for publishi my letter (February issue) about r need for Constellation informatic

I've received a number of replie including one from the Lockhe engineer who was responsible f overseeing construction of the fi models of the plane. Others writi included Air Force personnel wh flew the plane under a wide varie of conditions. Their recollectio are of considerable value to m study.

Your assistance is greatly appr ciated. I've subscribed to AI FORCE, finding it to be a most rea able, professional publication.

John T. Wible
San Antonio, Te

No Contest

. . . Mr. Archdeacon [February "Ai mail," p. 10] was very perceptive i realizing that one of our newest an most formidable weapon system lacks an appropriate name, notin that USAF's F-15, our air-superiorit fighter, has a "well-chosen" an "identifiable" name, the "Eagle that is very appropriate for the kin of plane it is. But what about th F-16? It is one of the quickest an most maneuverable planes flying i the world today.

Mr. Archdeacon made a goo choice of a name for the F-16, th "Viper." In my opinion, though, ther is a much more appropriate nam the F-16 "Falcon"! Like the eagl the falcon is another very effectiv bird of prey. The falcon, with i powerful wings, is probably one the quickest, most agile birds aliv

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

EF-111A:
fully programmed for supersonic jam sessions.

The sky's the place to test the far-out limits of the ALQ-99E Tactical Jamming System and the aircraft that carries it.

For the new supersonic EF-111A, that challenge was met during operational test and evaluation by the U.S. Air Force. Elements of the ALQ-99E from Raytheon demonstrated a significant increase in reliability over proven equipment currently in use. This advanced jamming equipment—consisting of ten transmitters, five exciters and one RF calibrator per aircraft—is the package that gives the EF-111A its ECM punch.

The equipment's built-in flexibility and reliability reflect Raytheon's long experience in designing high-powered ECM gear. Within the exciter, interchangeable "technique cards"— in

combination with the system's software control—enable the EF-111A to perform diverse missions to meet rapidly changing threats. This same design approach lowers the cost of ownership by extending the useful life of the equipment.

The EF-111A and ALQ-99E. Ready to handle any known threat. Today and tomorrow.

For details on Raytheon's airborne ECM capabilities, please write Raytheon Company, Government Marketing, 141 Spring Street, Lexington, Massachusetts 02173.

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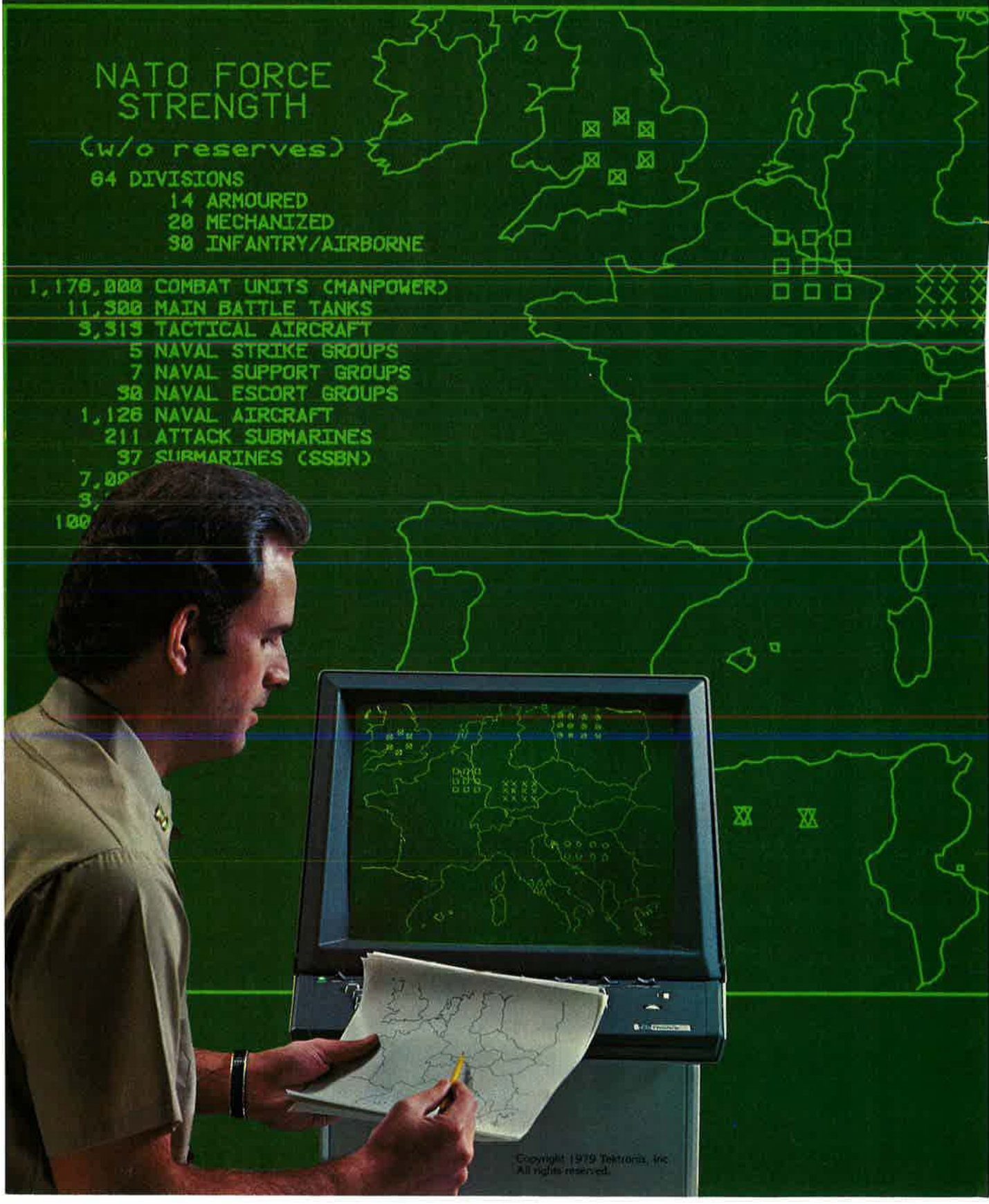

In almost every phase of defense, computer graphics is taking a tough job and making it more manageable.

Information is a key to defense. And managing that information — making it easier to understand and to react — is the job of computer graphics. Graphics gives you spontaneous access to information. Maps, charts and diagrams. Graphics fits the pieces together, so you can concentrate on the big picture.

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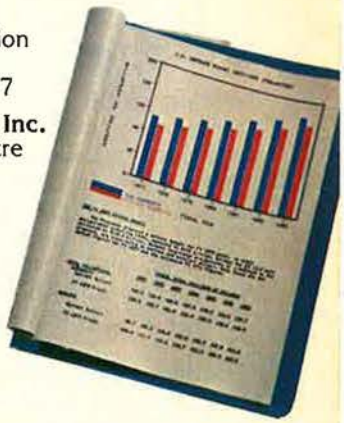

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Airmail

It is able to swoop down upon its unsuspecting prey at speeds approaching 200 miles per hour, and strikes with its deadly talons. The falcon also happens to be the mascot of the USAF Academy.

I feel the snake should stick with slithering on the ground, and let the eagles and falcons retain their mastery of the air.

Cadet Thomas D. Walker,
AFROTC
Northern Arizona University
Flagstaff, Ariz.

• *There is no "Name the Plane" contest afoot, but we've received several letters suggesting names for the F-16. Capt. William V. Carnes, of Gambrills, Md., endorsed "Viper," citing as precedent the Thomas-Morse Aircraft Corp.'s XP-13 biplane of the thirties, which was called "Viper," and the use of the name for the "good guys" in the TV* Battlestar Galactica *series. Chris Nicely, of Universal City, Tex., agrees with Cadet Walker on "Falcon." But 1st Lt. Bernie Lynn, of Hampton, Va., came up with "Osprey" for the F-16 and "Condor" for the TR-1 (although there is the "Gossamer Condor").*—THE EDITORS

305th AFROTC Grads

The 305th Cadet Corps at Louisiana Tech University is currently working on an alumni program. We would like to correspond with persons who graduated from the 305th Cadet Corps.

Michael N. Beard
Det. 305 AFROTC
Louisiana Tech University
Ruston, La. 71272

Building a T-38

I would very much appreciate any assistance readers and members of the Air Force Association could give me in attempting to locate Class 26 T-38 fuselage or other T-38 airframe parts. I am also in need of some J85 engines with afterburners, inasmuch as my project is to try and construct a T-38.

Understandably, this is a five- to ten-year project, but it is an idea I have entertained for a long time.

Since commencing this project approximately six months ago, I find that there are four projects in the United States where parties are attempting to build T-38s. I trust mine will be one of many. All efforts to assist will be appreciated.

Terrance H. Fregly
P. O. Box 3886
Tallahassee, Fla. 32303

Two for the 94th

The 94th Tactical Fighter Squadron, "Hat-in-the-Ring," is presently trying to upgrade its history of the squadron extending back to its formation in 1917 as the 94th Aero Squadron.

Any information or memorabilia of a unique or unpublished nature, such as squadron aces, squadron "kills," former commanding officers, personnel rosters, anecdotes, photographs, posters, and uniforms would be greatly appreciated. Especially sketchy are the periods from 1938 to 1947 and 1953 to 1958.

94th Tactical Fighter Squadron
Attn: Squadron Historian
Langley AFB, Va. 23665

I am trying to locate any surviving members of the 94th Fighter Squadron of the 1st Fighter Group.

My main concern is contacting those individuals who were members of the 94th from July 1942 to October 1942. This is the time period when six P-38 Lightnings were forced down on the Greenland icecap due to fuel starvation.

Would appreciate hearing from anyone knowing the whereabouts of any surviving members of this particular flight.

Russell D. Rajani
Pursuits Unlimited, Inc.
Rt. 2, Stanley Rd.
Fayetteville, Ga. 30214

Can You Help?

I am desperately in need of patches and information on the 20th Air Force, 58th Bomb Wing, 468th Bomb Group, 793d Bomb Squadron, WW II, for a presentation to a former member of these outfits.

James R. Turpen
13120 Pavilion Lane
Fairfax, Va. 22030

Women in Uniform

I am writing a history of women in uniform during World War II and am interested in contacting women veterans (WACs, WAVEs, nurses, WASPs, SPARs, and Women Marines) who would contribute their memories of wartime service. If they would send me their name and address, I will mail them a two-page questionnaire to serve as a guideline.

I am especially interested in locating women who served with the WAF and women who were WASPs and nurses serving with medical air evacuation units.

Barbara B. Tomblin
35 Wolf Hill Dr.
Warren, N. J. 07060

Where's the *Rum Dum* Crew?

I would like to correspond with the officers and crew of the B-17 *Rum Dum,* which was assigned to the 385th Bomb Group, 550th Bomb Squadron, Great Ashfield, Suffolk, England, on May 4, 1944. The officers and crew were: Ralph M. Hausler, pilot; William K. Lewis, co-pilot; Roger Merritt, navigator; Thomas M. Ellis, Jr.; John P. LoCoco; Walter R. Wallace; John Hamilton; and Oliver J. Besser.

I am doing research on the bombardier of the plane and would appreciate hearing from any readers who were associated with the above or can tell me where I may find them.

Joseph H. Nichols
13 Hibiscus Court
Gaithersburg, Md. 20760

Collecting Artifacts

I have been a student of USAAC/USAAF/USAF history for almost forty years and during that time have compiled a fair collection of Air Force artifacts. To add to that collection, I am seeking the following items and am hoping that readers might be able to assist me:

Flight manuals from any military aircraft, past or present.

Jacket and shoulder patches from numbered Air Forces and commands, including schools and NCO academies.

Postcards of military aircraft.

Any assistance will be greatly appreciated.

Kent Kistler
12712 Portland Ct.
Burnsville, Minn. 55337

Seeking Information on Brother

I am trying to locate anyone who served with and knew my brother, SSgt. Garrett C. Parnell, Jr., 38341096, who was killed on November 18, 1944, while serving with the 492d Bomb Group, 856th Bomb Squadron, Eighth Air Force, in England.

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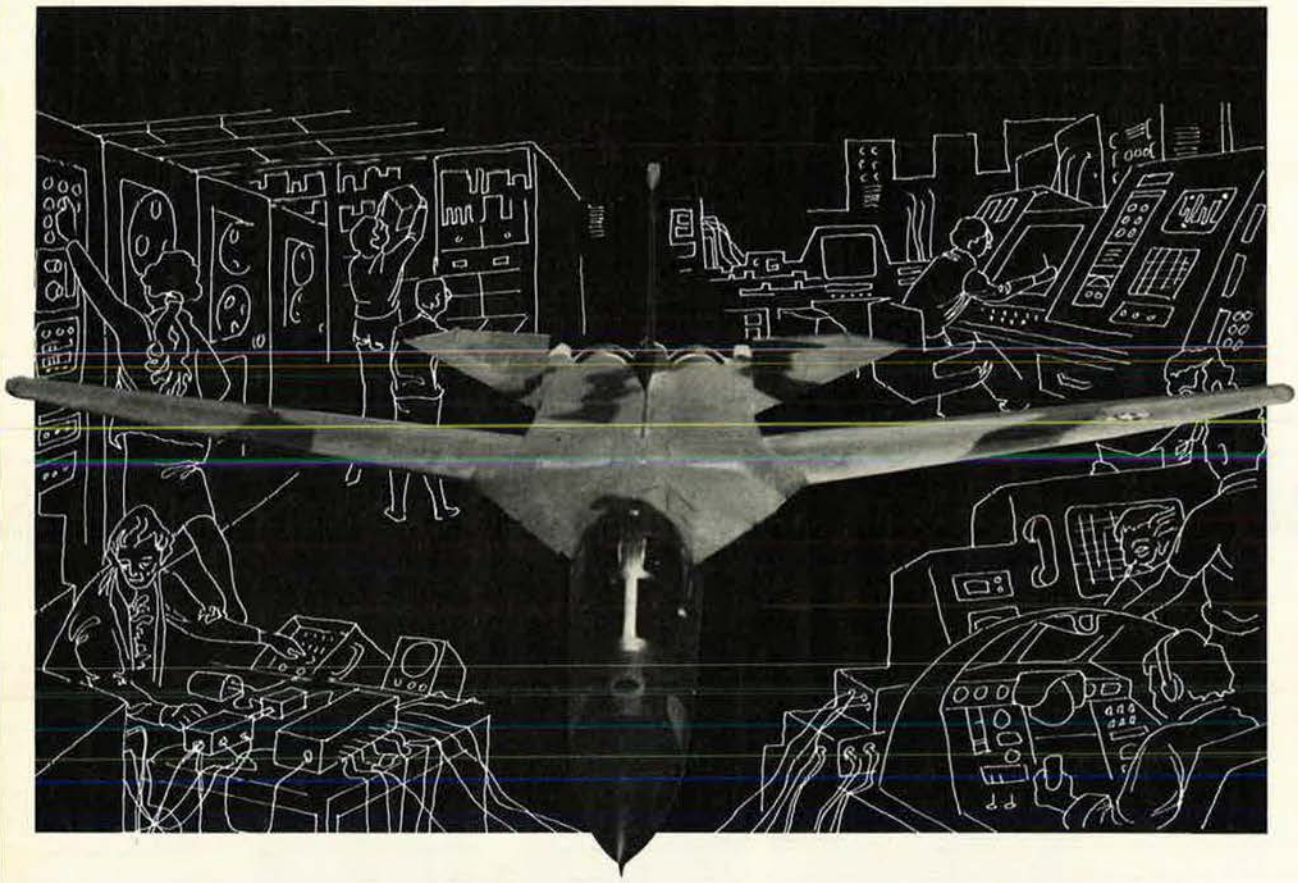

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Airmail

Among some old papers of my arents I have found letters indicating that he served with William K. :larke, Blue Mound, Kan., and larold E. Thompson, Covington, nd., or Kanaha, Iowa.

Any information or suggestions would be appreciated.

Ben Parnell
First Bank & Trust Company
Bartlett, Tex. 76511

)elta Dagger Pix

am working on a photobook of the Convair F-102A Delta Dagger and m seeking photographs and color lides of the plane during the period etween 1954 and 1970, especially hose taken in Europe during the arly sixties.

However, all other photographs nd slides will be great. All material ill be returned after I duplicate it, the sender wishes.

T. van Schaik
Zonneplein 10
3721 VB Bilthoven, Holland

JFOs at Edwards?

am a science writer and no-nonense UFO researcher interested in getting to the source of the persistent stories about a supposed "UFO anding" occurring at Edwards AFB, Calif., sometime during the 1950s or 960s. Would like to hear from anyone who can help me track down he rumor.

Also, would like information on ormer Astronaut Gordon Cooper's eported claim that while he was at Edwards, a film was made of a UFO anding. Cooper's reported claim of other UFO sightings while at Neubiberg AFB, Germany, in the early 950s, is another area of interest.

Robert Sheaffer
9805 McMillan Ave.
Silver Spring, Md. 20910

Patch Traders

'd like to contact readers who night be interested in trading USAF shoulder patches.

Jon W. Letzkus
59 Dogwood Dr.
Clinton Hills
Triadelphia, W. Va. 26059

am currently seeking to expand my ollection of Air Force patches, both those in the United States and overseas. Anyone wishing to buy, sell, or trade patches is urged to write. No patch is too large or too small to be of interest.

Tom McCullough
6402 Mil Mar Blvd.
Alexandria, La. 71301

67th Tac Recon Wing

I would like to hear from anyone who was associated with the 12th, 15th, or 45th Squadrons while in Korea (1951–53). The purpose of this is to complete a current address list, by squadron, to help old friends get back in touch and to gather material for a future article.

Warren E. Thompson
7201 Stamford Cove
Germantown, Tenn. 38138

96th Bomb Group (H) Combatants

It is believed by many Air Force personnel that the first two missions against "Big M," Merseburg, Germany, broke the back of the German Luftwaffe and that the missions on the 25th and 30th of November 1944 finished off this oil (synthetic) refinery. From my limited research of this target, I believe we lost around fifty bombers and fifty fighters.

I flew with the 337th as flight engineer and went down on November 25, 1944, over Merseburg—and was a POW for the duration. Amen.

I would like to hear from all combat crewmen and fighter pilots who went down on any of these missions.

Robert W. Owens
Contact Director
96th Bomb Group (H) Memorial Association
900 S. Western Ave., 2-R
Chicago, Ill. 60612

UNIT REUNIONS

Ex-Survival Instructors
from Stead AFB, the old "Home of the Walking AF," near-future reunion. **Contact:** John Howard, RD #2, Box 350, Bristol, Vt. 05443, or call Don Wertz (713) 440-5227.

Goodfellow Fld., Tex., Medics
June 29–July 1, Holiday Inn, San Angelo, Tex. Anyone assigned to station hospital or medical detachment, 1940–45, welcome. **Contact:** Leonard Stockus, 422 Amistad Blvd., Universal City, Tex. 78148.

White Falcon, Jr.
Iceland vets, June 24–28, Kutsher Hotel, Monticello, N. Y. **Contact:** Dave Zinkoff, Caretaker of White Falcon, Jr., 2101 Walnut St., Philadelphia, Pa. 19103. Phone: (215) 568-1234.

14th Fighter Group
Hqs., 37th, 48th, 49th, and 50th Fighter Squadrons, WW II, August 3–5, Oklahoma City, Okla. **Contact:** S. D. Huff, 3200 Chetwood Dr., Del City, Okla. 73115.

17th Bomb Group
34th, 37th, 95th, 432d Squadrons, MTO, ETO, August 30–September 1, Colorado Springs, Colo. Searching for former members. **Contact:** Bill Frymire, 4810 Garden Place, Colorado Springs, Colo. 80907.

20th Bomb Sqdn. (SAC)
All present and former members, 1st weekend of August, Fort Worth, Tex. Please send stamped, self-addressed envelope for information. **Contact:** Lt. Col. Charlie Yates, 6513 Winifred St., or Lt. Col. Norm Walsh, 6164 Whitman St., Fort Worth, Tex. 76133.

26th Photo Recon Sqdn.
August 31–September 1, New Orleans, La. **Contact:** Hartwell C. McCullough, P. O. Box 2141, Lafayette, La. 70502. Phone: (318) 234-2582.

56th Fighter Gp. & 33d Service Gp.
June 23–24, Detroit, Mich. **Contact:** Leo D. Lester, 600 E. Prospect St., Kewanee, Ill. 61443.

75th Air Depot Wing
27th anniversary reunion, August 2–5, Sacramento, Calif. **Contact:** Vern Wriedt, 2121 Cedar St., Davenport, Iowa 52804.

303d Bomb Group, 8th AF
3d reunion, August 23–26, Dayton, Ohio. Interested persons please send stamped, self-addressed envelope. **Contact:** Joe Vieira, P. O. Box 8531, Hollywood, Fla. 33024.

355th Fighter Group, 8th AF
2d reunion, August 9–12, Dayton, Ohio. Those interested please send stamped, self-addressed envelope. **Contact:** Gordon H. Hunsberger, 75 Congo Rd., Gilbertsville, Pa. 19525.

388th Bomb Group Ass'n
30th annual reunion, August 2–5, Opryland USA, Nashville, Tenn. **Contact:** Edward J. Huntzinger, P. O. Box 965, Cape Coral, Fla. 33904.

452d Bomb Group
8th AF, WW II, August 16–19, San Diego, Calif. **Contact:** Rom Blaylock, P. O. Box 2536, New Bern, N. C. 28560.

454th Bomb Sqdn., 323d Bomb Gp.
4th reunion, July 19–22, Tampa, Fla. **Contact:** Joe Havrilla, 1208 Margaret St., Munhall, Pa. 15120. Phone: (412) 461-6373.

485th Bomb Group
August 3–5, Pittsburgh, Pa. **Contact:** E. L. Bundy, 5773 Middlefield, Columbus, Ohio 43220.

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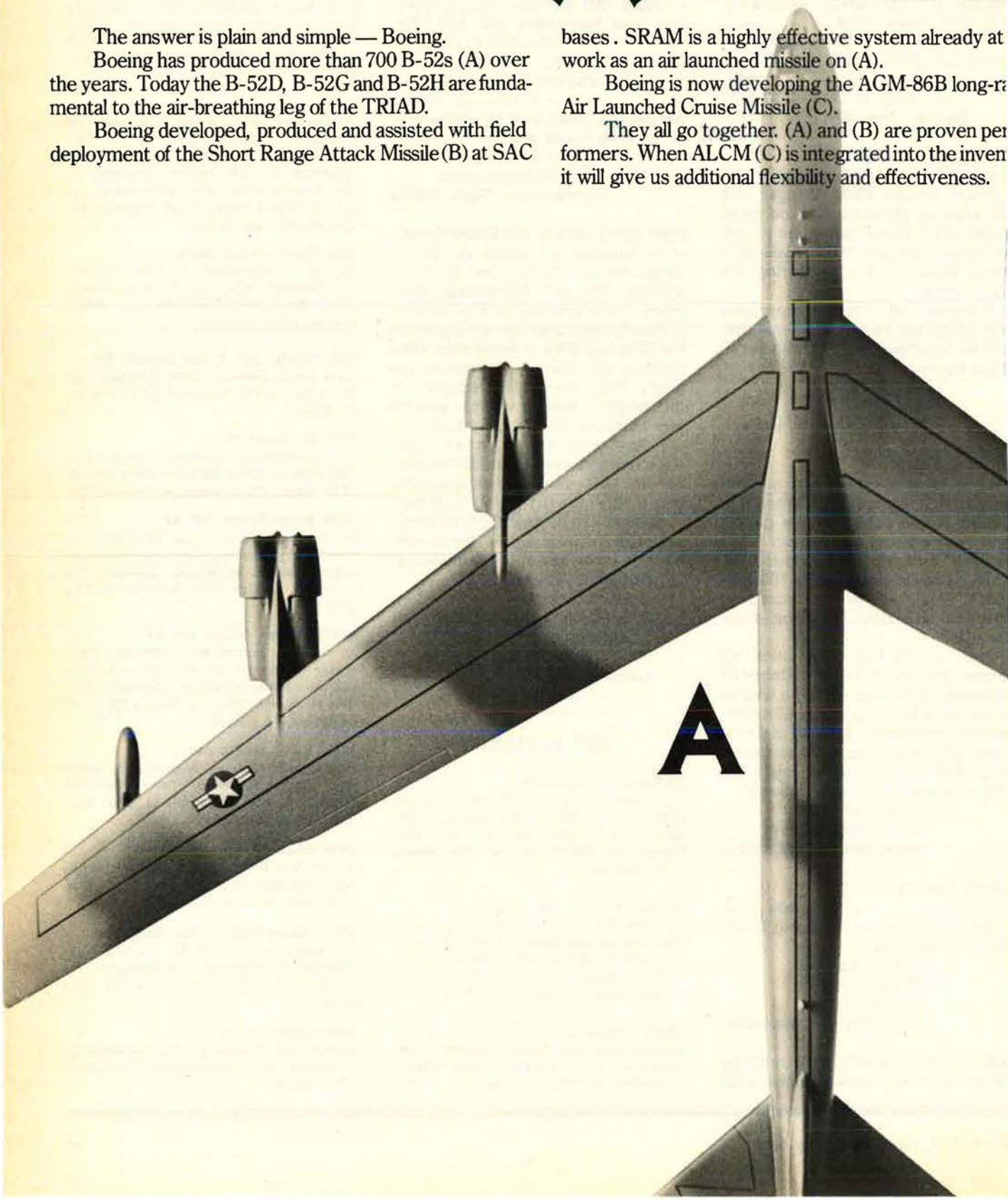

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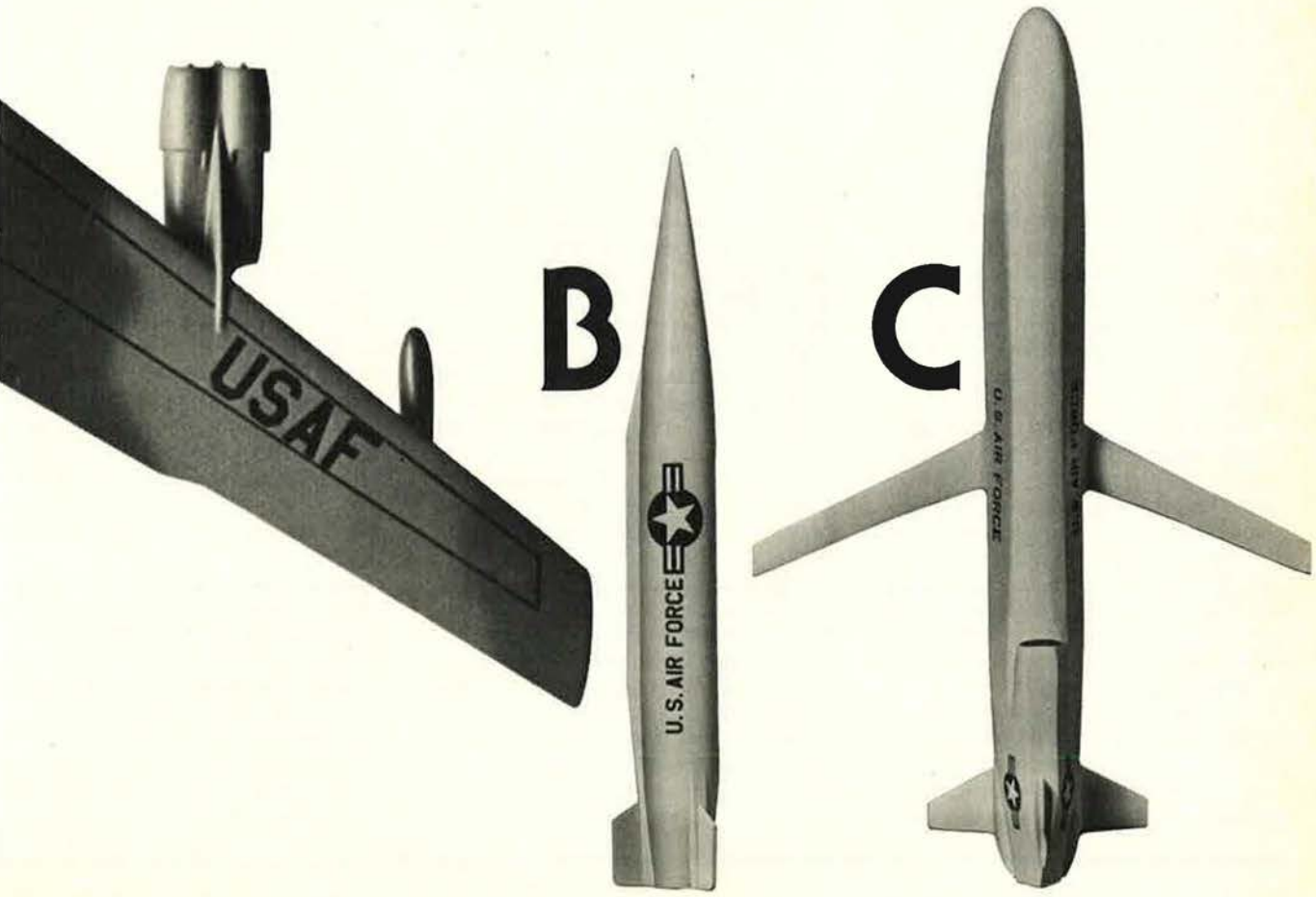

In Focus...

BY EDGAR ULSAMER, SENIOR EDITOR

Washington, D. C., April 2

The Shakiness of SALT II

The Soviet ICBM program continues to be oriented toward facilitating evasion of and breakout from SALT II limitations. As first reported in this space under a January 5 dateline, the Soviets have tested a new modification—probably the fifth—of the SS-18's post-boost vehicle and MIRVing pattern. At least two tests of the new front-end "mod" that did not involve encryption of telemetry data have taken place to date. The significance of these tests—which are a matter of grave concern to the US arms-control lobby—is that they demonstrate unambiguously that the Soviets have found yet another means for legally circumventing the so-called fractionation limits of the pending SALT II accord.

The fractionation prohibition was sought by the US SALT negotiators to keep the Soviets from further capitalizing on the massive ballistic missile throw-weight advantage granted them by the accord. The provision agreed upon by the two countries stipulates that neither side will test and deploy either ICBMs or SLBMs with a number of reentry vehicles (warheads) greater than the largest number tested so far on a given design. Hence, the maximum number permitted on the SS-18, or conversely on the MX, is ten, and fourteen on SLBMs. But as US analysts point out, SALT II's terminology on this point is weak and riddled with loopholes. The new SS-18 mod appears to be tailored to one of these loopholes.

The missile's new two-tiered post-boost vehicle (or "bus") that releases individual reentry vehicles against individual targets, appears capable of accommodating twelve to sixteen, rather than ten, warheads. In order to comply with SALT II, the Soviets only release ten RVs during any one test, yet put the "bus" through the complete maneuver sequence required for a larger number of warheads.

Two tests of the new system consisted of twelve maneuvers, ten of which involved actual release of RVs while two did not. There were indications, however, that fourteen RVs were loaded on the bus. By alternating from test to test the full maneuver sequence, the Soviets are able to test thoroughly and precisely the full warhead complement without running afoul of the SALT II fractionation limit.

Another means for end-running the US in regard to fractionation is available to the Soviets and appears to be under active consideration. Technical experts point out with alarm that decoy RVs are not covered by SALT II's fractionation provision. Thus it is possible to test as many decoys, in addition to the "legal" number of RVs, as the available throw-weight of a given ICBM allows. Since the fundamental purpose of decoys is to deceive the other side into believing they actually are RVs, the US might find itself on shaky grounds were it to charge that some Soviet decoys are, in fact, RVs. No doubt, the Soviets would say that their decoys obviously must be very effective if the US can't tell them apart from real warheads. US SALT II advocates presumably will counter these concerns about decoys by pointing out that theoretically the US can do likewise. But in fact, the severe throw-weight deficiency of this country's ICBMs, present and planned, eliminates this option in a practical sense.

Another potentially dangerous loophole of SALT II was created by the US negotiators' failure to mandate destruction of older Soviet ICBMs that are being replaced by new systems. Up to 1,500 older weapons could be involved in the transition to the new Soviet fourth-generation ICBMs. Once these older but still quite capable systems are taken out of their silos, they are no longer under SALT II's purview. Yet congressional experts point out that these weapons could be launched from simple, quickly erectable gantries of a type similar to those used by USAF's Atlas missiles. Command and control of these weapons could be provided by the extensive Soviet air defense command and control network or by means of conventional land lines.

There also is deepening concern in some quarters of Congress about SALT II's inadequate definition of terms covering verification of the pending accord. Sen. John G. Tower (R-Tex.), for instance, confirmed that, as reported in this space in March, the loss of US intelligence facilities in Iran means that this country no longer will be able to monitor and gauge the performance and features of the first and second stages of new Soviet ICBMs. While there are stopgap measures involving other US intelligence systems that Administration spokesmen allege could be thrown into the breach, their effectiveness and reliability appear to be uncertain and unproven for this task. These measures presumably include around-the-clock aircraft operations involving the use of side-looking radar from standoff positions.

There is further deep concern among US defense analysts about SALT II's failure to prohibit the use of so-called data buckets, or retrievable capsules containing test data that can be released from a missile. Capsules of this type, "kicked out" by a simple spring-load technique, are being used routinely by the US and the Soviet Union. Devices of this kind could be released on burnout of individual missile stages or during other critical phases of ICBM testing. Moreover, it is conceivable, according to US experts, that the Soviets would transmit telemetry data from previous test flights—while in fact testing a completely new design—for the sole purpose of deceiving US monitors. The "real" data from such tests could be delivered to the ground in capsules and without the US knowing about it.

MX Status Report

The Air Force, after reexamining over a period of more than three months various basing modes for its proposed survivable ICBM, the MX, reaffirmed that MPS (multiple protective structures, a scheme involving large numbers of vertical shelters, among which a lesser number of ICBMs are dispersed in shell-game fashion) remains the most effective approach. The Air Force's second choice, ranking close to MPS if the latter should prove unacceptable for political or SALT-related reasons, is the covered trench concept.

The Air Force further recommended that the MX missile be sized to provide the maximum throw-weight permitted under the SALT II terms—7,937 pounds. The proposed missile would have a diameter of ninety-two inches and weigh about 190,000 pounds. The new ICBM could carry at least ten warheads, either 335 kiloton Mk-12As (now being retrofitted to 300 Minute-

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UNITED TECHNOLOGI

nFocus...

nan III missiles) or a new design with a ield of about 500 kilotons. (The latter esign would use smaller amounts of ne special fissile material that initiates usion and which is a scarce resource.)

MPS's overriding virtue is that it increases US confidence in terms of crisis and arms-control stability without building up a first-strike threat to the Soviet Union. A key factor here is the relative ease with which the ratio of vertical shelters to actual missiles can be expanded to cope with future increases in the number of warheads the Soviets could deploy against MX.

The environmental factors associated with MPS are formidable but not insurmountable. While the amount of public land used by MPS is small—about twenty-five square miles fenced in and subjected to the same point security as the Minuteman silos—the area indirectly affected would be between 7,000 and 12,000 square miles of public land, probably in southern Utah and central Nevada. Almost all the land involved, however, would remain available for use by the public. The long lead time item of an MPS-based MX probably will turn out to be land acquisition since the legal process now involves running the gantlet of strict, new environmental and related laws that were enacted during the 1970s.

USAF's second basing choice, the covered trench, has gained in relative attractiveness as a result of the latest reexamination. All technical questions associated with survivability, security, and feasibility have been resolved. This basing mode envisions "hiding" individual missiles within a stretch of about twenty miles of covered trench, which in turn contains about fifty hardened sites. The missile would move within its twenty-mile domain on a railroad-type transporter/erector weighing about 1,200,000 pounds. The erector, using a gargantuan piston, punches an opening through the trench ceiling to launch the missile. Both the trench and the MPS basing concepts envision a "notional" force of 200 missiles. This number is considered necessary to ensure that an aggregate of about 1,000 warheads could survive even under worst-case conditions. Precise force sizing probably won't become critical until 1983.

Both MPS and the trench-based MX system could be augmented by rapid-fire ballistic missile defense (BMD) interceptors. USAF's studies indicate that a 200-missile MPS system operating in conjunction with a modern, multi-layered BMD system could withstand an attack by up to 27,000 Soviet ICBM warheads (a figure far greater than present Soviet deployment trends indicate) without danger of dropping below the survival minimum of 1,000 warheads.

The airmobile MX concept, studied and restudied in minute detail in the reexamination, emerged as USAF's third choice because of intrinsic economic and operational drawbacks.

At this writing, the timetable of when and how the Administration and Congress will act on the MX program is uncertain. Several influential senators have told this column that they would oppose Senate action on SALT II until the Administration has demonstrated a convincing commitment to full-scale engineering development of both the MX missile and its basing mode. Other congressional sources say it is "unthinkable" that the Administration could delay program go-ahead beyond September 30, 1979, the end of the current fiscal year.

New Fuel Air Explosives

Defense Department interest in Fuel Air Explosives (FAE) is on the increase, according to a recently released arms-control impact statement. These weapons, which were tested originally in 1960 and subsequently used in Vietnam for clearing helicopter landing zones and minefields, derive their predominant destructive characteristics from overpressure, or blast. The FAE's great lethality is generated by the detonation of highly volatile gas clouds, with the resultant shock and thermal wave extending evenly over relatively large areas. These weapons, therefore, are very effective against such targets as minefields, light bunkers, trucks, ships, aircraft, certain types of armored vehicles, and personnel in light fortifications.

The reason for stepped-up FAE programs is that new fuel mixtures and techniques for detonating the gas cloud now promise to cover large enough areas to rival the effect of small tactical nuclear weapons. To this end, work is being undertaken in the advanced design and testing of a large conventional FAE warhead and to determine measures of comparison with low-yield nuclear weapons, including, presumably, the so-called neutron bomb that the Administration canceled last year.

Two specific designs are being developed — the FAE II, an unguided conventional air-launched weapon, and SLUFAE, a countermine and barrier munition to be used by the Army's thirty-tube multiple rocket launchers. The Air Force, which is scheduled to have FAE II munitions (BLU-95 and BLU-96) in its inventory by 1984, plans to use the new weapons against such high-priority targets as truck columns, parked aircraft, radar installations, and materiel-storage sites.

Washington Observations

- The recent loss of US intelligence facilities in Iran is being offset in part by the fact that three facilities, including a nuclear listening post, located in Turkey were permitted to resume operation after the Turkish arms embargo was lifted last year. But there's a catch: The agreement with Ankara is for only twelve months. Prospects for renewal are uncertain, both because of Turkey's internal politics and the tumultuous conditions in the Middle East.
- US ability to rush reinforcements to Europe in case of a NATO/Warsaw Pact conflict is significantly below the required level because of shortfalls in US airlift capability. At present, the shortfall is between twenty-five and thirty percent. The gap should narrow to about fifteen percent within the next few years if all currently programmed airlift enhancement measures are authorized by Congress.
- Rep. Joseph P. Addabbo, Chairman of the Defense Subcommittee of the House Appropriations Committee, expressed alarm to this column about what he termed a real possibility that the B-1 battle may be revived by Congress. He specifically cited the fact that the House Majority Leader, Rep. James C. Wright (D-Tex.), appeared before his subcommittee to announce that he, Congressman Wright, had "made a mistake when he voted against the B-1" in the last go-around and that the issue of resurrecting the B-1 program deserved another look. Mr. Addabbo, who continues to oppose the B-1, said there are "funny talk and rumors" in the House about amending the FY '79 Supplemental or the FY '80 Defense Budget to include funds for reactivating the B-1 production program. With the Administration almost certain to veto such a bill, the chances of its survival probably are close to nil.
- The exodus of senior government and military officials caused by the new ethics bill, whose most stringent provisions won't go into effect until July 1, caused President Carter to convene on March 20 a meeting of those cabinet members most affected by this legislation. Recommendations for change

InFocus...

probably will be made to Congress in the near future. Several members of Congress are known to favor postponing the effective date of the bill.

• Administration plans to release photographs of Soviet territory taken by US reconnaissance satellites—in order to document publicly this country's ability to verify Soviet compliance with SALT II—are being frustrated by unbending Soviet opposition. The Soviet Embassy in Washington informed the White House by what is referred to as a "non-position paper"—an expression of Soviet policy that the Kremlin would disown publicly—that the USSR considers releasing such intelligence materials an affront sufficiently severe to put SALT II at risk.

The Soviet leadership traditionally has refused to acknowledge publicly, especially to the Russian people, that US intelligence satellites are probing routinely Soviet military and other activities, including crop status, even though Soviet satellites perform similar missions over the US. The Soviet Embassy's non-position paper asserts that release of any US space photograph of Russian territory with a resolution of fifty meters or greater would be unacceptable. High-level diplomatic channels continue to be used by the US, however, in the hope that the Soviets will recognize that release of this material may be crucial in obtaining congressional approval of SALT II.

• Senior members of the Carter Administration are privately expressing strong dismay over what they consider Canada's failure to contribute fairly to the common defense burden, in NATO and elsewhere. The Trudeau government, these officials contend, consistently has held defense spending to less than two percent of gross national product, a degree of parsimony exceeded only by Japan, a nominally neutral power not tied to any defensive alliances.

• The US hopes that within the next eighteen months NATO will commit itself to a broad modernization of theater nuclear forces (TNF) to offset the widening imbalance caused by the Soviet Union's deployment of SS-20 IRBMs and Backfire bombers. NATO's Task Force Ten, a high-level group chaired by US Assistant Secretary of Defense for International Security Affairs David E. McGiffert, has been holding meetings on this issue over the past two years and reportedly is "close to a consensus" on TNF modernization as well as arms-control mechanisms to balance Warsaw Pact vs. NATO capabilities in the nuclear arena. Focus of the eight-nation group is on the longer-range systems, such as the US Army's Pershing II tactical nuclear missile, USAF's ground-launched cruise missile (GLCM), and possibly a new two-stage medium-range ballistic missile. The most significant aspect of NATO's new approach to TNF is the intent to operate these systems from German territory as well as possibly from such other NATO countries as Belgium. Theater-based nuclear weapons would remain under full NATO control with final release authority resting with the US President.

The psychological impact of stationing in Germany nuclear weapons with a range sufficient to cover the Soviet Union's western regions to at least Moscow's longitude can be expected to be major, however. At the moment, the only TNFs capable of going after the Warsaw Pact's staging areas, the so-called second echelon, are US and British Poseidon and Polaris submarines.

Main opposition to the deployment of longer-range TNFs in Germany is likely to come from that country's political left, especially from the left wing of the ruling Social Democrats. Further complications can be expected from current arms-control efforts, including the European Disarmament Conference, a US-supported attempt to involve the French government in limiting TNFs and a stepping stone toward SALT III.

The objectives of SALT III, as outlined in SALT II, include ceilings on forward-based strategic systems, meaning longer-range TNFs. The Carter Administration, therefore, is keenly interested in setting up political arrangements that attract France to the arms-control process. Without French and British participation, SALT III would not seem attainable.

• USAF and other Pentagon planners are warming up to the concept of a multirole AMST (advanced medium STOL aircraft) that could serve as an ALCM launcher, a dual-role strategic and intratheater airlifter, and a survivable strategic command and control system. Additionally, should the White House overrule USAF and insist on air-mobile basing of MX, AMST would also perform this mission.

• The fall of Britain's Labor Government could put a crimp in US plans for concluding a Comprehensive Test Ban Treaty this year. Present Administration plans call for a concerted drive—to get under way once the Senate has ratified SALT II—to complete rapidly a series of less prominent although no necessarily less important arms-contro accords. These include, in addition t CTB, treaties barring ASATs (antisate lite interceptors) and limiting chemica warfare weapons. With overbearin Soviet demands during recent CTB ne gotiations reportedly causing secon thoughts on the part of Whitehall, U observers predict that a new Conse vative government almost certainl would want to reexamine its policie concerning such an accord. CTB, a presently understood, would halt all nu clear weapons tests—and by extensio freeze nuclear warhead technology– for a period of three years.

• The CIA, reportedly, is represente on the special White House tas force—headed up by Presidential As sistant Hamilton Jordan—that i charged with promoting the pendin SALT II accord to the Congress an the public.

• A recent Rand Corp. study dis closes that the Soviet Union outspen the US since 1973 on military inves ments—procurement and construc tion—by about $100 billion. Had thi money been available to the US, th study concludes, "it could have cov ered all of the following: the entire B- program; the baseline MX progran (missiles and shelters); all of the cu rently programmed Trident submarine and missiles; the roughly 7,000 XM- tanks we now plan to acquire, togethe with a matching number of infantr fighting vehicles and the once-planne buy of AMSTs to provide them wit intratheater mobility; and still le enough to buy all of the F-14s, F-15s F-16s, F-18s, and A-10s now planne for Air Force and Navy tactical air mod ernization."

• The Air Force has finished most o its homework on what a strategi bomber for the 1990s and beyon should look like, and some basic fea tures are beginning to take shape Most likely the aircraft will operate a altitudes above 80,000 feet and a Mach-3-plus speed. It will be largel "invisible" to optical and other sensor and will have unprecedented radar ca pabilities to support a range of nuclea and conventional smart weapons.

• A public opinion poll commissione by the Committee on the Present Dan ger refutes news media claims tha eighty-one percent of the public sup ports SALT II. The new poll conclude that "the American people are skepti cal about SALT II, don't know muc about it, and clearly are not prepared t support the treaty without additiona safeguards."

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Aerospace World News, Views & Comments

By William P. Schlitz, ASSISTANT MANAGING EDITOR

Washington, D. C., April 3

★ The longest production run for any US military aircraft ended in February when the US Navy took delivery of the last A-4 Skyhawk. Skyhawks had been in continuous production for twenty-six years.

The final aircraft, the 2,960th A-4 built by McDonnell Douglas Corp., was an "M"-version attack bomber that will go into USMC's inventory.

In all, McDonnell Douglas produced seventeen versions of Skyhawk, including six trainer types. The planes are currently serving with Navy combat readiness and utility squadrons and Air Training Command, and with Marine attack squadrons and Reserve units. Skyhawk also performs as the Navy's choice for the Blue Angels flight demonstration team. Abroad, the A-4 serves with the Royal Australian Navy, Royal New Zealand Air Force, Israeli Air Force, Argentine Navy and Air Force, Singapore Air Defense Command, and Kuwait Air Force.

Designed initially as a carrier-based attack aircraft, the A-4 is characterized by its light weight and short wingspan (27.5 feet; 8.3 m), which permits storage without wing folding. Impressed by the A-4's performance, USMC also enlisted the single jet, single-seat plane as a forward-area, close-air-support aircraft.

Avid Navy fans of the A-4, a combat veteran of Vietnam and the Mideast, once distributed auto-bumper stickers reading "A-4s Forever." The Skyhawk is scheduled to remain in service well into the twenty-first century.

★ The US Army has given the nod for full-scale development of the Pershing II surface-to-surface missile system.

Pershing II—to be developed by Martin Marietta Aerospace's Orlando Division under the $360 million contract—is to have greater range than the Pershing IA it will replace, increased accuracy, and smaller warheads.

A test program of the new missile's guidance system culminated in a series of highly successful full-scale missile flights at the White Sands Missile Range in New Mexico in 1977–78. It features an all-weather radar-correlation unit that makes a series of comparisons of the live radar return with a pre-stored radar image to maneuver the reentry vehicle to its target.

The first major change in the Pershing

The final Skyhawk off the McDonnell Douglas production line is an A-4M attack bomber scheduled to go into USMC's inventory (see adjacent item).

USAF Announces Force Structure Realignments

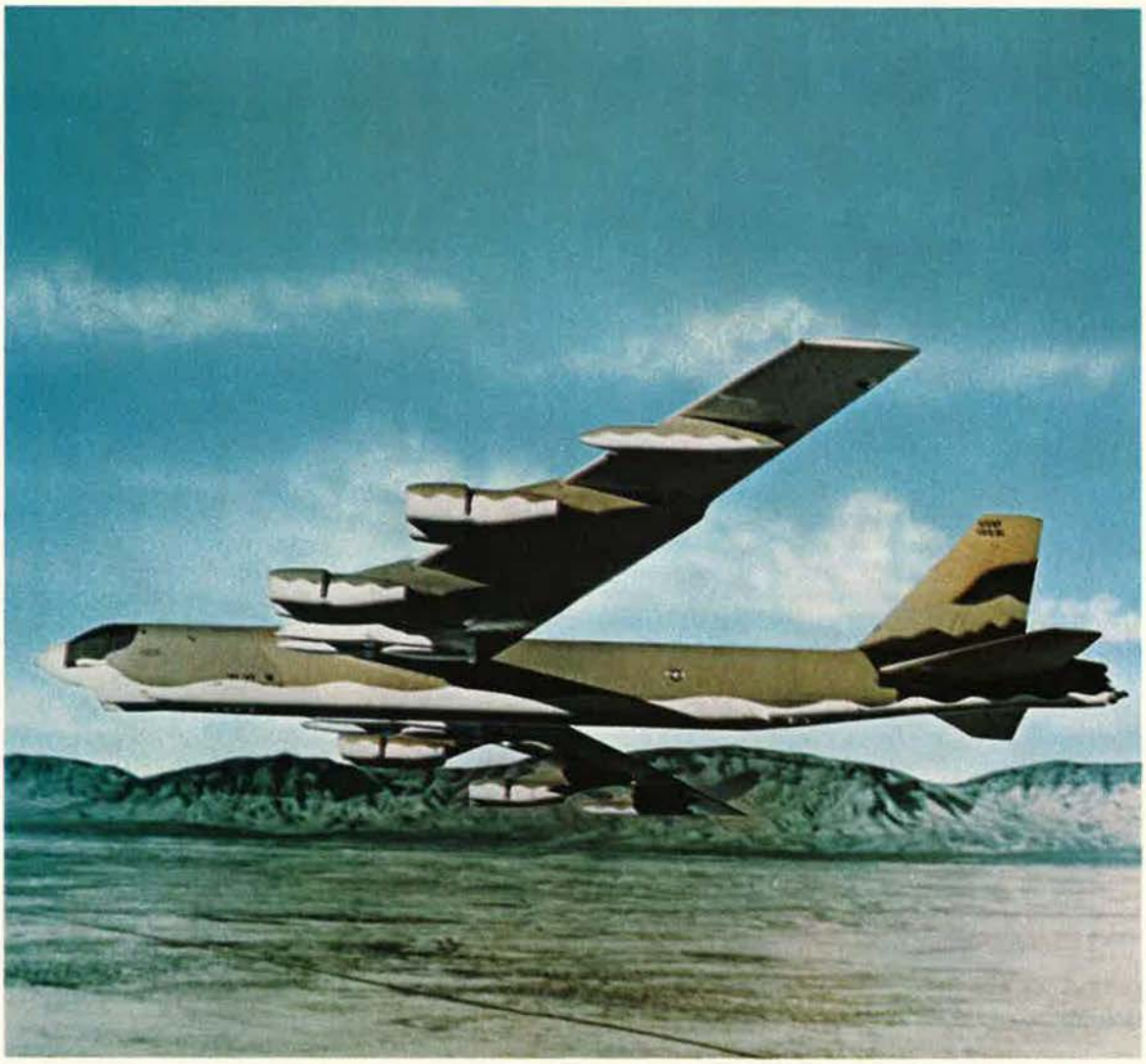
On March 29, the Department of Defense made public plans to close or otherwise consolidate 157 military installations around the country, a move aimed at saving up to $264 million annually. Some 15,300 military and civilian jobs would be lost and thousands of other workers would be transferred.

For its part, USAF, among other actions, would:

- Deactivate the Aerospace Defense Command, transferring its resources to other major commands *(for details see p. 66)*.
- Close Goodfellow AFB in Texas, and reduce operations at Loring AFB, Me., Rickenbacker AFB, Ohio, and Kingsley Field, Ore. According to officials, the decision to close Goodfellow is the result of an environmental determination study begun in April 1978. Loring would become a forward operating base, with its B-52s and KC-135s reassigned to other SAC units. At Rickenbacker, the 301st Air Refueling Wing would be inactivated, its tankers reassigned elsewhere. Active units would be removed from Kingsley, which would become a forward alert base for fighters.
- At Malmstrom AFB, Mont., the 17th Defense System Evaluation Squadron—USAF's last active EB-57 unit—is to be deactivated.

Among Army's cutbacks, it plans to close Fort Dix, N. J., the famous recruit training center.

Better vision for today's B-52 mission. A head start on tomorrow's.



Norden Systems is at work updating the bomb/navigation radar system on the Air Force's B-52 G/H bombers, to make them more capable of meeting the threats and mission requirements of today's world.

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Aerospace World

The first production Pave Low III HH-53H "Black Knight" rescue helicopter at the Naval Air Rework Facility, Pensacola, Fla. (see item, p. 32).

ıg system since it was deployed to urope in 1964, Pershing II will be ble to use its predecessor's ansporter-erector-launcher equip-ıent, which has been continually updated with modular im-rovements to keep abreast of echnological developments," offi-ials said. The current Pershing IA as a range of about 400 miles (644 m).

In another Army missile matter, the IS and six of its European allies have igned a memorandum of under-tanding that calls for NATO "to study ıe most practical and economic ays to acquire and produce the rmy's new Patriot air-defense issile system."

Besides the US, the memorandum as signed by Belgium, Denmark, rance, Germany, Greece, and the letherlands.

A NATO-established group head-uartered in Munich, Germany, is urrently reviewing the entire acquisi-ion process toward the purchase or oproduction of Patriot to replace both the Nike-Hercules and the Hawk systems in NATO air defenses. As part of this effort, the group has surveyed Patriot hardware and witnessed tests of the missile at White Sands Missile Range in New Mexico and toured production facilities in Massachusetts. (Raytheon Co. is prime contractor for the missile system; Martin Marietta Aerospace is principal subcontractor.) The group's study of acquisition methods is expected to be

This is a model of a new hybrid lighter-than-air ship with helicopter-type rotors that could lift up to 160 tons and serve a variety of industries. Goodyear Aerospace Corp. President Morris B. Jobe, in recent remarks before a US Senate subcommittee, said that such a vehicle "is within existing technology." Proposed tasks could include offloading and loading cargo vessels away from docks to reduce port congestion, and transporting a wide range of heavy equipment for construction, offshore oil drilling, and the like. According to Mr. Jobe, whose company has been building airships for seventy years and maintains the world's only existing fleet—the famous Goodyear blimps—it would take two and a half years and $15 million to complete technical verification of such a craft and $70 million and another three years to get it into the air. Mr. Jobe also recommended development of a modern airship for long-endurance maritime patrol.

Aerospace World

completed sometime early next year.

Highly mobile and all-weather Patriot is visualized as the cornerstone of air defense against medium- to high-altitude targets in the 1980s and beyond.

★ In a joint project, USAF and Navy have completed the first production "Black Knight" Pave Low III night and adverse weather search and rescue helicopter. It is the first of eight Sikorsky-built HH-53s to be modified under a $28.5 million program (*see also p. 126*). Work on the rest should be completed early in 1980.

Modification of the HH-53s is under way at the Naval Air Rework Facility at Pensacola, Fla., using as a model the Pave Low prototype developed in-house by AFSC's Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

The Black Knights, to be operated by MAC's Aerospace Rescue and Recovery Service, are characterized by terrain-following/avoidance radar augmented by a forward-looking infrared set, which make possible safe operations at very low altitudes. The aircraft's Doppler/inertial subsystems and projected map display will provide precise navigation. All subsystems are integrated through a central avionics computer.

★ In mid-March, Progress-5 became the fifth unmanned Soviet cargo vehicle to successfully dock with orbiting space station Salyut-6.

According to Soviet news agency Tass, the unmanned craft brought fuel and supplies to Cosmonauts Vladimir Ltakhov and Valery Ryumin, who boarded the space station from Soyuz-32 late in February (*see April '79 issue, p. 24*).

Tass said that Progress-5 also delivered materials to repair a number of the space station's systems. The cosmonauts are aboard Salyut-6, which has been in orbit a year and a half, to conduct experiments and evaluate the station's potential for future manned missions.

★ Panavia Aircraft GmbH, the trinational company established to build Europe's Tornado multirole combat aircraft, has selected Grumman Aerospace Corp. as its partner in offering the aircraft to USAF.

Panavia, organized by Aeritalia, British Aerospace, and Messerschmitt-Bölkow-Blohm, is currently developing Tornado for the British, West German, and Italian air forces, and the German Navy. The first series Tornadoes of the 809 aircraft on order are to be delivered in 1980.

Panavia visualizes the all-weather Tornado as filling the role of the Enhanced Tactical Fighter USAF is seeking from among existing aircraft as a tactical air-to-ground attack system for the mid-1980s.

★ Following the successful comple tion of a two-and-a-half-year test pro gram, the Air Force announced that i will continue to train women pilot and navigators and assign them t

NEW DIRECTOR, FILM AT NASM

"To Fly," the award-winning film shown at the Smithsonian Institution's National Air and Space Museum in Washington, D. C., ended its first run in early April. The twenty-seven-minute film that has thrilled nearly 4,000,000 viewers since the Museum opened on July 1, 1976, is being replaced by "Living Planet" (above, an aerial view of Athens's Parthenon—one of the film's striking photographic sequences). "Planet" was also filmed by New York's Francis Thompson, Inc., especially for the Museum. As was "To Fly," the thirty-minute "Living Planet" will be shown on the Museum's five-story-high, stereo-equipped screen. Photographed by Laszlo George and Burleigh Wartes, "Living Planet" was underwritten by the Johnson Wax Co. as a public service. There is a small charge to view the film, the proceeds of which are used to maintain and operate the Museum theater. Visitors who haven't seen the spectacular "To Fly" will have a second chance, however, as the Museum plans a number of daily showings beginning in June, as warranted by public interest.

Dr. Noel W. Hinners, formerly Associate Administrator for Space Science at NASA, has succeeded Michael Collins as Director of the National Air and Space Museum. Mr. Collins, a former astronaut who is an AFRES major general, was named Under Secretary of the Smithsonian Institution in April 1978. With NASA since 1972, Dr. Hinners served as Deputy Director and Chief Scientist, Apollo Lunar Exploration, Office of Manned Spaceflight. As NASA Associate Administrator for Space Sciences, he was responsible for formulating and conducting programs in astrophysics, solar-terrestrial relations, lunar and planetary exploration, and life sciences.

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A big part of HiMAT's performance story is the extensive use of advanced composites (about 30% of HiMAT's structural weight). The Los Angeles Division of Rockwell International has gone well beyond advanced composites' weight- and cost-saving advantages, to exploit a third superior property: unidirectional stiffness.

HiMAT also utilizes a wing airfoil optimized with a close-coupled canard for high maneuverability at transonic speeds. Until now, canard surfaces have served primarily as trim or control devices. HiMAT integrates the wing and canard in an optimum relationship to enhance maneuverability throughout the subsonic and supersonic flight envelope.

More reports on HiMAT — and more technological progress — are forthcoming. So watch for them. The future of aviation is happening now, at Rockwell.

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Aerospace World

noncombat jobs, in conformity with statutory restrictions (10 USC 8549). As of early February, there were twenty-two women pilots and six women navigators in the rated career field.

USAF said that it will be several years before data on washout rates are available and a decision is made on how many women to train in the two flying categories.

Test programs involving women training for three enlisted aircrew posts—inflight refueling operator, flight engineer, and aircraft loadmaster—are to continue through July 1979. By late summer, a decision will be made on whether to continue training women for these slots, although Air Force said that test results thus far are favorable.

Four combat-related enlisted specialties remain closed to women: security specialist, aerial gunner, pararescue/recovery specialist, and radio operator/maintenance driver on forward combat control teams.

★ As reported in the April issue (p. 28), the human-powered *Gossamer Albatross* will attempt to fly the English Channel in either May or June.

Success of the flight will depend on the leg muscles of the probable pilot, Bryan Allen, who in August 1977 made aviation history by flying *Gossamer Condor* over a mile-long, figure-eight course to win the Kremer prize. The twenty-six-year-old bicycle racer expects to keep *Albatross* aloft during the Channel flight by generating 0.25 hp.

The flight, twenty-two miles from Dover to Cape Gris Nez in France, will be made at an average altitude of thirty feet. With *Albatross* averaging eleven miles an hour, the trip should take just about two hours.

The fifty-five-pound *Albatross* is powered by a single propeller connected by chain drive to a pedaling device in the pilot's compartment, which is suspended from a wing longer than that of a DC-9—ninety-six feet.

Both the *Gossamer Condor* and *Albatross* were designed by Dr. Paul MacCready, a former world soaring champion who is head of a California company specializing in environmental and energy studies.

Warming up for the main event is Bryan Allen, manpowering Gossamer Albatross *during a training flight. Sponsors plan a cross-Channel flight of the craft in May or June (for details, see adjacent item).*

The reward for a successful cross-Channel man-powered flight is about $200,000, offered by British industrialist Henry Kremer and administered under rules established by the Royal Aeronautical Society.

Albatross, fifteen pounds lighter than *Condor* and of improved aerodynamic design, is to be succeeded by third-generation *Gossamer Penguin*, which is to have a reduced wingspan and perhaps belt-driven propulsion to further trim weight.

★ NASA has orbited an Air Force-sponsored satellite that will investigate a phenomenon that has disabled or disrupted equipment aboard orbiting civilian and military communications satellites.

It seems that comsats in geosynchronous orbit—stationary above the same spot on the equator—sometimes have been adversely affected by unexplained electric static discharges, which could be a major problem for the high-power satellites now on NASA's drawing boards for orbital operations in the years to come.

The SCATHA (for spacecraft charging at high altitudes) satellite has aboard twelve experiments to identify and measure the troublesome electrical buildups. One consists of two antennas that will extend in opposite directions to form a line longer than a football field.

The SCATHA's orbit will carry it above and below the geosynchronous orbital altitude as well as north and south of the equatorial plane.

★ Talk about your superglue. Engineers at the Air Force Flight Dynamics Lab, Wright-Patterson AFB, Ohio, are optimistic that adhesive bonding techniques they are developing could replace riveting in assembling major aircraft components.

According to program manager Jamie Florence, "While small aircraft parts like fairings, doors, and wing leading and trailing edges have been adhesively bonded in the past, the success of the [new techniques] should give manufacturing engineers

Aerospace World

The first brown-bar Minuteman III crew in Air Force history—2d Lts. John M. Betts and John M. Makuta—sharpens skills at Francis E. Warren AFB, Wyo., Missile Procedures Trainer.

confidence to use 'glues' for large sections like wings and fuselages."

His opinion is based on a strenuous test program under which a forty-two-foot-long (12.8 m) aircraft fuselage section of aluminum construction bonded together with special epoxy glues has withstood stress tests to more than three times an aircraft's expected lifespan.

The "glued together" aircraft section—built to the dimensions of a Douglas Aircraft Co. YC-15 AMST transport—is part of a program dubbed PABST, for primary adhesively bonded structure technology. The fuselage section is still undergoing testing at the company's facility in Long Beach, Calif., to determine why the bonding works as well as it does.

Testing includes the simulation of cabin pressure, wing, landing gear, cargo, and weight loads to which an aircraft is subjected during taxi, takeoff, flight, approach, and landing, to include depressurization during descent.

Such adhesively bonded aircraft, the engineers say, could weigh about fifteen percent less and cost twenty percent less to build and maintain than riveted counterparts. Bonded aircraft "could also have a low materials failure rate throughout their lifetime—possibly saving hundreds of thousands of dollars in maintenance costs," the engineers said.

★ Recently, two Cornell University scientists achieved a first: by applying tremendous pressure at near absolute zero temperatures to xenon, a rare stable gas, they were able to create a new metal (*see March '79 issue, p. 30*).

And while no practical applications are currently possible for metals made from gases, important future uses for such superconductors as metallic hydrogen are visualized.

Lately, two scientists—Peter M. Bell and David Ho-Kwang Mao—working at the Carnegie Geophysical Laboratory in Washington, D. C., achieved another breakthrough: Applying great pressure via a special diamond-sided vise called a diamond anvil cell, they were able to solidify hydrogen at room temperatures. The result was a dense salt-like crystalline substance.

To form metallic hydrogen, twice as much pressure—the equivalent of 1,000,000 earth atmospheres—must be created. This is well within the diamond anvil cell's capabilities, the scientists believe.

Index to Advertisers

Sperry Update 7

A timely report of Sperry Flight Systems activities in the airline, defense, space and general aviation markets.

Boeing awards 767/757 FMCS job to Sperry

Sperry Flight Systems' leadership in the supply of major systems to the commercial aviation industry was enhanced recently by the selection of our Flight Management Computer System (FMCS) as standard equipment for the new-generation Boeing 767 and 757 airliners.

The Sperry FMCS represents a major innovation for the modern flight deck, providing a comprehensive automatic enroute and terminal navigation capability. Computing and commanding lateral and vertical flight profiles, the Sperry FMCS maximizes fuel efficiency by electronic linkage to automatic flight control and thrust management systems. In addition, it will interface with electronic attitude director and horizontal situation indicators.

Sperry's FMCS – the nerve center of tomorrow's flight deck – will be recognized by airlines for its contribution to operating efficiency. And pilots will acknowledge Sperry's usual attention to their needs and admire its ease of operation.

The initial order calls for 200 shipsets each for the 767 and 757, with delivery to begin in 1981.

Sperry digital air data computers now standard in four airliners.

Selection of Sperry Flight Systems' Digital Air Data Computers (DADC) as standard equipment on Boeing's 767 and 757, Airbus Industrie's A-300 and Lockheed's L-1011-500 has placed us firmly at the forefront in design and manufacture of digital air data systems.

These commercial airline systems utilize technology advanced through development of digital air data computers used in the F-15, F-16 and F-18.

Sperry's DADC systems provide high reliability and enhanced built-in test capability while reducing weight, space requirements and power consumption.

Spanish jet trainers use Sperry avionics

An avionics package will be supplied by Sperry Flight Systems' Avionics Division for Spanish Air Force CASA 101 jet trainers as a result of a recent contract award.

The SPI-402 flight director system, gyroscopic sensors and communication transceivers will be used to equip the trainers manufactured by the Spanish aircraft builder, Construcciones Aeronauticas S.A. (CASA).

The avionics gear includes a Sperry Tarsyn vertical and directional gyro package, dual HZ-444 attitude director indicators, RD-500A horizontal situation indicators with remote course selection, RH-405 radio magnetic indicators and 807A communication transceivers.

Sperry needs engineers.

If you would like to go where the action is, come to Sperry. Send your resume to Sperry Flight Systems, Professional Employment (U-7), Box 21111, Phoenix, Arizona, 85036.

Advanced 737-200's get digital flight control.

British Airways and Lufthansa will receive the first Boeing jet airliners with digital flight control computers in an update of Sperry's SP-77 integrated automatic flight control system for the advanced 737-200's.

Known as the SP-177, the new system will digitally control all cruise flight modes and is designed for Category IIIA automatic landings. It combines in two digital flight control computers the functions which would require six separate analog computer boxes.

The Sperry system provides fast, complete monitoring and fault diagnosis of system components for simplified maintenance. Flight director and autopilot functions are handled by the SP-177, including altitude and heading hold and VOR track.

First deliveries to Boeing are set for late 1979. British Airways and Lufthansa have placed firm orders for more than 50 of the airliners.

Last year Sperry updated the analog autopilot system aboard the Boeing 727, providing greater reliability, while reducing system weight and power requirements. Once known as the SP-50, it is now the SP-150.

Remember us.

If you're interested in these programs, or you have an avionics project you'd like to discuss, talk to the good listeners at Sperry. Sperry Flight Systems of Phoenix, Arizona is a division of Sperry Rand Corporation, where listening is more than a word in our advertising slogan – it's a philosophy of doing business. *We understand how important it is to listen.*

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Metal hydrogen kept stable at room temperatures would have tremendous potential, since it would offer no resistance to electricity.

★ Boeing's contender in the air-launched cruise missile (ALCM) competition—the AGM-86B—was rolled out at the company's facility in Seattle, Wash., in late March.

General Dynamics' entry—the AGM-109—made its debut earlier in the year.

Following the flyoff beginning in June, the winner will go into production and begin entering SAC's inventory late in 1981. The first squadron of B-52Gs—each of which is to be armed with twelve ALCMs—should be operational by December 1982. Upon modification, each B-52G will be capable of carrying twenty ALCMs—twelve on two wing pylons and eight in an internal rotary launcher.

★ **NEWS NOTES**—On February 1, **Brig. Gen. Benjamin S. Kelsey, USAF (Ret.),** became the second occupant of the **Charles A. Lindbergh Chair of Aerospace History** at the Smithsonian's National Air and Space Museum. An aeronautical engineer and test pilot who retired from USAF in 1955, General Kelsey will research US military aviation between 1927 and 1940, concentrating on aircraft design changes, procurement, and employment. General Kelsey's account of flying the XP-55 appeared in the April 1977 issue of AIR FORCE Magazine.

SAC has earned two top safety awards for 1978: the Secretary of the Air Force Safety Award and the Maj. Gen. Benjamin D. Foulois Memorial Award, sponsored by the Order of Daedalians. The Secretary's award recognizes the record in flying, missile, nuclear, ground, and explosives safety. (In 1978, SAC aircraft were **airborne more than 360,000 hours** and suffered only one Class A accident—loss of life, loss of aircraft, or damage in excess of $200,000—with the crash of a B-52 in October.)

With NASA's first **Space Shuttle Orbiters** already named *Enterprise* and *Columbia,* the next three are to be called *Challenger, Discovery,* and *Atlantis,* the space agency said.

In early March, *Columbia* suffered some damage to its heat shield during a test flight aboard a 747 jumbo jet. The incident **postponed until late in the month its piggyback flight** from Edwards AFB, Calif., to the Kennedy Space Center in Florida to undergo final preparations for its first spaceflight later this year.

Northrop reports that the **company-funded development of the new RF-5E** reconnaissance aircraft has completed airworthiness flight testing at Edwards AFB, Calif. The next phase entails evaluating various cameras and sensors.

An **Air Training Command project begun in 1969**—"Stamps for Children"—has been marked with notable success. Used postage stamps from all over the world are collected and then **redistributed to orphanages and children's hospitals** as a means of providing educational recreation and therapy. Help in this humanitarian effort by sending your used stamps to: Stamps for Children, c/o Air Training Command/OIC, Randolph AFB, Tex. 78148.

US Army Sp. 4 Manuel Gomez, Office of Chief of Public Affairs, has been named **1978 Military Photographer of the Year** by sponsoring National Press Photographers Association and the University of Missouri. First runner-up was USAF's **SSgt. William Boardman,** Det. 1, 1361st AVS, Scott AFB, Ill.; second runner-up was USAF's **TSgt. Paul J. Harrington,** Aerospace Audio-Visual Service, Norton AFB, Calif. This is the first year that runners-up have been named.

Maj. David L. Smith, 1st TFW, Langley AFB, Va., has been named **Commander of the Thunderbirds** flight demonstration team, replacing **Lt. Col. Dan Cherry,** who will attend a senior staff school.

ADCOM's **49th Fighter Interceptor Squadron,** Griffiss AFB, N. Y., was named top fighter squadron with an air defense mission and awarded **the 1978 Hughes Trophy;** among the 49ers' achievements: a sweep of all seven awards for F-106s during William Tell '78, the biennial weapons meet.

Died: Lt. Gen. James E. Briggs, USAF (Ret.), former Air Force Academy Superintendent and ATC Commander, in February in Albuquerque, N. M. He was seventy-two.

Died: Dr. Richard Vogt, German-born aeronautical engineer, of a heart attack in Santa Barbara, Calif., in January. He was eighty-four. ■

Capitol Hill

By the Air Force Association Staff

Washington, D. C., March 27

Defense Increases Sought

By March 15 of each year, congressional committees are required to submit to the Senate and House Budget Committees their recommended changes to the President's budget request for the next fiscal year. This year the Armed Services and Veterans Affairs Committees again recommended that the amounts requested by the Administration be increased.

Based on recommendations made by each committee, the House and Senate Budget Committees must report their recommendations for the first concurrent budget resolution by April 15. Both houses are scheduled to complete final action by May 15. Budget levels established during this procedural step are informal guidelines and usually are revised downward during further consideration of the Defense Authorization and Appropriations Bills.

The Senate Armed Services Committee recommended an additional $1.6 billion for a total defense budget authority of $139.8 billion in FY '80. In announcing the committee action, Chairman John C. Stennis (D-Miss.) stated that "this budget target is a preliminary estimate which will be reviewed more extensively during the committee's hearings on the FY '80 Department of Defense Military Authorization Bill."

The House Armed Services Committee recommended adding $2.4 billion to bring the total budget authority to $140.6 billion in FY '80. The committee's recommendation would provide increased funds of some $631 million for research and development; $226 million for personnel, including improvements to the Survivor Benefit Plan, and increased funding for health professionals and some $1.4 billion for procurement, including funds for a nuclear-powered aircraft carrier (CVN) and landing ship dock (LSD 41) for the Navy.

The Senate and House Committees on Veterans Affairs recommended increases of $697 million and $768 million respectively, for a total budget authority of $21.3 billion in the Senate and just under $21 billion in the House.

In sharp contrast, the Senate Appropriations Committee upheld its Defense subcommittee's recommendation for a decrease of some $800 million in the defense request. The result would be a budget authority of $137.6 billion. The House Appropriations Committee, in keeping with its practice of recent years, made no specific recommendations.

Soviet Buildup

In response to charges that the Pentagon "covered up an unprecedented, unexpected, and massive Soviet strategic arms buildup" between June 1978 and January 1979, Rep. Samuel S. Stratton (D-N. Y.), Chairman of the House Armed Services Subcommittee on Investigations, asked Chairman Melvin Price (D-Ill.) to hold an emergency meeting of the Armed Services Committee. He requested that Defense Secretary Harold Brown respond to these charges, which, if proven, would represent "a serious breach of Pentagon responsibility."

Reserve Forces

On March 2, Maj. Gen. William Lyon, then Chief of the Air Force Reserve, reported to the House Armed Services Subcommittee on Military Personnel that the Air Force Reserve is now in better condition than in recent years. General Lyon cited specifically the success of Operation Readout, a unilateral mobilization and deployment exercise conducted last year at the direction of Congress and DoD; the combat-ready status of the quick deploying units and associate strategic airlift wings; and the short time required for mobilization (twenty-four hours) and deployment (seventy-two hours) of all Reserve units. "In short, the Air Force Reserve is fulfilling its peacetime mission and is ready to fulfill its wartime mission," he stated.

General Lyon expressed concern, however, because "the outstanding record of the Air Force Reserve [may be] adversely affected by [possible] conversion of Air Force Reserve technician slots to full military billets." He added that a permanent conversion of these positions is being considered following the current test phase. ". . . when you do [that] with the Air Force Reserve, you run the risk of degrading readiness over the years."

General Lyon urged the subcommittee to exclude the Air Force Reserve from this conversion program. At the request of Chairman Richard White (D-Tex.), General Lyon agreed to provide the subcommittee with recommended language regarding the Air Force Reserve technician program.

CVN Revival

Rep. Joseph P. Addabbo (D-N. Y.), Chairman of the House Appropriations Subcommittee on Defense, recently suggested that the Navy is attempting to gain congressional support of a nuclear-powered aircraft carrier (CVN) in place of the smaller, conventionally powered carrier sought by the FY '80 defense budget. He said that the Navy's efforts are building up support for the CVN in the Armed Services Committee and that full debate by the House is likely.

Chairman Addabbo predicted that if CVN funding is added to the FY '79 Supplemental or FY '80 defense budget request by the Armed Services Committee, his committee is likely to approve such an amendment. He declined to speculate on whether or not the House could override the almost certain Presidential veto that would occur.

Representative Addabbo further predicted that the House would reduce the FY '80 defense budget by between $1.5 and $2 billion. He added that, in his view, $5 billion could be cut without harming the nation's defense posture. Chairman Addabbo also hinted that the Administration would seek a second supplemental request after the Mideast peace treaty was signed.

The Defense Subcommittee, which was late in starting its consideration of the FY '79 Supplemental and FY '80 Defense Budget Request, is scheduled to continue hearings through May. Markup, the chairman said, should occur in mid-June, with floor action likely late in June or early July.

Carr on the Carpet

Rep. Bob Carr (D-Mich.) has been castigated by both the Chairman of the House Armed Services Committee and by a German military leader for incorrect statements in support of SALT II. Mr. Carr reportedly misquoted the foreign official concerning the importance of the Soviet MIRVed SS-20 IRBM and labeled as false some documented facts that had been cited by Representative Price. ■

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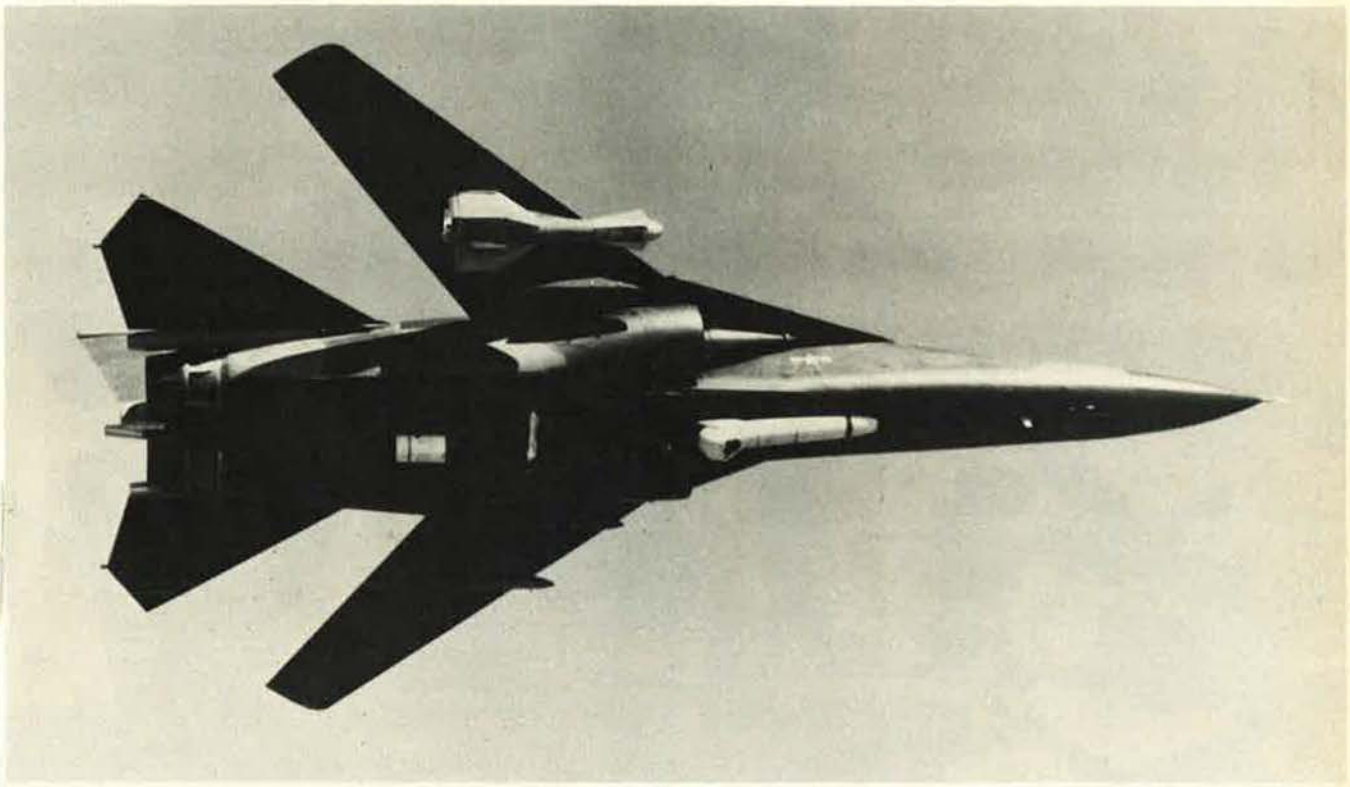

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DEFENSE SYSTEMS DIVISION

After almost a year as the nation's highest-ranking military leader, Gen. David C. Jones, the Chairman of the Joint Chiefs of Staff, talks to AIR FORCE Magazine about the state and needs of the country's defenses and why there are . . .

No Substitutes for Military Preparedness

BY EDGAR ULSAMER, SENIOR EDITOR

SOVIET Russia's superpower status is based on her military, mainly global, offensive power. Soviet Russia seeks to broaden and perpetuate her global standing through unrelenting growth and expansion of her military might, especially in the strategic and "force-projection" fields. Arms-control agreements and unilateral US restraint probably won't be able to bring about a reorientation of Soviet policy and doctrine. The time is "now" for the US body politic to "psychologically accept" the concomitant geopolitical and defense realities, to formulate a fundamental strategy for coping with them, and to provide the forces and capabilities needed to enforce this strategy.

Gen. David C. Jones, Chairman of the Joint Chiefs of Staff, struck this theme of great challenge and urgency in a recent interview with this writer.

"I see," said General Jones, a military leader who prefers analysis and innovation to convenient orthodoxy, "a major transformation in Soviet military power and its potential application. Soviet Russia traditionally has been a defensive nation, a continental nation with limited capability to project power beyond its borders or areas contiguous to its territory. Yet what we have seen in the last decade is an increasing ability to project power. The Soviets now have a large strategic force with great destructive offensive capability that undergirds both real and perceived projection of power. They have increased the mobility of their land forces, gone from a coastal to a bluewater navy including aircraft carriers, and transformed their air forces by providing them greater range and payload."

Other elements of this reorientation include substantial and expanding air- and sealift capabilities. Thus, the Soviets now can make their presence felt on a global scale. The rationale for Russia's military buildup—which General Jones expects to continue unabated—is "that the only aspect of power that gives the Soviets superpower status is their military capability." Neither in economic nor technological terms do the Soviets qualify as a superpower, he suggested. Further, Soviet-style communism has lost some of the appeal as an "export item" that it had in the years following World War II, he added. Hence the only form of power "that lets them sit at the head table is military. The continuing buildup of Soviet military forces, in my view, is strictly a means for increasing Soviet power and influence in the world and I don't see any evidence that they will moderate their objectives or that this buildup is the result of bureaucratic momentum."

Even though such arms-control measures as SALT can benefit national security, the JCS Chairman believes they won't slow down the "overall military effort of the Soviet Union." Arms-control accords may influence the Soviet military buildup to the extent needed for compliance with specific limitations, but "so far as I can see, the effort will simply shift to other areas" without appreciably changing the total growth rate, General Jones said.

US Responses

From the US point of view, the immediate imperative that is imposed by the growth and transformation of Soviet capabilities "is psychological. This nation must recognize that the growing threat is real, that we have consistently underestimated what the Soviets are doing, and that the relative power between the Soviet Union and this country has shifted adversely," General Jones said.

This shift has taken the US from a position of clear-cut advantage to a condition of "uneasy equality." That degree of equality is not necessarily a good measure of the two superpowers' relative standing, because the Soviets presumably will continue to capitalize on US vulnerabilities and avoid confrontations under conditions where US strengths could be brought into play, General Jones pointed out. "Each side has strengths and weaknesses relative to the other and the Soviets may well continue to call the shots as to where and how they create problems" and thus score advances even though there may be general equivalence, he suggested.

The mood of the Congress and of the American people, the JCS Chairman said, appears to be moving toward greater concern with the shifting military balance. While warning against alarmist tendencies, he pointed out that translating shifts in political attitudes into palpable military capabilities and reversing the present adverse trends will take many years. The time to formulate a national response to the growing Soviet challenge, and to implement it, is now, General Jones emphasized.

A Fundamental Question of Strategy

A vital precondition for an effective national response to the Soviet buildup is that the US "come to grips with fundamental strategic requirements and issues" and not bog down in interminable hardware debates, argued from irreconcilable premises. In principle this means a national consensus on whether forces confined to an "assured-destruction" role can provide adequate deterrence or whether a sustained or more versatile warfighting capability is required, he said.

The United States must be capable of fighting sustained nuclear war, General Jones believes.

"There has been too much concentration in our national debates on specific characteristics of individual weapon systems, such as yield and accuracy, and not enough on fundamental strategic issues," General Jones charged. In an oversimplified sense, one school of thought that holds great sway over public opinion contends that "as long as the US can wreak *substantial damage* on Soviet society—that is, destroy a given number of cities with some certainty—that's all we need in terms of a strategic equilibrium. Under this view, anything beyond that point is regarded as overkill and unimportant."

The disciples of this strategy tend to view the current status as intrinsically stable and impervious to the Soviet numerical buildup. "Under that belief the Soviets can continue to enlarge their strategic forces and 'waste their resources' without ill effect on our national security. Also, this school of thought holds that the process of SALT is more important than the substance of the treaty." But the concept of relying exclusively on assured destruction, "I believe, is flawed because the mission of our strategic forces is broader than merely deterring an attack on our cities," General Jones said. For one thing, the so-called nuclear umbrella extends beyond the US borders. "There could be a reverse of the [1962] Cuban situation where they might have a strategic advantage combined with local conventional force advantage. And, in most instances, the Soviets will have a local conventional advantage, simply because of geography."

Under such conditions, an outcome detrimental to the US would seem likely unless we are willing to take great risks, General Jones suggested. It is important, therefore, for the American people to understand that in talking about "the need to reexamine our strategic deterrence doctrine the focus must be on this nation having the capability to actually fight sustained nuclear war, including all the ingredients that entails. This does not mean that we take nuclear war lightly. We as well as the Soviets will go to great lengths to prevent nuclear conflict, particularly strategic nuclear conflict." The issue, then, is not a revision of this nation's strategic doctrine in the context of an impending Soviet attack on the US, but rather "the recognition that real or perceived differences in strategic capability can have pervasive influence on government leaders in Moscow, Washington, and elsewhere, and on the state of the world in general."

"By going to a dyad we would lose the broad potential—the mutual reinforcement—of the triad."

Dyad vs. Triad

Closely related to the schism over assured destruction vs. war-fighting forces is the increasing advocacy by some, inside the executive branch of government as well as out, of abandoning the strategic triad and shifting to a dyad of SLBMs and air-breathing weapons (bombers and/or cruise missiles). This advocacy is getting stronger because "some people simply don't want to do anything about the vulnerability of our ICBM force, and others assume that alternative solutions would cost less. I think *no* alternative solution can give us the total capabilities of the triad. By going to a dyad we would lose the broad potential—the mutual reinforcement—of the triad. Secondly, I believe a dyad would cost more in the long run and increase the strategic threat to this nation."

The Chairman and the Joint Chiefs of Staff, therefore, are resolutely committed to modernizing all "three legs

of the triad, including a survivably based modern ICBM."

But in the case of the latter, there is a need for interim solutions. Because of the sustained Soviet lead in strategic weapons spending—"about three times our level over the past few years"—and a temporary "trough" in US capabilities, a pronounced imbalance favoring the USSR is expected to develop in the first half of the 1980s. The option to launch under attack, General Jones pointed out, is a stopgap measure and far from ideal, but still vastly preferable to "not having this option at all and thus having to write off the ICBM force altogether."

Over the short term, "we see no choice but to have this capability," and it is possible to differentiate between an ironclad commitment to such a strategy and a declarative policy that forces the Soviets to assume that their attack *could* cause this country to launch its ICBMs before they are destroyed, General Jones explained.

Over the long term, a doctrine and force posture whose effectiveness and survivability are perched precariously on a "use-or-lose" hairtrigger "would be unwise and destablizing," in the view of the JCS Chairman.

MX Politics

The Defense Department's single most important weapons program, the MX follow-on ICBM, could, by the late 1980s, provide the means "for doing something about the imbalance in strategic capabilities" caused by the Soviet buildup, General Jones asserted. The nation's commitment to a survivable ICBM is both crucial and urgent. "But the most important factor is to get on with full-scale development of a new ICBM while continuing to evaluate basing modes so that we will be able to decide that issue early and wisely. I feel strongly that it would be a mistake to delay development of the missile until every 'i' is dotted and every 't' is crossed on the basing-mode approach. I am fully aware that many of the friends of MX think that by pressuring for an immediate decision on the basing-mode issue they are speeding up and helping the program. In reality, this tactic is likely to slow down if not jeopardize MX. The missile is the program's long lead time item."

While acknowledging the "substantial contribution" that the air-launched cruise missile can be expected to make to US strategic capabilities once this weapon reaches operational status, General Jones emphasized that he remains "a strong advocate" of a new penetrating bomber. There is nothing on the technological horizon to suggest that the days of the penetrating bomber are numbered, even though "I have searched my mind in every way possible to ensure that my support of the bomber is not reflective of generals who always 'fight the last war' and are unwilling to give up the horse," he said.

Critics of the bomber and its cost-effectiveness in the missile age tend to view this weapon system as having the same mission as ICBMs and SLBMs, General Jones explained. "But the need for a penetrating bomber rests on a broader definition of the word 'strategic' than we ascribed to the term in the context of SALT, whose focus is on central nuclear launch systems. I contend that there are many other strategic interests of the US and the Western world—broader than in the SIOP [single integrated operational plan] sense—that can be realized best through the unique flexibility and versatility of the penetrating bomber. The bomber's range, penetration, and command and control characteristics combined with its ability to use a wide spectrum of weapons, including very effective conventional munitions, qualify it for a variety of strategic missions outside the scope of ICBMs and cruise missiles," General Jones said. Further, the manned strategic bomber has considerable potential for certain maritime missions even though "it clearly is not a substitute for aircraft carriers," the JCS Chairman indicated.

Turning to the cost of modernizing and strengthening the nation's strategic forces, General Jones said that over the past few years, "we have been spending only about ten percent of the Defense budget on strategic forces in a direct sense, or maybe a few points above that if indirect costs are taken into account. So when we talk about improvements in the strategic sector, only a moderate increase of the total defense budget is involved."

The NATO Triad

US strategic forces also are the anchor of the NATO triad—which also includes theater nuclear (TNF) and general-purpose forces—and thus affect directly the efficacy of that defense alliance, General Jones pointed out. So far as NATO's theater nuclear forces (in the main provided by the US) are concerned, "the greatest worry is about longer-range systems. With deployment of the SS-20 intermediate-range ballistic missile and the Backfire bomber, the Soviets have gained a substantial advantage in longer-range theater nuclear weapons. There is, therefore, a pressing need to modernize our equivalent TNF capabilities. We have instituted programs to develop an extended-range Pershing II tactical nuclear missile and the ground-launched cruise missile (GLCM). We also are studying the possibility of a theater ballistic missile," General Jones said. The Joint Chiefs have recommended deploying enhanced radiation/reduced blast weapons, the so-called neutron bombs, because "they would have provided good capabilities on the battlefield. But I am much more concerned with the problem of longer-range theater nuclear weapons," General Jones said. (The White House has halted the production and deployment of neutron bombs.)

US and NATO chemical warfare (CW) capabilities also lag behind those of the Soviets and should be shored up. "We have improved substantially our defensive CW capabilities but major deficiencies remain that affect all services. On the offensive side, we are concerned about the aging of our chemical weapons. The JCS view is that a reasonable offensive CW capability is important for deterrence. Clearly, we need to correct this imbalance."

The Joint Chiefs believe that one of the most crucial tasks in the category of general-purpose forces is "to raise the threshold in Europe. We are concerned about NATO forces having the sustained capability to hold back an attack by the Warsaw Pact. At the moment, the consensus is that we would have less than a fifty-fifty chance of succeeding in such an eventuality," General Jones said.

An uneasy state of deterrence is in effect, nevertheless, mainly because "the Soviets can't be sure that they can score a quick victory or that there won't be escalation to higher levels of conflict. So the triple requirement

for us is to raise the threshold so far as our conventional capability is concerned while at the same time improving our theater nuclear and central strategic capabilities," General Jones said.

Asked about frequently aired contentions by ground-warfare experts that preoccupation with NATO has caused the US to preposition an inordinately large portion of its war materiel in Europe—thus affecting this country's ability to cope with conflicts elsewhere—the JCS Chairman said, "In the case of most of the likely conflict sites, we would be better off if our supplies are in Europe rather than sitting in the middle of the US. Combined with currently sought improvements in our airlift capabilities, prepositioning stocks in Europe will enhance significantly our ability to project force to likely trouble spots. In many instances, our ability to project force will exceed Soviet capabilities, even though the Soviets are extending the reach of their sea, air, and land forces substantially. It is essential that we retain this type of edge because of our critical dependence on allies as well as for economic and resource reasons."

No US advantage exists, or is likely attainable so far as force projection in certain areas is concerned, however: "If the territory involved abuts the Soviet Union, the advantage will always rest with Russia," he acknowledged.

Korean Withdrawal Schedule

Because of findings of major imbalances in North vs. South Korean military capabilities by the House Armed Services Committee, and similar conclusions by US Army experts, a government-wide intelligence reassessment of the Korean situation is in progress. The results of this reexamination "will be taken into account fully" by the Joint Chiefs in determining whether future withdrawals of ground troops should be slowed or halted, General Jones said. "But we are not yet ready to state our position because the reevaluation is still going on. There are no substantial withdrawals planned until November of this year and even then only 2,600 troops would be involved," he said.

General Jones said the reason the withdrawal plan was implemented without first conducting a comprehensive intelligence assessment was that "intelligence is an art and not a science. However, about a year ago we put increased emphasis on the Korean picture and got some indications of increased North Korean capabilities. While we can and should do better in intelligence, we can't expect perfection. If you insist on perfection in intelligence, you probably won't make any decisions at all."

Questions About the All-Volunteer Force

There are, the Chairman of the JCS points out, "problems with the all-volunteer force in terms of the active as well as the Reserve Forces." In the first instance, the problem is "not only one of getting the numbers of people needed but also of meeting educational standards. The percentage of volunteers who are high school graduates is decreasing. Yet, statistically, high school graduation is important to us. The attrition among non-graduates runs about twice the level of graduates," according to General Jones. The recruiting problem is most severe in the case of such reserve elements as the Army's combat reserve, he added.

Serious consideration is being given, therefore, to taking "Selective Service out of the deep freeze and going to some categorization and evaluation. We are also looking at some Selective Service for the IRR [Individual Ready Reserve]. Further, in reviewing the problem we won't foreclose the option to go even further than mere registration before too long," General Jones said. At the same time, he expressed "a word of caution: There is a tendency to believe that by going back to the draft we would save a lot of money. I believe that it would cost more because of greater turnover. Of course, it is possible to have mixed pay scales between draftees and volunteers. This would mean that we reduce the pay of draftees and impose the double burden of making people serve their country while paying them less than the minimum wage. In my view, this would be unwise. Secondly, there is an impression that by going back to the draft we would solve all of our personnel problems. The fact is that we had personnel and disciplinary problems under the draft."

Disciplinary problems in the military are linked closely to changing standards of US society, General Jones suggested. "It's much tougher to be a commander today than when I had my first command. Today you almost need a lawyer at your right elbow all the time. Discipline is better than it was a few years ago, but it takes an enormous amount of effort to maintain it. Much of what the government—and I mean here all three branches of government including the courts—has done makes it much more difficult for today's commanders. There had been excesses and abuses in the past, but we tend to overcorrect. We should examine this situation regardless of whether or not we go back to the draft. The pendulum has swung too far, with the result that the limitations on commanders cause problems in maintaining adequate discipline and unit efficiency."

Turning to general concerns of the men and women in military service, the JCS Chairman said, "over the years there developed the tendency to change the character of military life, to make it more a job than a profession. Nowadays the means available to commanders to look after their own people are severely curtailed. When I first commanded a squadron, I had all the means needed to look after my people. I had the aircrews as well as the maintenance people, we had our own personnel section—our own dining hall, club, and recreation facilities, all with prices below off-base levels. And I had a big say in promotions. But, today, commanders can neither reward nor punish to the extent I could.

"It is important to swing the pendulum back somewhat, but this is very difficult to do. I am concerned also about the fact that there is so much uncertainty, fostered by people not in the military. They insinuate that the military is overpaid, that our people wear the uniform for financial gain and not because of dedication. We need to change this perception so that society recognizes that ours is an honorable profession, that the people who serve make great sacrifices, and are due recognition in a psychic as well as a tangible sense. I realize, of course, that today's uncertainty is not confined to military people. Inflation affects everybody, and makes all of us wonder whether or not we will be able to maintain or improve our lifestyle. But I acknowledge that we in military leadership positions have a special obligation to alleviate the concerns of our people." ■

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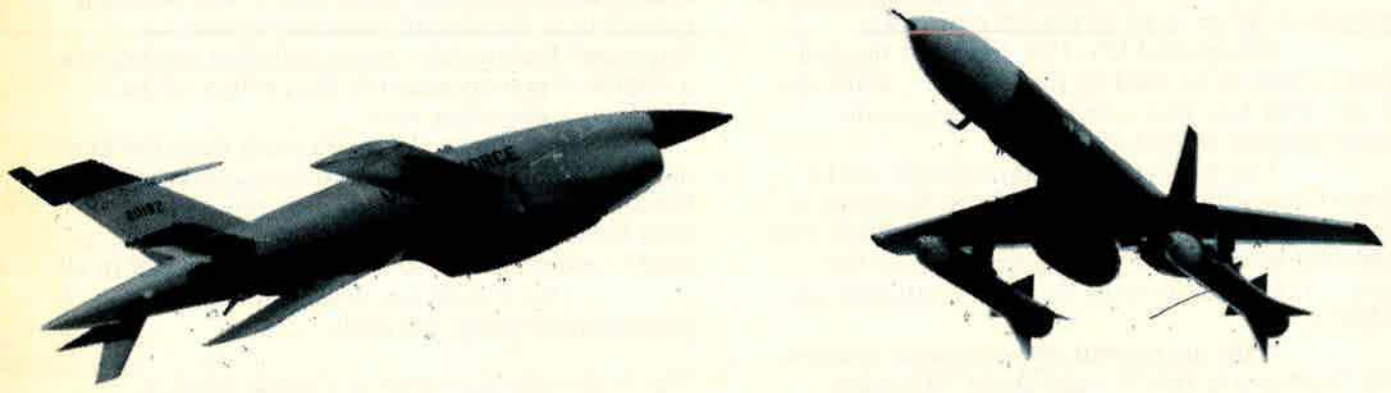


Our military forces aren't exactly of superpower size or, perhaps, entirely of superpower quality. That raises some questions about . . .

Volunteer Forces and Superpower Status

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

AN earnest young man was on the radio the other day expressing his views on the draft. Not surprisingly, he was against it. Since he is president of some sort of undergraduate association, he was evidently speaking for a constituency. In the course of the interview he made it clear that he was not in the least antimilitary, just against having the lives of the citizenry at large disturbed by military service. In the young man's opinion, the volunteer force is working fine, and he is content to rely on it.

He was probably speaking for a great many people, and not just potential draftees either. Conscription has never been a popular notion in any country, democratic or otherwise, and so there is nothing either new or radical in the young man's views. It was not popular in 1940, for instance, when today's graybeards were in college. A sounding made by *The Atlantic Monthly*, in that year before Pearl Harbor, evoked a stream of undergraduate letters wholly opposed to the idea of conscription. There were even threats of rebellion against a draft.

As it happened, the rebellion all came before, not after, the draft began. And while no one ever expressed any joy at being drafted, there was a general acceptance of its necessity, considering the shape the world was in. Draft dodging took place, true enough, but the draft dodgers themselves were viewed with general contempt.

The world is once more in pretty sorry shape, in many ways worse even than in 1940. Certainly the danger to the United States is potentially much greater than in those relatively serene days of 1940 when the Atlantic and Pacific Oceans served as protective moats. There are still isolationists and pacifists around, going by one name or another, who seem to feel our security can be maintained by noninvolvement, but events are rapidly discrediting them and their theory.

We have begun to give signs that we are coming out of the Vietnam vapors, what with a little show of force here and there, and some military guarantees to Israel and Egypt. Coming, as it does, after the past few aimless years when we seemed incapable of taking a stand anywhere for any purpose, this new display of resolution is encouraging. There is, however, one small drawback to our reassumption of superpower status: Our military resources are not exactly of superpower size. There are also some disquieting signs that they may not be entirely of superpower quality either.

Since the ending of the draft in 1973, an action that was dictated largely by political duress, the volunteers have been a mixed bag. In the high technology areas, ones that offer training in advanced skills, the results have been good. It is in the more basic areas that the volunteer concept seems to be in trouble. Since these are also basic combat troops we are talking about, there appears to be some cause for worry as we hear of widespread functional illiteracy and other limitations in a military establishment supposedly representative of the rich and powerful United States.

The Reserve Forces, no longer benefiting from the threat of the draft, are fast dwindling away. There are nearly 40,000 fewer people in Reserve Forces units than there were three years ago, while the individual Ready Reserve, which numbered 1,600,000 a few years ago, is now down to 364,000, and dropping. There is very little, in short, behind the volunteer regular forces, now for the first time beginning to fall short of their recruiting goals. And since the Selective Service System is deep in mothballs, the machinery for carrying out a rapid callup does not even exist. If war, or something close to it, comes, we will face it with what we have. If it is a small quiet war, then maybe things will work out. Anything beyond that will find us in trouble very early.

As we noted, not many wanted to go to World War II, and certainly not undergraduates who, on the threshold of their careers, felt they had the most to lose. Nonetheless, when the time came, they went, for it finally became clear to everyone, back in 1941, that there was an awful lot at stake.

We have not used the years since the end of that war wisely, no question about that. One way or another, the great and invincible nation that celebrated V-E and V-J Days, that summer in 1945, is faced once again with a grim threat. We have already discovered that being irresolute, or placating, doesn't make the threat go away. It just makes it bigger and more ominous.

The college junior who opposed the draft on the radio the other day is in good company. Emotionally, a great many people oppose it. The whole idea of hiring an army, navy, and air force to take care of our defense problems is persuasive, and what is more, in the long-term tradition of the country.

Peacetime conscription is of modern origin. The trouble is that when volunteer forces were the tradition, the world, and this country, were different places. Now the moats are gone, our allies are weak, and it is up to us. It seems increasingly obvious that kind of responsibility cannot be delegated entirely to the volunteers.

And if, as some people predict, there will be widespread revolt against a reinstitution of Selective Service, then this is as good a time as any to find it out. ■

Why US Influence Is Declining In Latin America

American human rights, arms, and nuclear policies that conflict with the concerns of Latin American countries over terrorism and economic troubles have resulted in a smaller US voice in affairs south of the border. Can the trend be turned around?

BY BONNER DAY
SENIOR EDITOR

ABRASIVE US policies, compounded by conflicting military and political interests, have pushed US influence in Latin America to a new low point. The ebb in US authority comes at a time when Latin America is growing in importance militarily and economically.

US arms sales to Latin American countries have dropped dramatically. Some countries have been cut off completely. Others have turned their backs on US suppliers as a gesture of resentment to what they see as US government interference. European companies and a growing Latin American arms industry are filling the vacuum.

Fewer Latin Americans are being sent to the US for military training, the combined result of US cutbacks in invitations and refusals by countries south of the border. This valuable exchange with Latin military forces comes at a time when the influence and control of military leaders in Latin America are on the increase.

In trade and economic assistance, the traditional dominant role of the US is being shared increasingly in the region with Europe and Japan. In one particularly sensitive area of high technology, nuclear power reactors, Europe and Argentina are replacing US companies.

To the US, the decline of influence in the region where it has long been the leading power poses major problems.

Economically, the Latin countries have been principal US sources of oil, copper, tin, and other raw materials. The US at one time bought fifty percent of the exports of all Latin America. And the volume of trade between the US and the region has climbed steadily in total dollar value. In 1978, the US imported $18.5 billion in goods from Latin America, about eleven percent of total imports.

The continued availability of reliable supplies of oil, the single most important import by dollar value, is a particular concern to the US. The new discoveries of oil in Mexico, as well as extensive oil exploration activities in South America, make economic relations with the region more important than ever.

Countries in the region also have been a traditional market for US manufactured goods, and one of the few areas where the US has managed to hold a favorable balance. In 1978, the US exported more than $20 billion to Latin America, some fourteen percent of total US exports. Trade with Latin America in 1978 provided a $1.5 billion surplus in the balance of payments, at a period when the US experienced a record trade deficit.

But if the region is growing in economic importance, its military value is even greater. No single Latin American country is viewed as a military threat to US security. But US policymakers view as matters of serious concern the growth of Brazil and Argentina as potential nuclear powers, as well as deteriorating relations with Mexico over oil policy and the flood of illegal aliens entering the US. The penetration by the Soviet Union, first in Cuba and more recently in Peru, also has put a new perspective on hemispheric defense planning.

Friendly relations with Latin countries in past decades had permitted the US to enjoy considerable hemispheric security with a minimum use of military resources. Because the US was confident of its hemispheric neighbors, it could focus its attention and resources on more pressing security issues in Europe and Asia. Latin American countries, concerned primarily with internal security, were largely taken for granted or placed low on the list of military priorities.

US cooperation with military forces in the region, furthermore, ensured the safety of US trade and military lines of communications in that part of the world, with a minimum use of naval and other military forces.

The takeover of Cuba by Fidel Castro, however, marked a shift in the balance of power in the hemisphere. US failure to topple Castro, an avowed Communist and a junior partner of the Soviet Union, or to prevent the sale of Soviet arms to Peru, reinforced the shift. The cold war, once contained in Europe and Asia, suddenly expanded not only to Africa but also to the Western hemisphere. The influence of the Soviet Union in Latin America, though still small compared to that of the US, is growing. In Cuba, Mexico, and other key Latin centers, large Soviet embassies mark Moscow's active interest in the region.

Some Latin American specialists see the Panama treaties as damaging to US influence, in that the US military presence will appear to be more distant and less available to the region than in the past.

Any further decline in US influence, say some Latin American specialists, would have significant consequences to the continuing global conflict with the Soviet Union. Depending upon the degree of Soviet penetration, the US could be forced to respond, at a minimum, with the redeployment of some air, land, and naval forces from forward positions in Europe and Asia to strategic checkpoints in the Western hemisphere. A decline in US influence thus could increase the demand for US military resources without any apparent addition to the security it enjoyed in the past.

US influence has been eroding for a number of years, the result of US restrictions on military sales, sanctions against military governments, the cutback of economic aid, and broad trade policies that have hurt countries heavily dependent upon coffee, sugar, and other raw materials exports.

But no US policy affecting Latin America has been as troubling in recent years as the stand on human rights taken by Congress and the Carter Administration. The Administration claims some victories as a result of its aggressive position.

In recent months, political prisoners have been released in Chile, Haiti, and other countries. US relations with Peru and the Dominican Republic have improved. Lists of prisoners have been made public in Argentina and Chile. Commissions to investigate human-rights conditions have gained entry to several countries. Reports on the use of torture indicate a decrease in that practice. The treaties governing the Panama Canal have been ratified. US pressure to avert a military takeover in the Dominican Republic has received praise in the region.

But overall, the consensus among Latin American experts is that there has been a sharp downward plunge in US influence.

Arms sales, military aid, and military training in the past have helped to strengthen US military relations with Latin countries, and have provided the US with both military and political influence. The US government today is seen as less concerned about maintaining Latin American countries as military allies and trading partners, however, and more interested in pushing US standards on human rights and nuclear nonproliferation.

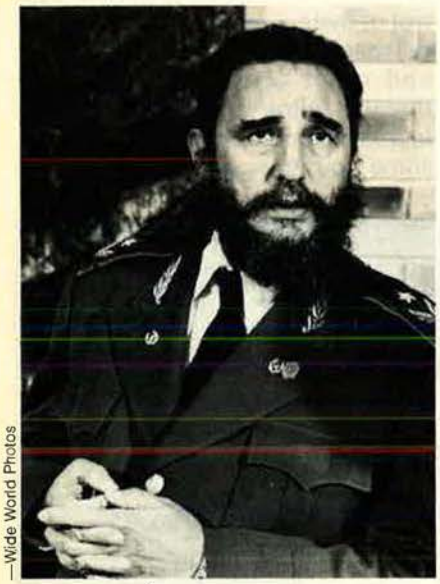
The US is prohibited by Congress from arms sales to Argentina and Chile. Brazil and other countries have refused to participate in military programs rather than submit to human-rights reports, which they say violate their sovereignty. Rear Adm. Gordon J. Schuller, a director in the Pentagon's Office of International Security Affairs, recently told Congress: "There has been a gradual deterioration of our military relationships at a time when the region is predominantly governed by military regimes."

Part of the US decline in influence must be credited to an almost inevitable diversion of interests. US priorities have been on the military threat of an increasingly powerful Soviet Union, arms control, and nuclear nonproliferation. Internal subversion in Latin America is not seen as a threat to US security. Latin American governments have as their two highest priorities control of their runaway economies and defense against internal Communist and other leftist, destabilizing threats, followed by an interest in increasing military strength and, for some countries, in developing nu-

clear power. The Soviet Union appears as a distant threat, but not an immediate danger.

Leaders in Brazil, Argentina, Chile, and other countries—concerned over domestic violence and insurrection—complain that the US seems to understand the Soviet Communist threat and no other.

The result of these conflicting interests is twofold. The US Congress and the Administration have imposed policies cutting off military arms. Some Latin American countries, seeing political dissension and terrorism as a crippling threat to economies that already are under tremendous pressures, have put down political opposition brutally, and have responded to terrorism with torture and other human-rights violations.



—Wide World Photos

Cuban President Fidel Castro, while dabbling in African wars, supports Latin antigovernment guerrillas.

Nicaraguan President Anastasio Somoza-Debayle is a special target of Cuban-aided Sandinista forces.

The methods, on the surface, have been effective. Terrorist acts have declined dramatically in Uruguay, Argentina, and Chile. At the same time, there have been improvements in the economies of these and other countries.

But there are still a number of countries bubbling with terrorism that threatens to boil over into civil war. At the same time, border disputes pose a continual threat to regional peace.

Nicaraguan Rebellion

In the case of the Nicaraguan crisis, the US has been accused of first ignoring a growing schism between the government and the governed, and, later, pressuring the government to compromise with terrorists in the heat of battle. Critics point out that the US owed a debt to the Somoza government, as the country had helped the US to launch the ill-fated 1961 Bay of Pigs invasion by Cuban refugees.

Gen. Anastasio Somoza-Debayle, elected to a second presidential term in 1974, has been the personal enemy of Cuban President Fidel Castro and a prime target of Cuban subversion and propaganda. His heavy-handed rule and the lengthy control of his family over the nation have bred widespread discontent in the country. But it is the Sandinista National Liberation Front that provides the opposition with military firepower. This guerrilla force is trained by Cuba, which also supplies arms and equipment through Panama and Costa Rica, and provides safe havens and new identities when members become known to the Nicaraguan government.

The war between the Somoza government and its widespread opposition reached a high point last year in August when the Sandinistas took over the National Palace temporarily, and government forces reacted with artillery and airplane attacks and street executions.

But Nicaragua is not only a personal vendetta of Castro. Because of domestic unrest and its strategic location, the country has been targeted as the launching pad for Cuban subversion of all Central America. For that reason, leaders in Central America have expressed concern that if Cuba pulls its troops from Africa and the Middle East, it will throw even more energy and resources against the vulnerable Central American republics.

"Nicaragua and all of Central America could be a repeat of events in Iran," says one Latin American expert.

Beagle Channel Dispute

In the Beagle Channel crisis between Argentina and Chile, US influence was not strong enough to prevent the massing of armed forces on their respective borders last December. At one point, ground, air, and naval forces of the two countries were on battle alert. Outright war was averted when the Pope agreed to mediate the two countries' differences.

The crisis developed after an International Court of Justice ruling, disputed by Argentina, favored Chile's claim to islands south of the Beagle Channel, and additional land in Antarctica.

Though favored in the court ruling, Chile is considered no match militarily for Argentina. The two countries have had a long history of friendly relations with the US, but recent disputes have reduced US influence. As a result, it was the Pope rather than Washington who had the leverage to prevent what would have been the first major South American war in decades.

Peruvian Arms Buildup

An even greater threat to South American peace is Peru's purchase of arms in recent years. Soviet, Swiss, and other arms suppliers have made Peru's armed forces among the best equipped in Latin America. Notable purchases include thirty-five Soviet Su-22 Fitter-C jet fighters. The US managed to damage its relations with Peru by first refusing to sell it jets, then trying to abort the Soviet sale.

The buildup in Peru appears to have slowed down in recent months, but Latin American experts attribute this to the government having achieved its planned arms program. To pay for the arms purchases, Peru has delayed payments on its debts to Western banks and international lending agencies.

Unique in Latin America, Peru's leftist military government has been able to balance its military and diplomatic relations with both the US and the Soviet Union. US Defense officials today claim that Peru has more Soviet military advisors—in excess of 100—than there are US military advisors throughout Latin America. Peru also entertains a number of Cuban military advisors. Despite the Soviet and Cuban presence, the US continues to provide some military training and spare parts to the Peruvian government.

The Soviet presence only compounds the concerns of Peru's neighbors, who are aware of the vow of Peruvian military men to retake land lost to Chile by the 100th anniversary of the war, from 1879 to 1884, in which Peru was defeated. Peru, with its arms buildup, a much larger population, and a superpower as an arms supplier, is rated by military experts as much stronger than Chile militarily.

Though the US maintains relations with both potential combatants, its influence with either government is at a historic low. Says one Latin American expert: "The failure of the US to sell Peru fighter aircraft, which opened the door to the Russians, must be regarded as a major benchmark in Latin American history."

Arms Policies

On one point most Latin American authorities agree: The unilateral cutback of US arms sales in the area has failed to halt arms traffic in the region. Instead, it has opened to the French, British, Germans, Israelis, Italians, Dutch, and Swiss a market that once was dominated by the US, at a time when the market is growing by leaps and bounds.

In the case of Peru, it has provided the Soviet Union a legitimate means of expanding its influence in the region. US restrictions also have served to accelerate a domestic arms industry that was already growing. There is increasing awareness of the problem in the Carter Administration. Admiral Schuller, in testimony to Congress, warned that "if we solely exhibit unilateral restraint, it will not automatically lead to reciprocal restraint by other suppliers or recipients."

US and Soviet diplomats met in Mexico City last December to discuss limiting conventional arms transfers in Latin America, but failed to reach an agreement.

One result of US restrictions, say industry observers, is that the US would have great difficulty in winning back many of its previous markets.

Among the more aggressive aircraft salesmen have been the Is-

Two Latin American countries fly Soviet combat planes: Cuba has five squadrons of MiG-21s, similar to the one shown here, and Peru has bought Sukhoi Su-22 Fitter-C aircraft. Brazil's Embraer aircraft plant, below, assembles Italian-designed fighters in addition to producing its own trainers, patrol, and other aircraft Shown here, the Bandirante EMB-110.

raelis. They have sold Arava military transports to Bolivia, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, and El Salvador. Argentina has signed an order for twenty-six of Israel's Dagger, a fighter-bomber version of the Mirage III-5.

Among Latin American countries, Brazil is the largest aircraft builder and exporter. In addition to sales to its own armed forces, Brazil is manufacturing trainers for Paraguay, transports for Chile and Uruguay, and sea patrol planes for Chile. It is building, through a license agreement with Italy, the Aermacchi M.B. 326, a fighter-bomber, for its air force and for Bolivia.

Argentina's aircraft industry is smaller, but includes the FMA IA 58 Pucará counterinsurgency aircraft. Argentina is buying the Aermacchi fighter-bomber from Italy and transport planes from Italy and the Netherlands.

Chile, concerned about the arms buildup in neighboring Peru, has little domestic arms industry, but is finding willing suppliers in Brazil and Israel. Chile had contracted for eighteen F-5s from Northrop Corp. under the Allende government, before the US ban on sales to Chile went into effect.

Ecuador and Bolivia, also neighbors of Peru, are buying military aircraft from Italy and Switzerland.

Traffic in ground and naval arms is just as competitive, but Latin American countries, particularly Brazil, are winning an increasingly large share of the market, and even challenging traditional suppliers in other markets. Brazil is expanding its shipbuilding production in a cooperative arrangement with Britain. Prior to 1974, Brazil exported virtually no locally manufactured military equipment. Since that time, Brazilian arms exports have totaled more than $100 million. Part of the push for exports is Brazil's government-wide concern over the negative balance of payments generated by petroleum imports. Some eighty percent of Brazil's oil consumption must be imported.

Argentina is also in the export market, selling light arms, tracked vehicles, and towed and self-propelled artillery. Customers are mostly in Latin America, but some sales are being made to Arab and African countries.

Nuclear Proliferation

Though the US is a strong backer of the Nuclear Nonproliferation Treaty, Brazil and Argentina, with the most potential in the nuclear area, have backed away. Efforts toward achieving a hemispheric nuclear-free zone similarly have stalled because of reluctance in Brazil and Argentina.

Argentina is considered the Latin American country closest to becoming a military nuclear power. Successive governments since President Peron in the 1950s have pushed nuclear research, with a strong emphasis on military applications. Observers say the program satisfies the Argentine quest for superpower ranking and speaks to the nation's competitive feelings toward its larger neighbor, Brazil.

Argentina has had a heavy water power plant, suitable for making weapons grade uranium, since 1973. Argentina also has its own natural uranium deposits, uranium enriching facilities, and reprocessing plant, and has begun contracting to build reactors for other countries. It is estimated that Argentina, barring a change in its present schedule, will have nuclear weapons sometime in the 1980s. Critics of current US policies toward Argentina point out that the nation is scheduled to become a nuclear power at a time when US influence will be at a historic low.

The Brazilian nuclear program appears to be directed more at nuclear energy rather than developing weapons. As part of its efforts to relieve its dependence upon foreign oil, Brazil has contracted with Germany to build up to eight nuclear reactor power plants, amounting to billions of dollars. Brazil also has a number of Westinghouse nuclear plants already under construction, contracted under US nuclear guidelines governing nuclear fuel and its disposal.

It was the conflict over nuclear power policy, as well as the human rights stance of the Carter Administration, that hurt relations between Brazil and the US, causing Brazil to cancel a twenty-five-year-old US military assistance agreement.

The nuclear dispute began in 1974, when the US government informed Brazil it could no longer guarantee processing of nuclear fuel for Brazilian reactors under construction. Then, when Brazil contracted with West Germany for reprocessing technology, the Carter Administration added insult to injury by attempting to block the arrangement. Vice President Walter F. Mondale's direct approach to West Germany concerning the proposed sale, without discussing the matter with Brazil, won few friends in Brazil and failed to affect the technology transfer.

Guerrilla Wars

Many experts see a decline in the guerrilla attacks plaguing much of Latin America. Incidents continue, but are smaller and less frequent in most countries. Attempts by both urban and rural terrorists have been countered, with mixed success, by government police and military forces, though draconian methods have been used. Now, in the view of many experts, the major threats to governments in the region are economic. The pressing need is for political leaders to find jobs for its spiraling populations, and thus eliminate the root cause for anti-government movements.

Cuban Influence

Though its influence is hard to measure, there is no doubt that Cuba, under communism, continues to be a festering sore to the rest of Latin America. Its supportive role to guerrilla bands conducting kidnappings and assassinations of government officials, businessmen, and diplomats has shaken governments throughout the region. Through its continued support, Cuba has kept alive the Tupamaro terrorist movement in Uruguay, ERP and Montonero movements in Argentina, as well as guerrilla movements in Venezuela, Guatemala, Bolivia, and Colombia.

But Cuba has been careful to keep a low profile, supporting the guerrillas with training and arms, and resisting the urge to send Cuban guerrillas into battle.

Cuba's influence in Guyana and Jamaica is growing. In Panama, Cuba is more public in its contacts now that the treaties with the US over the canal are out of the way.

There are extensive contacts with government officials, regular visits of Cuban diplomats and soldiers, and a continual exchange of students.

In its guerrilla schools, Cuba continues to train terrorists from Argentina, Guatemala, and other countries.

But so far, Castro's successes in Latin America have not been as large or dramatic as those in Africa. Latin American experts say this is because, in Angola and Ethiopia, Castro moved into power vacuums, and received a heavy assist from the Soviet Union. In Latin America, however, the police and military forces appear to be more than a match for Cuban-trained guerrillas, though not without considerable violation of traditional Western standards of human rights.

Increasing US Influence

With the region threatened by Cuban and Soviet machinations and the continued arming of hostile neighbors, the need for a strong US voice is apparent. How, then, can US influence, now at a decline, be increased?

Latin American experts say the first target should be the region's economy. A start toward enhancing US influence would be an aggressive policy aimed at integrating the economies of the Latin countries with the large US market. Forging stronger trade ties and helping the individual nations to strengthen their economies would be a difficult policy, given economic pressures in the US. But such an effort would be a strong boost to restoring US prestige.

Says one authority: "Latin America is different from Africa and Asia. It is not hopelessly authoritarian and it does not have the problems and concerns of a recently liberated colony. Rather than turn its back, the US should open its markets to Latin American countries that want to join the economically advanced Western nations."

A resolution of the region's economic difficulties will not come quickly. Attempts to lower tariffs and eliminate quotas on Latin products will be resisted by domestic producers. Latin American experts say that, for the foreseeable future, economic hardships will be putting tremendous pressures on incumbent governments to make immediate improvements, or face replacement by voters or the military.

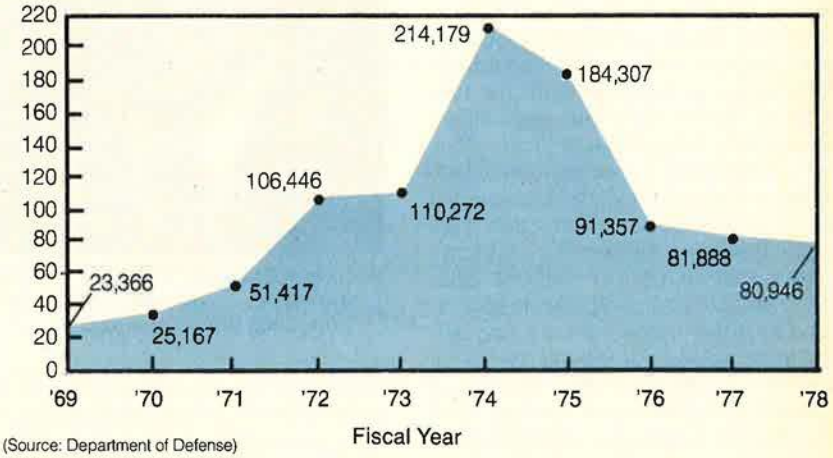
In the military area, the US should resume its practice of providing military training to Latin countries and end policies that restrict military sales. Experts also urge the US to avoid nuclear-power policies that can be interpreted as an attempt to monopolize this source of energy.

The number of Latin American servicemen trained by the US has been cut in half in the past three years, while more sophisticated weapon systems are being introduced into the area, along with third-country advisors and instructors. The US has provided no grant military assistance in Latin America since 1977. Credit for military sales to Latin American countries for fiscal year 1980 is budgeted at a token $30 million.

But beyond economic and military policies, to make a significant improvement in its relations with Latin America the US would have to abandon what critics term "human-rights sermons." And, so far, this may be too high a price, in view of their apparent popularity with voters, for the Administration or Congress to pay. ■

US Military Sales to Latin America

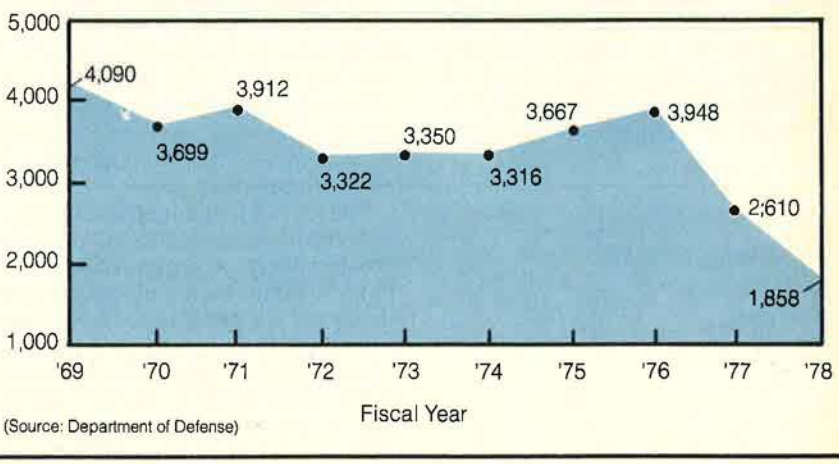
From a high of $214 million in Fiscal Year 1974, US military sales to Latin American countries have dropped to $80 million.



(Source: Department of Defense)

US Military Training of Latin American Servicemen

In three years, the number of Latin American servicemen trained by the US has been cut in half, from 3,948 in Fiscal Year 1976 to 1,858 in Fiscal Year 1978.



(Source: Department of Defense)

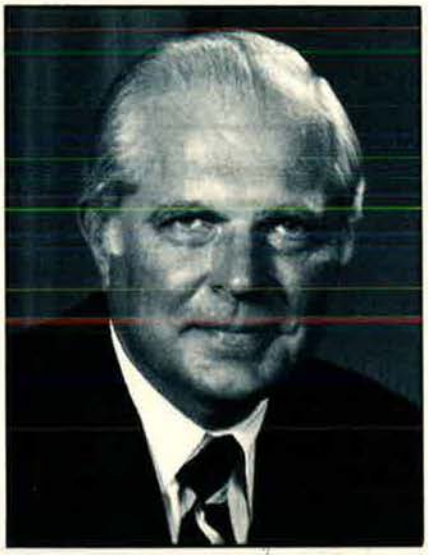
Broadening the Strategic Planning Process

BY THE HON. JOHN C. STETSON
SECRETARY OF THE AIR FORCE

EVEN before the Army Air Corps was established in 1926, a primary concern of its leaders was finding new, advanced concepts and applications for airpower: The search for new ideas and the ability to recognize important technological developments for the future was understood and accepted by the Air Corps.

Although there was no shortage of new concepts for airpower, progress was very slow for many years. It was not easy to convince the public or government leaders that airpower could become a critical resource for the nation's security. Neither were the early military leaders fully supportive of those ideas that would later prove so important. Historical records, for example, show that the Army responded to an idea from Robert Goddard, the father of American rocketry, by noting in an official letter that, "while the Air Corps is deeply interested in the research work being carried out by your organization . . . it does not, at this time, feel justified in obligating further funds for basic jet propulsion research and experimentation. . . ."

The Air Corps's institutional position within the War Department made it difficult for airmen to exploit new ideas. However, there were notable individual exceptions dating back to the early 1900s. Brig. Gen. Billy Mitchell stood against the institution when he sank the German battleship *Ostfriesland* in July 1921 and demonstrated, by the standards of his day, a radical application of airpower that would prove critical in the 1940s and beyond. Individual attempts by Generals Arnold, Westover,



Secretary Stetson: "Planning errors and imprudent . . . decisions will be less forgiving than in the past. . . ."

Chennault, Eaker, Hansell, Walker, and many others to move the Air Corps forward were partially successful. But it took the catastrophic events of World War II to produce an appreciation for the concepts and capabilities of airpower. As a result, the Army Air Forces of World War II found it both justifiable and necessary to accelerate all activities and, in particular, do a great deal of research on jet propulsion and a host of other new ideas. In fact, the unprecedented level of research and experimentation during the war and the period following provided the technological foundation for our modern Air Force: an Air Force that today provides the critical components of US strategic deterrent power.

The thinking, planning, and dramatic achievements since World War II have created the great organization we now have. It would be a serious weakness, though, if we became too comfortable with today's progress and the many new ideas of our own time. When the Air Force celebrates its sixtieth anniversary in the year 2007, we need to be able to look back and report that the Air Force did not get bogged down in legacy, tradition, and extrapolative thinking. Thus, the Air Force must strive to recognize what may be possible in the future and then to use those possibilities and analyses to influence current objectives and plans.

Broadening the Planning Process

The vehicle for doing this is strategic planning. In the Air Force, such planning traditionally has involved looking at the future in a systematic, documented fashion. The focus usually has been on a single problem and a single product. This approach has been very productive. But we have the opportunity to broaden the approach to include an examination of multiple problems, opportunities, and their interrelationships in such areas as technology, mass communications, strategic resources, and education. This can best be described as an attempt to create a continuous, evolving "process" of looking at the future.

The current emphasis is designed to: (1) examine corporate long-range planning techniques as models for Air Force planning, (2) develop a process for institutionalizing strategic planning in the Air Force, and (3) produce documentation providing perspectives on the future. These will be continuous activities.

In effect, as this effort evolves, it will focus on questions similar to those asked by strategic planners in the industrial world:

- What are the Air Force's basic objectives?
- Is the Air Force providing the right "products" today?
- What "products" should the Air Force produce during the coming decades?
- What can we afford?

• When will the present products become obsolete and when will the transition need to take place?

• What will the future missions be?

These questions cannot be answered without a forecast of the future trends that will have the greatest impact on our organizational and procurement goals.

We all recognize that strategic planning, and the multifaceted forecasting behind it, is a complex, interpretive, and imprecise art. The chronology of recent events in Iran, for example, visibly demonstrates just how difficult it is to predict the shifting sands of power. However, it is not as difficult to predict the possibility of such events occurring by assigning various probabilities, and then weighing the consequences of those events on what we can and should do within the Air Force.

We also can identify the possible and probable technical achievements of our adversaries and potential adversaries. Such long-term analyses can provide important guideposts for our Air Force to develop superior concepts of weapons design and utilization to meet those long-term developments.

In addition to forecasting, strategic planning requires total organizational involvement. This means that Air Force people from as many different organizational levels as practical will have an input into the planning process. We have thousands of years of experience and talent represented by the officers and enlisted men and women serving today. Some of this talent can be applied to analyze the more distant future and to help direct solutions in aviation, space systems, electronics, computer science, management, training, recruiting, and many other fields.

Similarly, the intensity of our planning process requires involvement by the Air Force's top decision-makers. Political and budget realities that both constrain and extend future opportunities have to be included as planning inputs. The thoughtful judgments of the top leaders must be brought to bear on our strategic planning to help assure that the Air Force of the future has evolved into an efficient, maximum strike force, considering the technology and the threats of that period.

Secretary of the Air Force John C. Stetson, a graduate of MIT with a degree in aeronautical engineering, served as a Navy communications officer in World War II. For nearly fifteen years, Mr. Stetson was associated with the management consulting firm of Booz, Allen, and Hamilton as a member and a partner. In 1965, he was named president of the Houston Post Co., and five years later became president of A. B. Dick Co., a manufacturer and international distributor of business machines. In 1977, Mr. Stetson was appointed Secretary of the Air Force.

Two Critical Problems

The first products of Air Force strategic planning have already shed some light on the international political activity, demography, technology, resources, and economics of the future. These areas are now continuously analyzed in terms of threats, uncertainties, and opportunities that affect the Air Force. Two illustrative topics that have been explored are military manpower and jet fuel availability.

Military manpower is an important area to look at because, by the 1990s, the median age in the United States probably will have risen from twenty-nine to thirty-six years. As a consequence, there may be a shortage of labor and a critical shortage of military-qualified youth. The manpower shortage and the "aging" of the population will affect almost every decision we make concerning the structure of the Air Force. Aircraft and missile designs, maintenance procedures, and technology programs all must be reconsidered in the light of future manpower availability and costs. Otherwise, we could create an Air Force of the future that would not function because of unrealistic manpower needs.

Another example of a "future snapshot" that is influencing our current decisions concerns the availability of jet fuels. We can be almost certain that the peak production rate of the world's natural oil supply could occur by 1995, maybe sooner. As consumption rates continue to expand toward the 1990s, it is apparent that the availability and cost of jet fuel may be a highly important factor governing the future of the Air Force.

The Air Force is already paying three times more for fuel than it did ten years ago, and prices could rise dramatically in the 1980s. Thus, many of the critical decisions the Air Force must make this year, and in following years, will be directed at promoting alternative fuels, such as shale oil, and developing new designs in engines and airframes for both piloted and pilotless systems.

These two problems—the military manpower problem and the fuel problem—already have entered the crisis stage. Other problems and opportunities in the areas of technology, economics, and politics are on the horizon. Strategic planning can moderate the impact of, or make positive gain from, those coming events. If they are not planned for, the Air Force can easily become the victim of strategic surprise where unanticipated threats and crises dictate the course of our future.

New Realities in Defense Planning

The Air Force has benefited from the good planning of Air Force leaders in the last four decades. It has experienced some of the rewards of planning from the process that is being built today. The strategic planning process will help the Air Force develop an understanding of the technological possibilities that will affect airpower in the next century, and generate organizational momentum to change possibilities into realities.

The most desirable technological possibilities in the world, however, cannot be turned into usable resources for defense by the Air Force alone. There must be a national consensus before the Air Force can begin to shape its own future. Like the Air Corps of the past, which faced a variety of fiscal and other constraints, the Air Force today faces similar constraints. Yet, unlike the Air Corps of fifty years ago, the Air Force today faces Soviet forces that have grown at unprecedented rates to achieve a state of equivalence with US forces and, in some areas, substantially more. Planning errors and imprudent deployment decisions will be less forgiving than in the past, and this dictates a new reality in defense planning.

Simply stated, when security forecasts, long-range threat estimates, and professional judgments reveal that change and improvement are needed, the Air Force must move in a consistent forward pattern. We will not have enough time to produce the most perfect and satisfying decisions overnight. Those decisions must be made now, and they must be reviewed continuously as part of our strategic planning efforts. ■

Readiness, Modernization, Motivation

BY GEN. LEW ALLEN, JR., USAF
CHIEF OF STAFF, UNITED STATES AIR FORCE

IN pictures and words this annual Almanac issue portrays the greatest Air Force in the world—one with an unmatched record of peacetime and wartime service. But what paper and ink cannot capture is the excellence of Air Force commanders and the spirit of Air Force people, whose daily efforts ensure US national security. Building this quality force took vision, commitment, and scarce national resources. Maintaining it requires these plus a thorough understanding of resource constraints and of growing threats to US national security.

Over the past fifteen years, Soviet military spending has exceeded that of the US by twenty-five to forty-five percent. Expanding within the bounds of arms-limitations agreements, the Soviets have gained ground. Their projected capabilities threaten the future survivability and effectiveness of Air Force ICBMs and bombers, our two legs of the strategic triad. And their steady gains in tactical air—quality and quantity—have increased their ability to attack NATO and other allies and to threaten US interests worldwide.

Meanwhile, after more than a decade of rising prices, the American people consider inflation the nation's most important problem. To reduce inflation the President has promulgated a broad antiinflation program that combines the efforts of both business and government. He has submitted to Congress a Fiscal Year 1980 budget that he described in his budget message as "lean and austere." Consistent with this theme, the President has proposed real cuts in a number of federal programs. But, recognizing the gravity of the growing Soviet threat, he has provided for three percent growth in defense outlays.

General Allen: ". . . maintaining a quality force requires more than increasing compensation."

The President has thus given a strong signal that national security and maintaining military equivalence with the Soviets have a very high priority. The Administration's strategy for achieving its national defense objectives is well documented. The United States will seek to negotiate equitable and verifiable arms-limitations agreements with the Soviets. We will also seek, together with our allies, to field forces sufficient in size and quality to meet Soviet military threats as they develop within the bounds of negotiated constraints.

Modernization and Readiness

For the Air Force, this strategy requires the achievement of force modernization and increased force readiness. It demands that we attend to making our tactical and strategic forces viable for the future and to reaching greater combat readiness today with the new and the veteran weapon systems we have on hand. Above all, it requires that the Air Force continue to recruit, train, and retain committed men and women—now and in the future. The Air Force must have top-quality people to accomplish its mission and must use them to maximum effect.

From its inception, the Air Force has sought and applied technology to achieve progress in both military strength and efficiency. We have favored quality and have improved efficiency as a result. But the technological sophistication required for this trade-off has cut two ways. As we have multiplied the effectiveness of individual combat crews, we have incurred some costs in terms of maintenance, training, and support required for successful employment of our forces. And as Soviet power increases, we must be cautious about limiting our quantitative strength too severely.

Recently we have moved toward greater quantity and simplicity by choosing systems like the A-10 and F-16 to complement our more sophisticated aircraft. Now we must ensure that all weapons in the inventory are provided with adequate funding for op-

The New Shape of Air Power

In each generation, one combat aircraft incorporates the full technology of the time and is known as the "fighter pilot's fighter." The Spitfire. The Mustang. The Sabre. The Phantom. Each delivered spectacular performance and each dominated the skies of its era.

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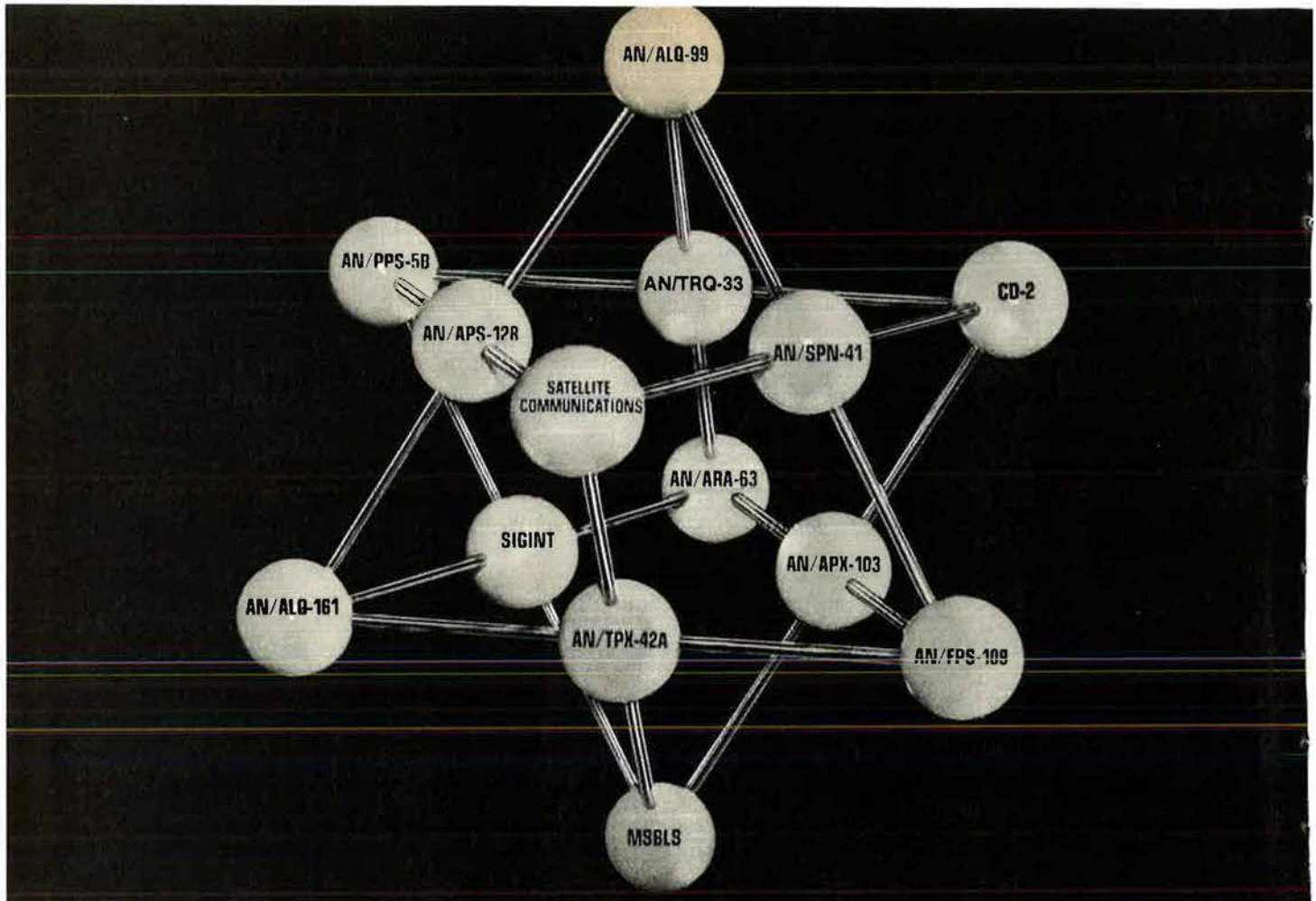
The F-16 is operational with the Belgian and United States Air Forces, and is scheduled to join the Air Forces of Denmark, The Netherlands, Norway and Israel. Like the pace-setting fighters of other generations, the F-16 will set the standard of multirole combat performance for years to come.

GENERAL DYNAMICS

Fort Worth Division, Fort Worth, Texas 76101



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erations, maintenance, and other essential support. Moreover, training must be rigorous and realistic so that crew members can exploit the full potential of their weapon systems.

To complement general-purpose force readiness, the Air Force must modernize its strategic forces. Projected Soviet gains in weapons quality and quantity will degrade the survivability and effectiveness of Air Force ICBMs and manned bombers. Unless this threat is countered, the essential equivalence provided by the triad will not be maintained, and the US will bear grave, unacceptable risks. To avoid these risks we will have to restore the viability of the ICBM with its unique characteristics and to provide improvements in the air-breathing element with its particular strengths. Modernizing these Air Force legs of the triad will be neither easy nor cheap. But it must be done.

Leadership and Motivation

Achieving both modernization and readiness demands careful attention to people. New systems, sortie surge exercises, and realistic training demand much of Air Force people. The mission will continue to come first, and the "needs of the Air Force" will at times mean hardship for airmen, NCOs, and officers. But to committed Air Force people there are great rewards, ranging from pride in national service to satisfaction in doing a necessary job extremely well.

The present economy, inflation, and the federal pay cap quite naturally draw members' attention to Air Force pay. Some perceive a decline in purchasing power and an erosion of benefits. And when Air Force members perceive there is a problem, there is a problem. The leadership of the Air Force is continually seeking to remedy inadequacies in the total compensation of Air Force members. Fortunately, there are many in the executive and legislative branches and many private citizens who understand and support these efforts.

Presenting the case for improved pay and benefits must be done accurately to point out genuine shortcomings that need to be remedied. It is vital that Air Force people understand this effort. But the effort must be a careful one that does not undermine the perceived advantages of present Air Force pay and benefits. It is most unfortunate to lose high-quality Air Force people who undervalue Air Force compensation and discover too late its real advantages. The Air Force cannot ignore the economics of pay and benefits but, especially in the short run, cannot match dollar for dollar the pay available for certain skilled people. Across the Air Force we must remind ourselves that pay has never been our chief motivator and that maintaining a quality force requires more than increasing compensation.

Last December, the Air Force failed to achieve its recruiting goal—its first monthly shortfall since the adoption of the All-Volunteer Force. The number of young people from which the Air Force has recruited high-quality airmen is shrinking and will continue to do so. Moreover, today's high employment economy and other factors have reduced the volunteer rate of these people. Given current antiinflation measures, simply bidding with higher pay for recruits is infeasible. Instead we must rely on higher forms of motivation to attract young people and to provide genuine career satisfaction for all Air Force people.

The attitudes of present and former Air Force members affect the decisions of potential recruits. Young people's perceptions of rewards in the Air Force come from neighbors, friends, and relatives who have served in the Air Force. Also important to the attitudes of young people are the esteem and recognition that American society accords to members of the Air Force. Of particular concern in a period of announced austerity but real defense growth will be the Air Force's use of its resources. Achieving readiness and modernization efficiently is an end in itself, but is also a means to recruit the kind of young people the Air Force will continue to require. The heart of Air Force motivation is being a part of a vital, exciting effort—ensuring the security of the United States.

The need to emphasize higher motivation applies as well to pilot retention. Certainly, airline hiring is a factor in the loss of pilots in the six- to eleven-year group. But it is a mistake to overemphasize the effect that pay has on the decisions of exiting pilots and other Air Force professionals. Frequently pay is not the chief issue in resignation. It is sometimes the frustration that accompanies readiness and modernization efforts. For others it is the stringency that accompanies efforts to get more out of the resources provided for mission accomplishment and training. At many levels we are studying pilot—and other—retention problems. There are no easy solutions. The vast majority of pilots did not choose the Air Force primarily for economic reasons. We must recognize their basic motivations and desires and work to improve their pride and satisfaction in service.

Soviet threats to the US national security are real and growing, requiring heightened readiness and modernization. Attaining these goals requires highly productive Air Force people, motivated by being part of a vital undertaking. Such motivation results from the exercise of enthusiastic, committed leadership—like that provided by those now in command positions throughout the Air Force.

But this motivation cannot be taken for granted. It requires continuous vigilance. Members of our quality force came out of American society to provide security for it. Their monetary compensation must at all times provide the dignity of a reasonable standard of living. But, more importantly, Air Force service must provide satisfaction commensurate with the high motives such people bring to the Air Force. ■

Gen. Lew Allen, Jr., graduated from the US Military Academy in 1946 and, after pilot training, was assigned to SAC as a bomber pilot. In 1954, he earned a doctorate in nuclear physics, followed by seven years' duty in the nuclear weapons area. From 1961 to 1971, General Allen served in a variety of assignments associated with space systems. From 1973 to 1977, he was Director of the National Security Agency, and from August 1977 to April 1978, when he was named Air Force Vice Chief of Staff, he commanded Air Force Systems Command. On July 1, 1978, General Allen became USAF's tenth Chief of Staff.

USAF's Future: The Challenge Is Yours

BY ROBERT D. GAYLOR
CHIEF MASTER SERGEANT OF THE AIR FORCE

IT isn't easy to accept the fact that my Air Force career is careening toward completion this summer—especially when I so vividly recall my induction almost thirty-one years ago and thousands of "over-the-years" memories that seem to have happened only yesterday. Even the frustrations and goofs of the past, not funny then, now evoke laughter.

But some serious points need to be made. For example, the good old days were not always all that good. Believe me, we had our share of problems and irritations then as we do now. The old style of leadership we now tend to renounce had some tremendous virtues. I wince when I hear criticism of "brown-shoe days." We had some disciplines in those days we would do well to copy today. If those of you who are leaders in the Air Force today, or will be in the future, can just manage to do as well as our great leaders of the past, the force will be in great shape. And if you lead more effectively, that's better still. The challenge is yours. And here is my warning to you in a nutshell. You had better not mess up my Air Force!

When you review the charter of the Air Force during its thirty-two years of existence as a separate service, you will find no change in its goal. Simply put, it is to position thousands of trained men and women and their equipment strategically throughout the world to protect freedom and promote peace. The headlines blared "Berlin" in the late '40s, "Korea" in the '50s, "Southeast Asia" in the '60s, "Europe" in the '70s. But always the Air Force was there—responsive and prepared. Today we have airmen in locations that even other airmen have never heard of. Carrying out the Air Force charter has always been a massive undertaking, and it will continue to be. To understand its scope is to appreciate what our Air Force does.

For Bob Gaylor, it began in 1948. After thirteen weeks of basic training at Lackland AFB (can you imagine thirteen weeks, airman?) it was on to Waco AFB, Tex., and the security police career field. It was not uncommon then to receive your career field assignment after you arrived at your first permanent duty assignment—not prior to leaving Lackland.

Chief Gaylor: "And here is my warning to you in a nutshell. You had better not mess up my Air Force!"

There were no off-duty education programs or PME opportunities, few technical schools. We lived in open-bay barracks, ate in mess halls, reported for pay, received our uniforms from squadron supply, shined our collar brass, and had "GI parties." Payday was the one big day of the month. If an airman was married, his wife got part of his pay in a monthly allotment check—in her name. Only she could cash it. We ate on six-compartment metal trays in the mess hall. And then got to wash them on "KP." See what you missed, airmen of today?

But we also had teamwork, discipline, high morale, and solid leadership. We did our jobs—got promoted—went PCS and TDY. And some went AWOL, some received an Article 104—the forerunner of today's Article 15.

We griped—like all good airmen do. And just as in today's force, attitudes were a personal choice; integrity was an individual attribute. I took part in the transition from Army OD and khaki to Air Force blue. From corporal to airman first class. And believe me, it was a day of pride. My Air Force became autonomous. The service became my life.

In many respects, the good old days *were* the good old days. Parking spaces were always available—only a few had cars. The base movie was 25¢.

But most impressive have been the changes—the progression. Dormitories replaced barracks, rooms replaced open bays. Dining halls and plates bumped mess halls and trays. Paychecks direct to the bank put paylines in history. Pay increases enabled airmen to buy cars, stereo sets, homes, motorcycles. One could even afford to get married.

Equipment and technological advances have resembled free substitutions in a basketball game. Jeeps out—staff cars in. B-29 bomber out—FB-111 in. P-51 out—F-15 in. Carbine out—M-16 in. The list is interminable. I can't think of a piece of equipment we use today that we used in 1948.

The key word became education. The Air Force has always attracted educated people, and it now gives them a chance to continue their education. The result has been a qualified force, a trainable person, a skilled professional.

Similarities between 1948 and 1979? Sure! We had noncommissioned officers then who failed to accept their responsibilities; we have some now. We had violators of rules and regulations then; we have some now. We had people who chose not to accept the Air Force way of life as a total package; we have some now. I accept the fact that when you assemble more than half a million people, you will have all kinds.

In 1994, 1979 will be the good old days. And you may laugh then at the life styles now. The frustrations of today will be replaced by new frustrations. Who knows? We may even have to order male airmen to let their hair grow.

But I'll tell you one thing. You had better continue to improve, and try new things, and make the Air Force better or my old buddies and I will haunt you. We made the Air Force what it is today. We made it a better place for you to work, play, live, and do your thing. And I warn you: You had better not mess up my Air Force! If you accept the fact it is also YOUR Air Force, then I am satisfied our security is in good hands. ■

Chief Master Sergeant of the Air Force Robert D. Gaylor will retire this summer after thirty-one years' service in the Air Force. Much of Chief Gaylor's career has been in the security police field and as an instructor, with overseas tours in Korea, Japan, and Thailand. He is an honor graduate of the SAC NCO Academy and in 1972 established the USAF Command Management/Leadership Center in Europe. He became the fifth Chief Master Sergeant of the Air Force in August 1977.

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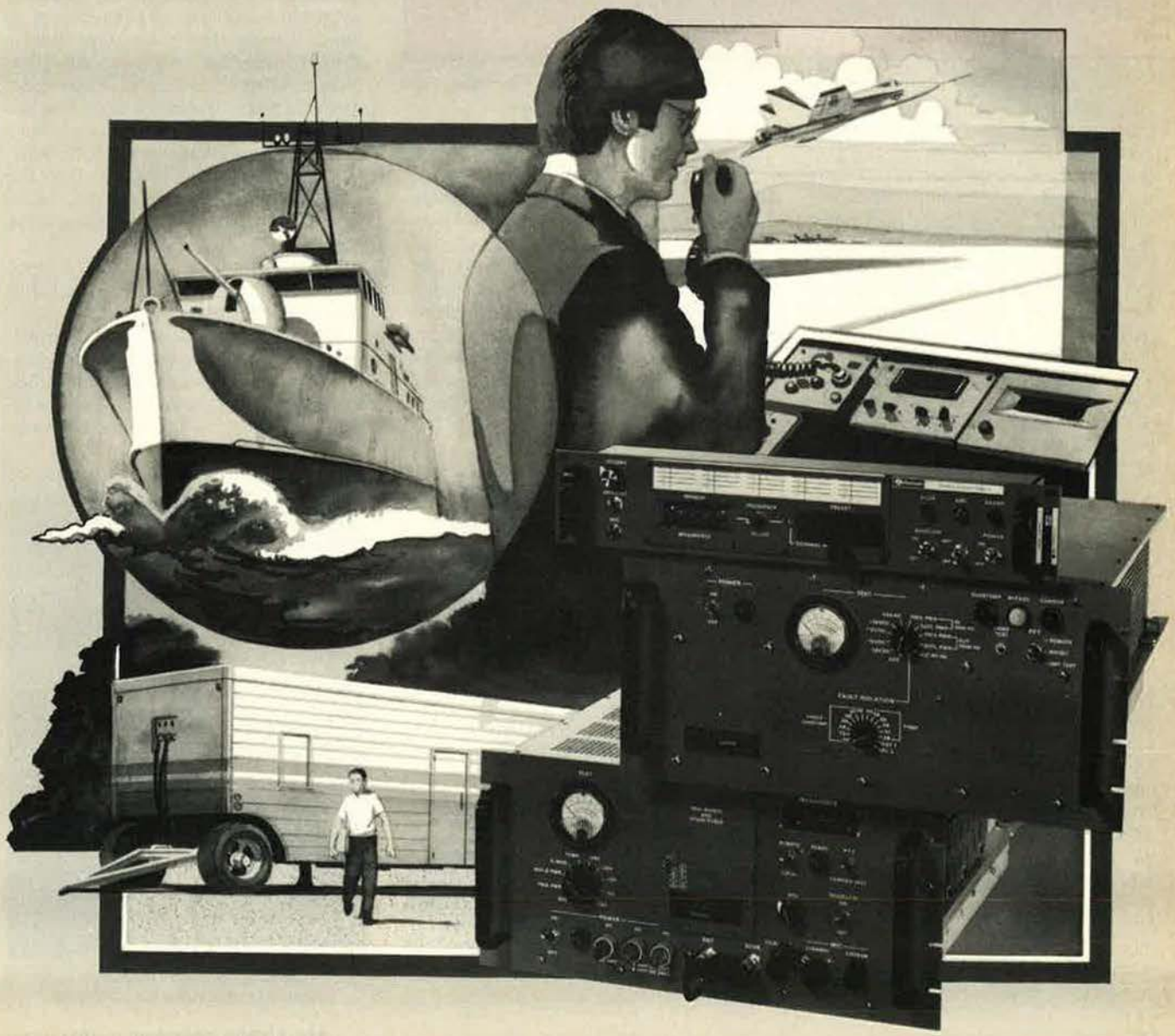


A MAJOR COMMAND

Aerospace Defense Command

AEROSPACE DEFENSE REALIGNMENT

On March 29, the Air Force announced the forthcoming inactivation of ADCOM as an Air Force major command. Management of active Air Force interceptor units and ground-based air-defense radars and control centers will be transferred to Tactical Air Command; management of space surveillance and missile warning field resources to Strategic Air Command; and management of communication resources to Air Force Communications Service. Transfer of responsibilities will begin in the summer of 1979 and continue over an estimated eighteen months.

Operational control of strategic air defense and space surveillance and missile warning assets will remain with the Commander in Chief of the joint US-Canadian North American Air Defense Command, who also is CINC of the US *specified* Aerospace Defense Command and commander of the USAF ADCOM. Transfer actions concern only the last named command and only the management of its forces.

Over the past thirty-three years, the Aerospace Defense Command (ADCOM) has changed from a predominantly US-based bomber defense force to a worldwide organization whose responsibilities extend into space. Today, ADCOM, an Air Force major command, is the principal component of the US Specified Aerospace Defense Command and of the binational North American Air Defense Command (NORAD).

All ADCOM forces are under the operational control of the Commander in Chief of NORAD (CINCNORAD), Gen. James E. Hill, who also commands ADCOM Specified Command and ADCOM Major Command.

ADCOM is currently authorized 21,500 military and 4,200 civilian Air Force personnel at some 200 missile warning sites, satellite tracking stations, fighter bases, command and control centers, and radar outposts throughout the world.

Strategic attack warning is a key to US deterrent policy, and ADCOM provides CINCNORAD a variety of global surveillance and missile warning systems. Initial warning of a ballistic missile launch would be given by satellites, then verified by Ballistic Missile Early Warning System (BMEWS) radars. The giant radars of the three BMEWS sites produce an electronic warning net covering the polar approaches to North America and provide up to twenty-five minutes' warning of an intercontinental ballistic missile (ICBM) attack. Other radars along both coasts of the continental US can warn of a submarine-launched ballistic missile (SLBM) attack.

ADCOM continues to maintain interceptors, radar sites, and command and control facilities to monitor NORAD air sovereignty and to provide a limited defense against manned bombers. Air defense interceptors are organized in six active-duty and five Air National Guard (ANG) F-106 Delta Dart squadrons, three ANG F-101 Voodoo squadrons, and two ANG F-4 Phantom squadrons. The command also has a squadron of F-4s in Iceland and two squadrons of EB-57 Canberras, one active duty (to be deactivated) and one ANG.

The newest of ADCOM's missions is "space defense." With the increasing military reliance on satellites and Soviet development of an antisatellite capability, the importance of ADCOM's Space Defense Center has grown. While ADCOM has no "space-defense" function in terms of combat outside the earth's atmosphere, the Center analyzes data from a worldwide system of sensors to catalog man-made orbiting objects and to forecast when and where they will reenter the earth's atmosphere. There are some 4,600 objects in the space inventory, and ADCOM analysts forecast the figure will rise to more than 10,000 by 1985.

ADCOM has several programs under way to improve its capabilities in all mission areas. Since warning time for a submarine-launched ballistic missile attack is considerably less than that for ICBMs, two new and more effective phased-array radars called Pave Paws are scheduled to replace five of the six radars in an older conventional system. The Pave Paws sites are at Otis AFB, Mass., and Beale AFB, Calif. The Otis site will be operational in mid-1979, while the Beale site is scheduled to be completed in 1980.

More modern computers and control panels will enhance BMEWS's ICBM detection capability.

In the area of atmospheric defense, progress is well under way on converting to a Joint Surveillance System (JSS) that will result in a joint Federal Aviation Administration (FAA) and military radar

Gen. James E. Hill, CINC, Aerospace Defense Command.

CMSgt. Wesley H. Skinner, Senior Enlisted Advisor, ADCOM.

Scopes in ADCOM's Combat Operations Center show the status of aerospace defense systems.

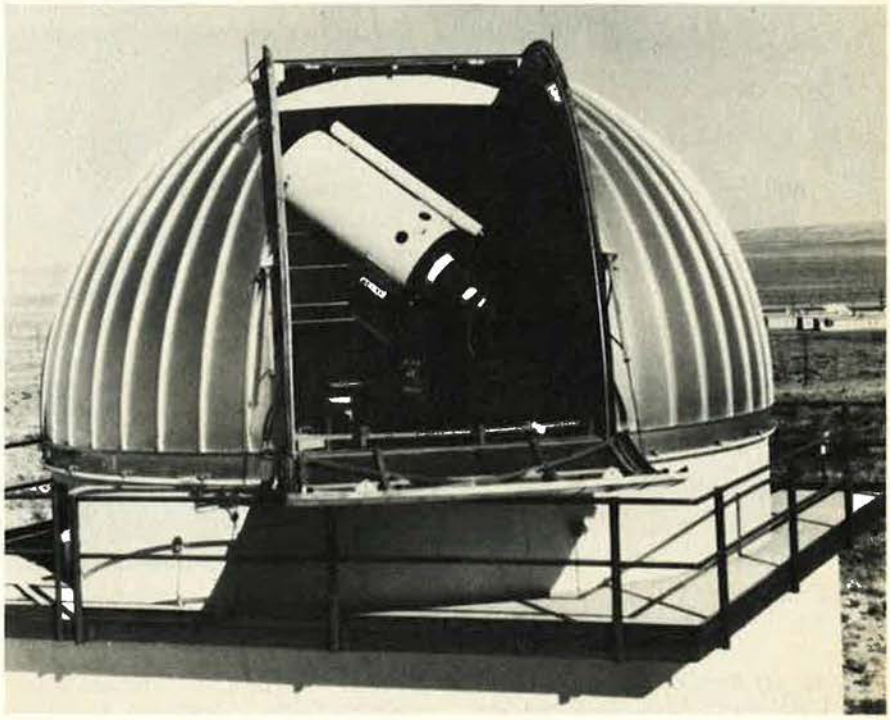
will enable ADCOM to keep up with the expanding number of objects in space. For example, the Ground-based Electro-Optical Deep Space Surveillance (GEODSS) system currently under development will combine a sophisticated telescope with electro-optics, television, and a digital computer to speed space object identification and tracking. Full operational capability is expected in the early 1980s. ■

network. Plans call for deactivating twenty-eight ADCOM radar sites, transferring fourteen others to FAA, entering into joint use with FAA at twenty-two of its radar sites, and operating only nine military radar facilities. Also, the six existing Region Control Centers will be replaced by four Region Operations Control Centers (ROCCs) by 1983.

JSS/ROCC is primarily a peacetime system. In the event of war, surveillance and command and control functions would shift to Tactical Air Command's E-3A Sentry aircraft, which entered continental United States air defense operations early this year.

Research and development also are continuing on an over-the-horizon backscatter (OTH-B) radar system. Plans call for developing East and West Coast sites by the mid-1980s, and adding a third site in the South later. This system is expected to extend aircraft detection and tracking capability from the present 200-mile coverage to ranges in excess of 1,000 miles.

Several improvements are under way in space defense. Programmed improvements in space tracking sensors



The five-station Ground-based Electro-Optical Deep Space Surveillance system for nighttime surveillance will be fully operational in the early 1980s.

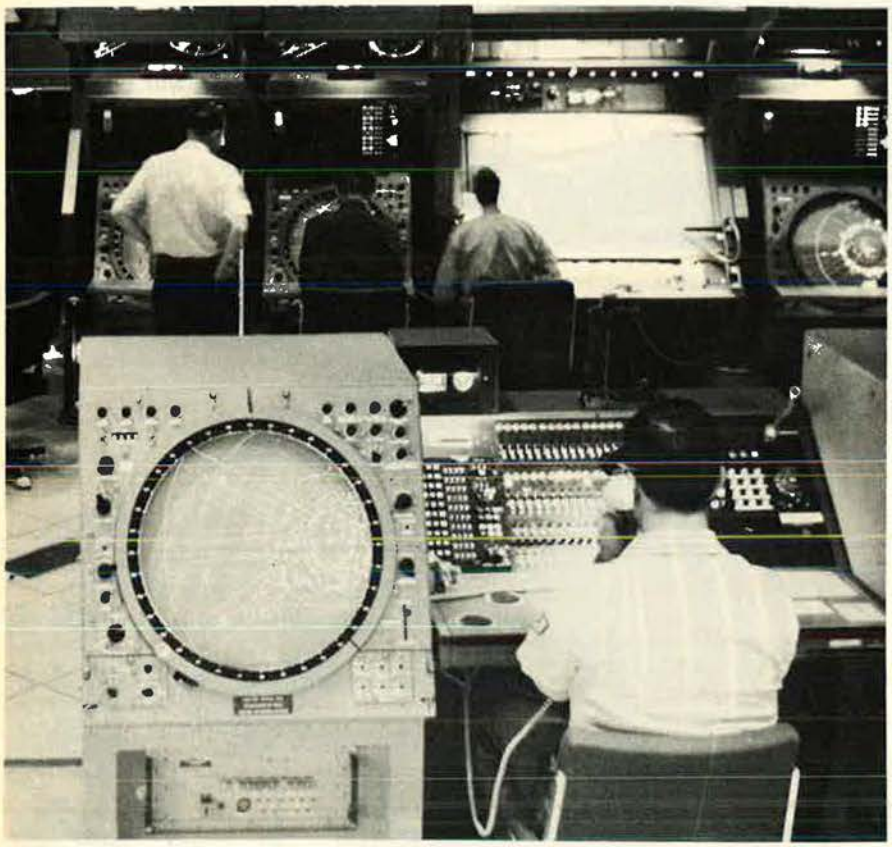
AEROSPACE DEFENSE COMMAND

Headquarters, Peterson AFB, Colo.

Commander in Chief
Gen. James E. Hill

- **Combat Operations Center**, Cheyenne Mountain Complex, Colo.
- **20th Air Division**, Ft. Lee AFS, Va.
- **21st Air Division**, Hancock Field, N.
- **23d Air Division**, Duluth IAP, Minn.
- **Alaskan ADCOM Region**, Elmendorf AFB, Alaska
- **24th Air Division**, Malmstrom AFB, Mont.
- **25th Air Division**, McChord AFB, Wash.
- **26th Air Division**, Luke AFB, Ariz.
- **Air Defense Weapons Center**, Tyndall AFB, Fla.
- **Air Forces Iceland**, Keflavik, Iceland
- **46th Aerospace Defense Wing**, Peterson AFB, Colo.
- **14th Missile Warning Squadron**, MacDill AFB, Fla.
- **4754th Radar Evaluation Squadron**, Hill AFB, Utah
- **425th Munitions Support Squadron**, Peterson AFB, Colo.
- **10th Aerospace Defense Squadron**, Vandenberg AFB, Calif.

Air Force Communications Service



AFCS air traffic controllers operate the Berlin Air Route Traffic Control Center, which controls all civilian and military aircraft flying into Berlin.

Advanced technology—computers, solid-state electronics, and geosynchronous satellites—have enhanced Air Force Communications Service's capabilities, but AFCS people dominate the command's accomplishments.

Some 48,000 officers, airmen, and civilians provide a full range of communications, data automation, and air traffic control services to Air Force and selected Defense and federal agencies around the world. Their tasks include planning, programming, engineering, installing, operating, and maintaining communications, standard software systems, and air traffic control facilities.

AFCS is the most widely dispersed Air Force command, with units at more than 400 locations around the world, including forty-nine of the fifty states and the District of Columbia. No AFCS units are based in Vermont. Unlike other major commands, AFCS has no assigned bases, but operates as a tenant at Air Force installations.

The worldwide AFCS mission means one-third of the work force is always located overseas. About 1,500 AFCS personnel are assigned in remote areas in Korea, Turkey, Greenland, and other countries.

The Total Force policy is a reality in AFCS. Air National Guard and Air Force Reserve personnel performed jobs that saved more than $7 million for the command and the Air Force last year. One half-million man-hours came from 187 ANG/AFRES units involved in communications operations and maintenance, engineering and installation, air traffic control, and combat communications.

When the Air Force's global mission requires forces to move to parts of the world where communications and air traffic control facilities are inadequate or nonexistent, AFCS's mobile and transportable equipment is moved with those forces to provide essential communications and air traffic control support immediately.

An average of 400 engineering and installation teams are available to the command for worldwide deployment. About seventy percent of these teams are on the road at any one time. The average technician spends from 200 to 250 days each year on temporary duty away from home.

AFCS is in "operational contact" with an Air Force aircraft every second of every day, be it a request for takeoff, clearance to cross an active runway, or instructions to aircraft landing in marginal weather conditions. More than 12,000,000 aircraft contacts were made last year.

Air Force Communications Service air traffic controllers saved 238 people aboard eighty-two aircraft during 1978. Some 101 controllers received recognition either for warning pilots of dangerous situations or guiding distressed

Maj. Gen. Robert E. Sadler, Commander, AFCS.

CMSgt. Earl E. Dorris, Senior Enlisted Advisor, AFCS.

aircraft to safe landings with radar or visual assistance.

Involved in the "saves" were thirty-six military aircraft carrying ninety-eight people and forty-six civilian aircraft carrying 140 passengers. The aircraft saved were valued at more than $109.5 million.

AFCS has four C-140As and two T-39s for AFCS facility checking squadrons to use in evaluating communications and navigation aids at Air Force bases. These squadrons work in the air and on the ground, evaluating landing systems, navigational aids, radar approach controllers, and tower operators.

On June 30, 1978, the seventeenth birthday of AFCS, the field activities of both the Air Force Data Automation Agency and the AFCS Communications Computer Programming Center at Tinker AFB, Okla., were realigned under the new Deputy Commander for Data Automation. Three units—the Air Force Data Systems Design Center, the Air Force Data Systems Evaluation Center, and the Phase IV Program Management Office—are located at Gunter AFS, Ala. The other three units are the Air Force Computer Acquisition Center, Hanscom AFB, Mass.; the Air Force Data Services Center at the Pentagon; and the Federal Computer Performance Evaluation and Simulation Center, Alexandria, Va.

AFCS in 1978 assumed responsibility for the flight standards division of the disestablished Air Force Instrument Flight Center. This transfer made AFCS responsible for representing the Defense Department before the International Civil Aviation Organization obstacle clearance panel; reviewing instrument procedure waivers; developing terminal instrument procedure criteria; collecting and validating flight information data; and developing criteria to prepare instrument approach and departure procedures for NATO.

AFCS last year was designated the technical evaluator and audit trail monitor for a Joint Chiefs of Staff program involving a study to consolidate telecommunications centers at fifty-seven locations. The program studies automating equipment with the aim of achieving cost savings and also providing services not available at many locations.

Other former Air Staff functions scheduled for transfer to AFCS during Fiscal Year 1979 include: responsibility for the command control and communications programming plan for the Air Force; managing the communications-electronics officer education and training conference; monitoring requests for special-purpose and leased circuits and networks; and preparing statements of need and base wire processing in the Air Force Dial Central Office program.

AFCS also has assumed increased responsibilities in communications support for automated data processing, maintenance consolidations, Automatic Voice Network (AUTOVON), Automatic Digital Network (AUTODIN), Dial Central Office, the Air Force-assigned or -owned portions of the Defense Communications System long-haul communications, and telecommunications center consolidations.

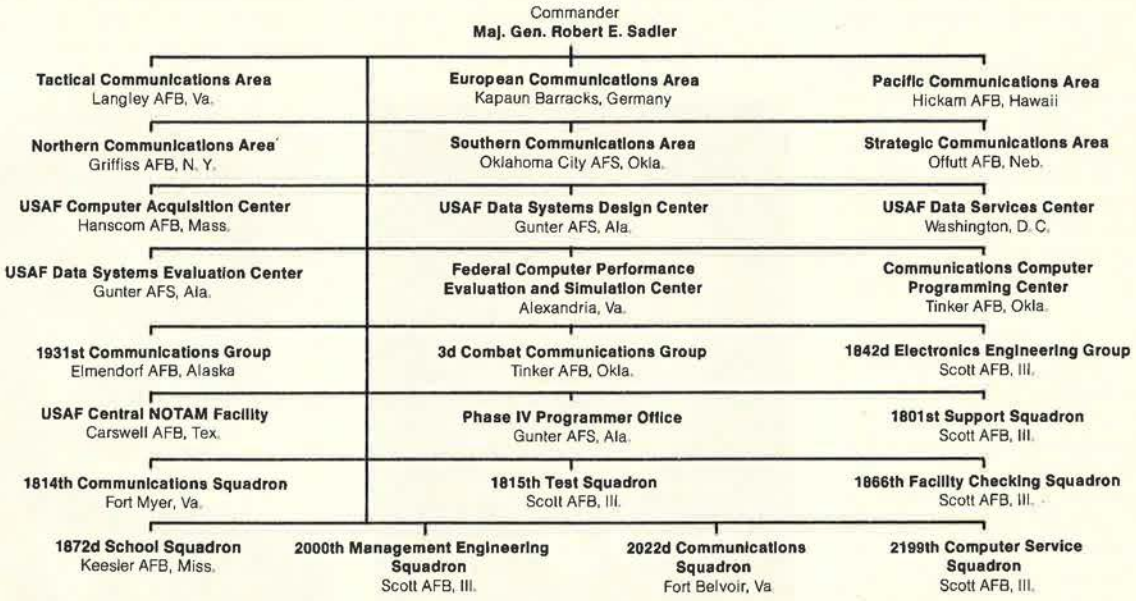
AFCS is the manager of the USAF Automated Telecommunications Program, which uses computer technology to improve the efficiency and economy of base telecommunications centers. The command is presently deploying new minicomputer Automated Message Processing Exchanges (AMPE) to modernize eight large telecommunications centers. Optical Character Reader equipment is to be deployed to some thirty locations by 1982. A follow-on AMPE program is being developed to support the Defense Communications Agency (DCA) Integrated AUTODIN System, which will deploy automated equipment to nearly all USAF telecommunications centers by 1986.

Over the next fifteen years, AFCS plans to replace many aging electromechanical telephone central offices with standardized digital systems. Authorization is being sought to replace the facilities at sixteen bases within the next five years.

With the changes currently taking place and those planned, AFCS will continue to "Provide the Reins of Command." ■

AIR FORCE COMMUNICATIONS SERVICE

Headquarters, Scott AFB, Ill.



A MAJOR COMMAND

Air Force Logistics Command

AFLC's Oklahoma City Air Logistics Center supports USAF's fleet of A-7Ds. This is part of the A-7D depot maintenance line at the Tinker AFB facility.

During 1978, Air Force Logistics Command (AFLC) reassessed and redirected several aspects of its operations toward the increasingly complex management challenges of the next decade. The command's attention—paced by the current nature of defense spending—has shifted to maintainability and availability.

The AFLC Commander, Gen. Bryce Poe II, said recently: "In the past we have become expert in the management of shortages. This year we should work harder at determining priorities, eliminating shortages in the programs that are key to our mission by deleting systems that drain resources without comparable contributions to readiness."

AFLC's Air Force Acquisition Logistics Division (AFALD) has made great progress in influencing the design and development of new systems to increase supportability and readiness and to reduce operating costs.

Better teamwork became a theme as joint AFLC and Air Force Systems Command (AFSC) staff offices balanced performance, budgets, and life-cycle costs against projected defense needs. AFALD and AFSC's Aeronautical Systems Division (ASD) jointly completed source selection for the new KC-10 tanker and awarded contracts to McDonnell Douglas that include all logistics support except flight-line maintenance. Aggressive action lowered the initial unit cost of the KC-10 by $9 million and cut life-cycle support costs by one fourth.

Other AFALD initiatives standardized avionics equipment and component design and use, and continued cooperation with other Air Force organizations in the Productivity, Reliability, Availability, and Maintainability (PRAM) areas to improve existing systems.

AFLC recently created an Office of Productivity, formed a command energy panel, began establishing an aircraft battle-damage repair program, expanded its War Reserve Materiel Program, reestablished an intelligence capability, and initiated a study to determine the ability of the contractor-depot maintenance industrial base to meet a potential wartime surge.

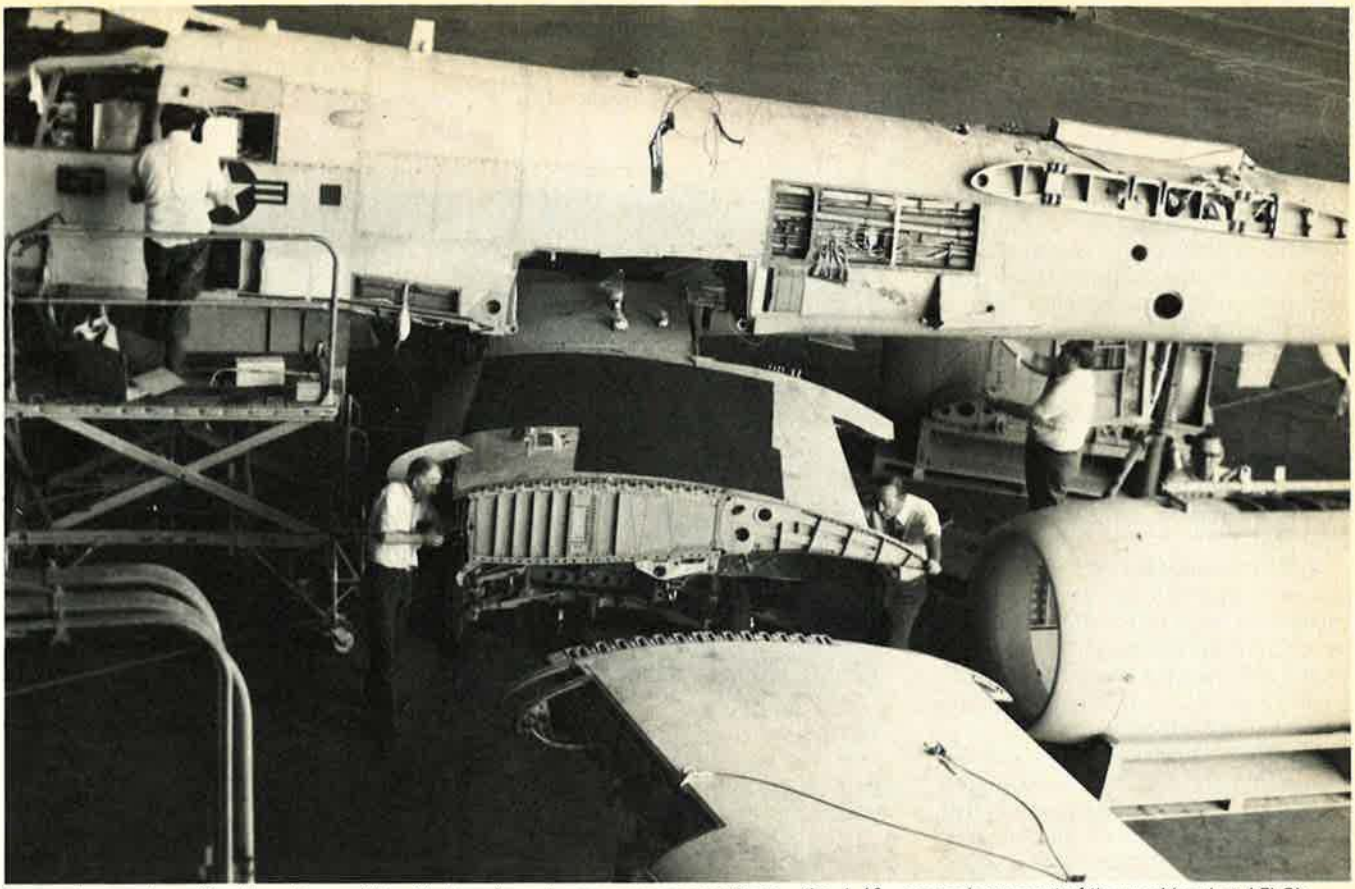
The command is now supporting some 40,000 weapon system computers that use 110,000 different programs. A substantial workload is shifting from repairing hardware to software support. Providing software changes and improvements to Air Force operational requirements has become AFLC's greatest logistics challenge.

The command's maintenance work force repaired more than 1,500,000 items last year and processed more than 4,100 aircraft through its five logistics centers and contractors for depot maintenance, inspection, or modification.

The command provided a variety of support to sixty-two countries under the DoD Security Assistance Program. A management initiative in this connection was the establishment of the International Logistics Center to oversee international logistics programs and provide better service to customer

Gen. Bryce Poe II, Commander, AFLC.

CMSgt. Robert E. Rogers, Senior Enlisted Advisor, AFLC.



Inspection and modification of one of the Air Force's major new weapon systems—the A-10—was a large part of the workload at AFLC's Sacramento Air Logistics Center, McClellan AFB, Calif., during 1978.

countries. At the end of 1978, AFLC had more than $6.5 billion in new and prior-year foreign military sales of goods and services yet to be delivered.

AFLC managed more than $14 billion in 1978, including the command's $6 billion appropriated budget (about a fifth of the total Air Force budget), stock and industrial funds of about $5.5 billion, and a $2 billion international logistics program.

More than $5 billion was obligated by AFLC through some 500,000 contract actions, and minority business enterprises received $37 million in contract awards.

Two major energy projects were initiated during 1978. The base energy audit program has identified energy conservation retrofit projects amounting to $10 million. In addition, McClellan AFB, Calif., was chosen as the Air Force's "showcase" base for a joint DoD/Department of Energy effort to encourage new and innovative energy-saving technologies.

AFLC has participated for twelve years in the Joint Logistics Commanders' organization. Meeting at least four times a year, the commanders of AFSC, the US Army Materiel Development and Readiness Command, the Naval Material Command, and AFLC work to reduce overall costs and improve logistics readiness.

On January 31, 1979, AFLC's military and civilian work force of 90,698 was about ninety percent civilian, a ratio attributed to the industrial nature of the command's mission. Twenty-six percent of the force was women and twenty-three percent minorities. ■

AIR FORCE LOGISTICS COMMAND

Headquarters, Wright-Patterson AFB, Ohio

Commander
Gen. Bryce Poe II

- **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.
- **AFLC International Logistics 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
- **Air Force Acquisition Logistics Division** — Wright-Patterson AFB, Ohio
- **Air Force Museum** — Wright-Patterson AFB, Ohio
- **2750th Air Base Wing** — Wright-Patterson AFB, Ohio

A MAJOR COMMAND

Air Force Systems Command

The mission of Air Force Systems Command (AFSC) is to advance aerospace technology and to adapt it into logistically supportable, cost-effective aerospace systems. It is responsible for the design, construction, and purchase of weapons and military equipment for Air Force operational and support commands, involving more than 200 programs that include such areas as command control and communications, space satellites, strategic and tactical aircraft, and missiles.

AFSC's budget for FY '79 was $14.0 billion, or approximately thirty-two percent of the total Air Force budget. Systems Command manages resources at nearly 200 installations throughout the United States and overseas, valued at more than $2 billion.

The command's projected manpower for FY '79 is approximately 52,400 people—fifty-one percent civilians, nineteen percent officers, and thirty percent enlisted.

More than sixty percent of AFSC's budget goes to acquisition of weapon systems under manufacture, with that figure estimated to approach sixty-six percent next year. The command, therefore, continues to emphasize new initiatives in the management and technology areas.

Among the initiatives are independent manufacturing assessments, usually conducted by five-man teams from Hq. AFSC. These assessments examine selected programs to ensure they are ready to enter production.

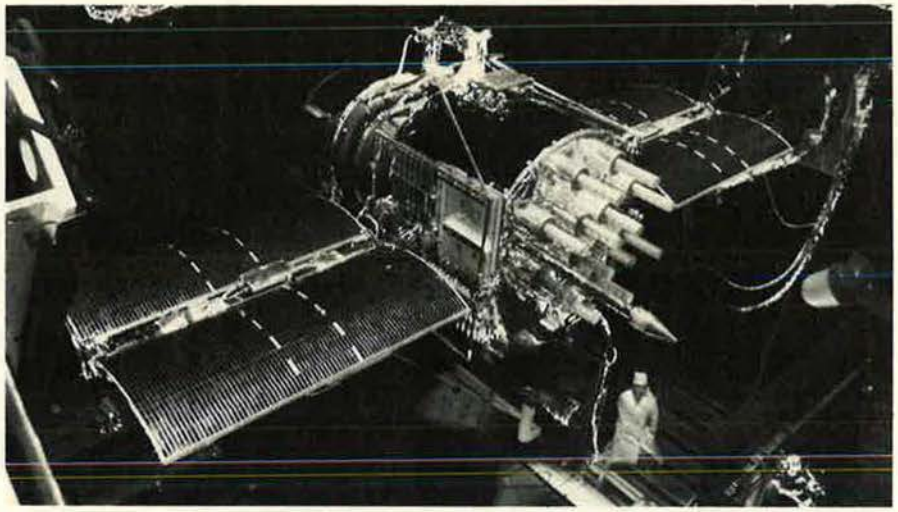
AFSC established a focal point within the command to identify and promote sound acquisition practices by avoiding repetition of past mistakes.

Announced early last year, a work measurements standards implementation system has now been incorporated into at least one contract by almost every major aerospace contractor. The objective of these standards is to achieve improved productivity and efficiency in contractor manufacturing.

Major improvements are under way in five important areas of contracting and manufacturing. They include: increased competition among contractors for Air Force contracts, better selection of contractors with greater emphasis on past performance, stronger contractual incentives, expanded emphasis on manufacturing, and continued support of minority business programs.

The manufacturing technology program is also receiving considerable emphasis. The Air Force Materials Laboratory at Wright-Patterson AFB, Ohio, manages the program, which develops and applies new manufacturing technologies to solve production problems on Air Force weapons.

This program also includes Integrated Computer-Aided Manufacturing (ICAM), which addresses computer integration into all manufacturing activities from the shop floor through automated process planning. A major program using ICAM is the Air-Launched Cruise Missile (ALCM), where significant cost savings can be achieved by establishing new manufacturing technology early in the life cycle of the air-launched missile.



A NAVSTAR Global Positioning System satellite undergoing tests at Arnold AFS, Tenn. The system is designed to provide pinpoint navigation accuracy.

Technological advances in 1978 included:

- The High Enthalpy Ablation Test (HEAT) facility was opened at Arnold AFS, Tenn. It is the first facility to duplicate the extreme temperatures and pressure experienced by a reentry vehicle. The facility uses a multimegawatt arc heater to generate a supersonic stream of 10,000-degree air to the test specimen.
- AFSC's Aero Propulsion Laboratory at Wright-Patterson AFB began operating the most modern sea-level jet engine research test facility in the Air Force.
- Early this year, the Air Force was

Gen. Alton D. Slay, Commander, AFSC.

CMSgt. Arthur L. Andrews, Senior Enlisted Advisor, AFSC.

scheduled to take delivery of its first magnetic bubble memory system. It stores binary information (bits) of ones and zeroes as the presence or absence of "magnetic bubbles" in a magnetic film on a garnet "chip." The first memory systems will store 15,000,000 bits of information.

• A new technique to photograph fluorescein, a solution that will emit a fluorescent light after injection into a person's vein, is believed to be a first. The technique is expected to have great value for surgeons in verifying that "live" skin was used in skin or muscle transpositions.

The following were among AFSC's most significant events and achievements in 1978:

• Management of the Air Force air- and ground-launched cruise missile programs was reassigned from AFSC to the DoD's Joint Air Force/Navy Cruise Missiles Projects Office. The move centralizes program management until the programs have successfully passed key decision points, when the air- and ground-launched programs will return to AFSC.

• In a related development, three study contracts were awarded for the concept and system definition phase of the Air Force Cruise Missile Carrier Aircraft (CMCA) program.

• The first production F-16 Air Combat Aircraft rolled off the assembly line in 1978, marking the beginning of a production cycle during which the Air Force plans to buy some 1,388 of the aircraft. Additional F-16s are being coproduced and purchased by Belgium, Denmark, the Netherlands, and Norway. Formal F-16 acceptance ceremonies were held earlier this year at Hill AFB, Utah, and in Belgium.

• Production of the F-15 Eagle air-superiority fighter continued. More than 100 have now been assigned to TAC. In late 1978, AFSC accepted three production models for follow-on development test and evaluation related to weapon systems, with four more to be delivered this year.

• Culminating nearly eight years of successful development work, the E-3A Airborne Warning and Control System (AWACS) achieved initial operational capability (IOC) in early 1978. Efforts are now under way to procure eighteen aircraft for the multinational NATO program.

• The Air Force and NASA unveiled a highly maneuverable aircraft technology (HiMAT) research vehicle that could be the basis for fighter design of the 1990s. One-third the scale of most fighter aircraft, it will travel at transonic speeds (700 to 780 miles per hour). It is the first research vehicle anywhere to fly with an aeroelastically tailored composite lifting surface, which enables composite materials to control bending and twisting under load.

• The imaging infrared Maverick tactical missile entered full-scale development.

• Acquisition of the GBU-15 modular glide weapon system reached another milestone with the completion of the cruciform wing weapon's (CWW) development and initial operational test and evaluation program.

• Construction on three MX intercontinental ballistic missile test trenches began during the year and initial land screening for potentially suitable MX development sites was planned in the continental United States. The Boeing Co. and Martin Marietta have successfully demonstrated the operation of an MX missile trench breakout and erection mechanism.

• In June 1978, integrating the Inertial Upper Stage (IUS) with the Titan III booster was approved. This program is expected to provide improvement in reliability over the current Titan III configurations. It will be the most cost-effective way of backing up Space Shuttle launches of critical DoD satellites through the Space Shuttle transition period.

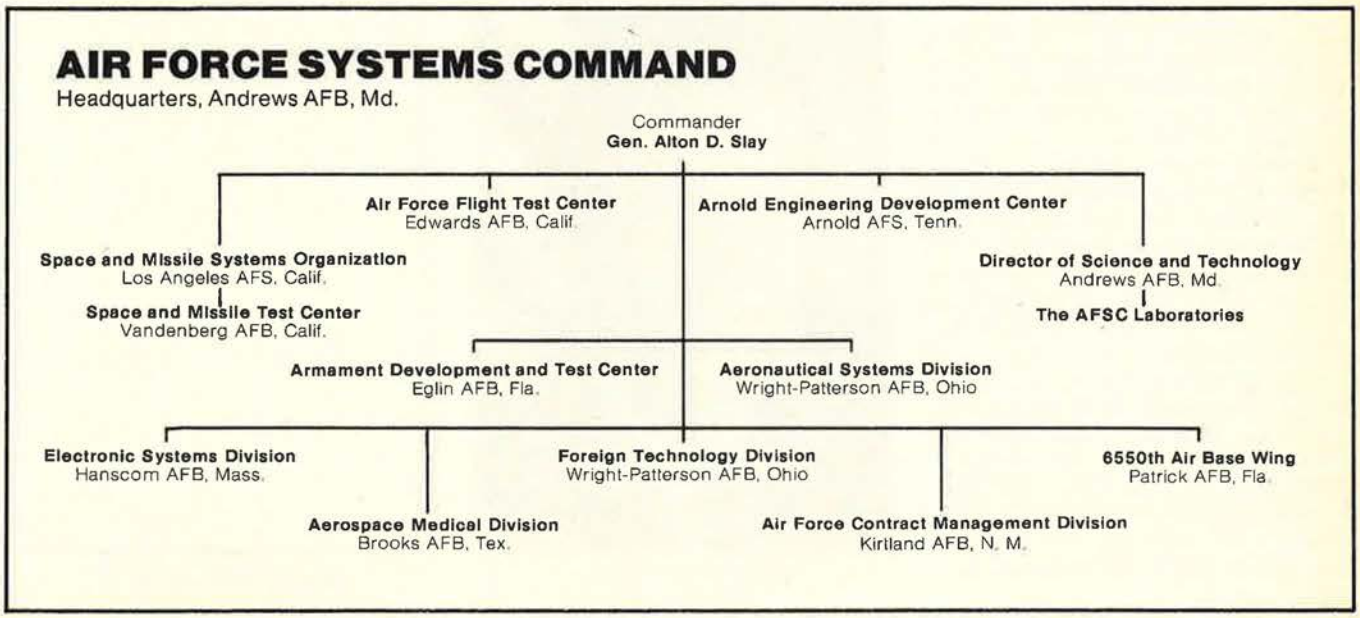
• A contract was awarded for full-scale development and initial production of the IUS vehicle system, designed to transport satellites from low earth orbits obtainable by the Space Shuttle to high-energy orbits or interplanetary trajectories.

• Two Defense Satellite Communications Systems (DSCS) satellites were launched in December. After completing initial on-orbit tests, both will join the operational DSCS constellation to help provide worldwide satellite capability for the Defense Communications System.

• Four satellites in the NAVSTAR Global Positioning System (GPS) have been launched and are in operation. A full-scale engineering and development decision is expected in May 1979. When the system is completed in the mid-1980s, its twenty-four satellites will permit military aircraft, ships, and ground units to determine their positions in three dimensions to within ten meters in all weather conditions.

• Ground tests have been conducted on a prototype laser communications (LASCOM) system that could be used in space to transfer data from satellite to satellite as well as to and from ground and airborne users. The test series on the system is expected to be completed in 1980.

Every AFSC program is designed to strengthen the means of acquiring the most effective aerospace weapon systems to assure continuing readiness of the United States Air Force. ■



A MAJOR COMMAND

Air Training Command

Air Training Command (ATC), with headquarters at Randolph AFB, Tex., is responsible for Air Force recruiting; basic, technical, and flying training; professional military education; and other specialized education.

With a force of more than 110,000, an annual budget of $1.6 billion, and $4.4 billion in assets, ATC conducts training and education programs at fifteen major installations in the US and more than 257 operating locations throughout the world. These operating locations include field training, Reserve Officer Training Corps detachments, and other training units.

In 1978, more than 69,000 students completed basic military training, 145,000 graduated from 2,900 resident and nonresident technical training courses, and 139,000 attended some 780 field training courses. More than ninety percent of all basic trainees received technical training before reporting to their first assignments.

The Defense Language Institute's English Language Center at Lackland AFB, Tex., graduated nearly 3,600 foreign students from forty-two countries. Of this total, 2,107 were Air Force-sponsored; others were sponsored by the Army and Navy.

Some 5,000 foreign military trainees from sixty countries completed about 10,000 flying, technical, and professional training courses valued in excess of $180 million.

ATC conducted its flying training mission with 1,478 aircraft, including 680 T-37s, 731 T-38s, fifty-two T-41s, and fifteen T-43s.

The command produced 1,178 new pilots and 501 new navigators in 1978. Also, 329 foreign students completed specialized pilot training courses. Sixteen women became pilots, and a second group of eight women entered navigator training.

Instrument flight simulators are operational at three undergraduate pilot training bases and at Randolph, the only pilot instructor training base in the Air Force. Simulators are scheduled to become operational in mid-1979 at Laughlin AFB, Tex., and in 1980 at Columbus AFB, Miss.

ATC operated the Accelerated Copilot Enrichment (ACE) program at twenty-four Strategic Air Command locations, with ninety-three instructor pilots supporting 900 SAC copilots. ACE provides increased flying experience for SAC copilots, to help them transition to aircraft commander positions.

The command flew approximately eighteen percent of all Air Force flying hours, and had a flying safety record of 4.2 accidents per 100,000 flying hours. ATC experienced less than eight percent of the reported accidents, a noteworthy achievement in view of its mission.

During the year, more than 9,000 crew members received training in land and water survival.

In 1978, ATC's mission was expanded substantially when it was designated as the major command responsible for the Air University, which operates USAF's professional military schools and colleges and provides advanced degrees and continuing education programs to meet Air Force requirements.

The Air War College, the senior professional military education school for the Air Force, prepared 264 resident graduates for high command and staff positions. Air Command and Staff College graduated 553 officers; more than 2,600 graduated from Squadron Officer School; 1,194 completed the Senior NCO Academy; 1,063, including seventeen civilian employees, completed the ATC's NCO Academy; and more than 6,500 were graduated from Phase I, II, and III Professional Military Education (PME) courses for NCOs.

ATC's Air Force Institute of Technology at Wright-Patterson AFB, Ohio, continued to provide specialized education in scientific, engineering, technological, managerial, medical, and other areas. A total of 368 Air Force officers and thirty-two others completed graduate degree programs through AFIT's School of Engineering and School of Systems and Logistics at Wright-Patterson AFB. Continuing education courses were completed by 6,422 individuals from all services and Defense Department agencies. An additional 2,705 students completed on-site courses conducted by the AFIT faculty. Graduate programs at civilian institutions were completed by 294 officers, while 319 medical service officers completed graduate, post-graduate, and residency programs. Four hundred and two students received medical training in the Air Force Health Professions Scholarship programs.

Registrations in the Community College of the Air Force showed more than 95,000 airmen actively pursuing degrees. New registrations continued at a rate of about 3,000 a month. The ATC commander conferred 2,808 Associate in Applied Science degrees to enlisted members during 1978.

More than 155,000 students completed correspondence courses from the Extension Course Institute in 380 professional, specialized, and career-development courses.

Last year was a banner year for Civil Air Patrol, the Air Force auxiliary now under ATC's aegis. CAP volunteer searchers recorded ninety-one saves from aircraft accidents—the highest in its history—and found 469 hunters, fishermen, children, and others who were lost. CAP flew 892 search-and-

Gen. Bennie L. Davis, Commander, ATC.

Senior Enlisted Advisor, ATC. (Temporarily Vacant)

rescue missions, logging 11,481 sorties and 24,800 flying hours.

Air Force Reserve Officer Training continued to be the major source of new Air Force officers in 1978. A total of 2,614, including 374 women, were commissioned through ROTC. At the end of the year, more than 18,000 men and women were enrolled in AFROTC programs at 140 college campuses, with 5,010 under full scholarships. Approximately 33,000 young men and women participated in Junior ROTC at 275 high schools.

In 1978, 1,558 new officers received commissions through the Officer Training School at Lackland AFB, Tex. In October, the school was expanded, to increase classes from 180 to 250 officer trainees. OTS has been increasing its contributions to the commissioned ranks for the past two years and is expected to produce more than 3,400 officers in 1979. ■

MEETING THE RECRUITING CHALLENGE

Air Force Recruiting Service, commanded by Brig. Gen. Keith D. McCartney and headquartered at Randolph AFB, continued to recruit quality men and women needed to sustain the Air Force in the All-Volunteer Force era.

Recruiters signed up more than 72,000 young men and women during the year. The All-Volunteer Force concept, now nearing the end of its fifth year, continues to challenge recruiters in attracting quality enlistees.

Some eighty-five percent of all enlistees were high school graduates, and almost fifty percent scored in the "above-average" Department of Defense mental categories.

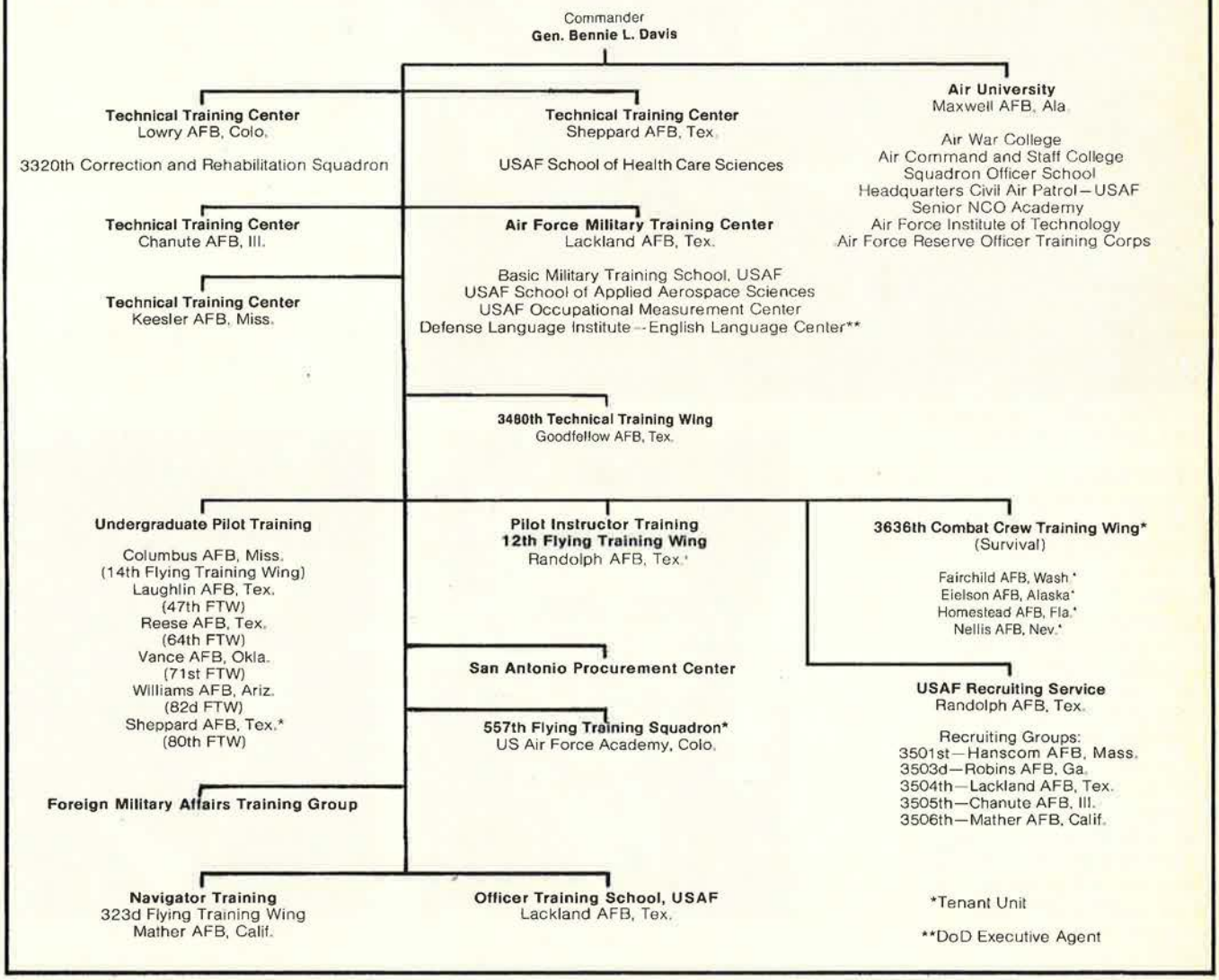
Volunteers included 68,025 men and women enlistees without prior military service, 1,300 prior-service people, 1,721 enlistees for Officer Training School, and 1,470 health professionals for commissioning.

The Air Force attracts approximately twenty percent of enlistees for all the US armed services with less than thirteen percent of the total DoD recruiting budget, including only nine percent of the DoD recruiting advertising budget.

"Air Force—A Great Way of Life" continued as the recruiting theme, with particular emphasis on the diverse educational opportunities available through technical training and off-duty education. More than 350,000 age-qualified leads were generated last year to help recruiters meet Air Force manpower objectives. Twenty-two thousand of those leads were provided by active, Reserve, and retired Air Force people and their dependents through the Air Force Recruiter Assistance Program. Some 3,500 military and civilian people work for Air Force Recruiting Service in the United States, Guam, Puerto Rico, England, Spain, and Germany.

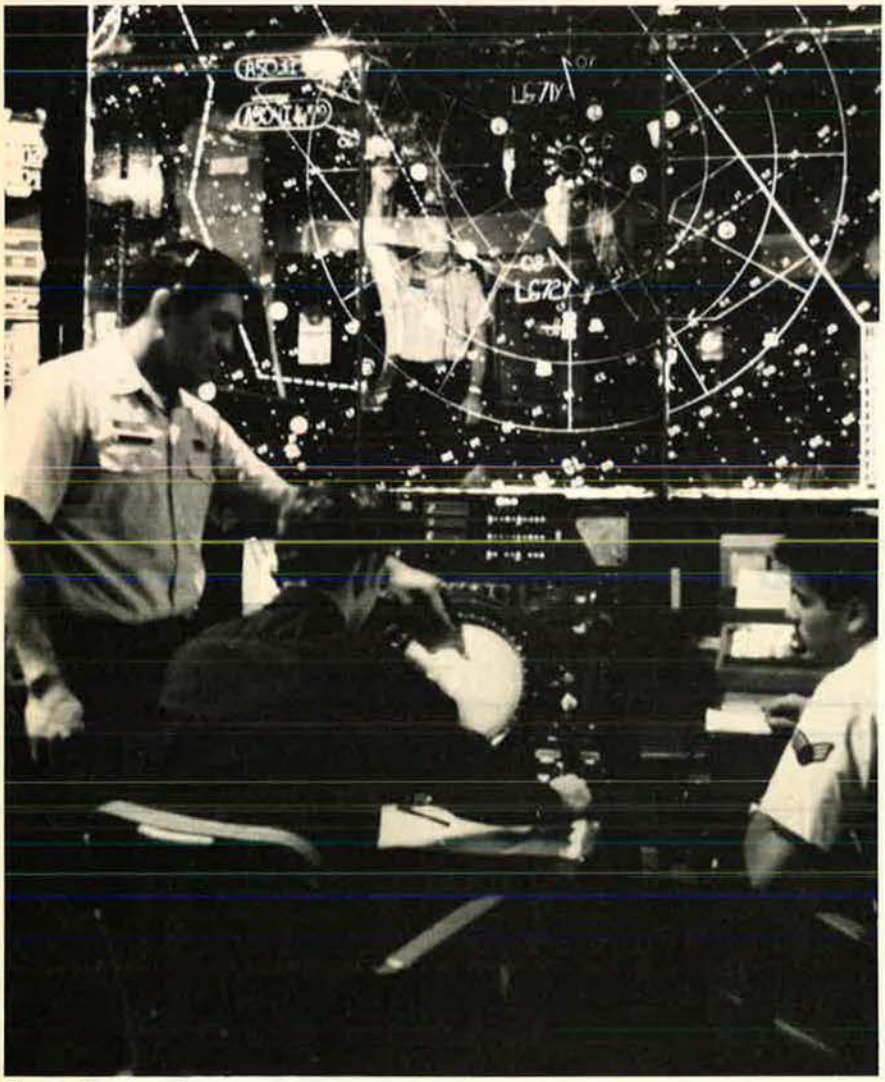
AIR TRAINING COMMAND

Headquarters, Randolph AFB, Tex.



A MAJOR COMMAND

Alaskan Air Command



The 709th AC&W Squadron keeps constant watch at Fort Yukon AFS, Alaska.

The Alaskan Air Command provides early warning of an air attack on the US and Canada, guards the sovereignty of US airspace, and supports US ground forces in Alaska. The command has 8,850 authorized personnel, including 800 officers, 6,800 enlisted members, and 1,250 civilian employees.

Lt. Gen. Winfield W. Scott, Jr., the AAC Commander, also serves as Commander, North American Air Defense Command/Aerospace Defense Command (NORAD/ADCOM), Alaskan Region, and is responsible to the Commander in Chief, NORAD, for aerospace defense of that region. As the senior military officer in Alaska, he is the coordinating authority for all joint military administrative and logistic matters and the military point of contact for the state.

Lt. Gen. Winfield W. Scott, Jr., Commander, Alaskan Air Command.

AAC mans three main bases, thirteen aircraft control and warning (AC&W) squadrons, and two forward operating bases. The main bases are: Elmendorf AFB, bordering Anchorage; Eielson AFB, near Fairbanks; and Shemya AFB, near the tip of the Aleutian Islands chain. The AC&W squadrons are along the western coast or in the interior of the state. Galena and King Salmon Airports are forward operating bases for fighter aircraft from Elmendorf. In addition, AAC provides administrative and logistic support for ADCOM units at Shemya AFB and at Clear AFS.

Elmendorf's 21st Composite Wing is the main flying arm of AAC. The wing's 343d Tactical Fighter Group includes the 43d and 18th Tactical Fighter Squadrons, both of which fly F-4E Phantoms. The 343d group also has a number of T-33 Shooting Star jets. Assigned to the wing are all of the AC&W squadrons—managed by the 531st Aircraft Control and Warning Group—and the forward operating bases.

Major tenants at Elmendorf include the 616th Military Airlift Group and its 17th Tactical Airlift Squadron, equipped with C-130Es, and the 71st Aerospace Rescue and Recovery Squadron, equipped with HC-130s and HH-3 helicopters. Other tenants include the 1931st Communications Group and the 6981st Security Squadron.

The 5010th Combat Support Group at Eielson AFB is the only other flying unit in AAC. The group's 25th Tactical Air Support Squadron flies the O-2A,

CMSgt. Richard P. E. Cook, Senior Enlisted Advisor, AAC.

primarily in support of US ground forces in Alaska. The group also has T-33s that provide training targets and simulated air cover for ground forces during training maneuvers. Eielson's largest tenant unit is SAC's 6th Strategic Wing, equipped with KC-135 Stratotankers.

AAC also operates a Rescue Coordination Center (RCC) that uses aircraft and personnel of all the military services in the state, plus the Civil Air Patrol, the FAA, and civilian volunteers. During 1978, the RCC coordinated emergency assistance for 214 military and civilian persons in distress and saved 125 lives.

A Joint Task Force (JTF)—normally established by the Joint Chiefs of Staff for contingency/emergency operations—is formed each year for joint Arctic training exercises involving active-duty, National Guard, and Reserve personnel from all the military services and the Coast Guard. It is normally headed by the AAC commander.

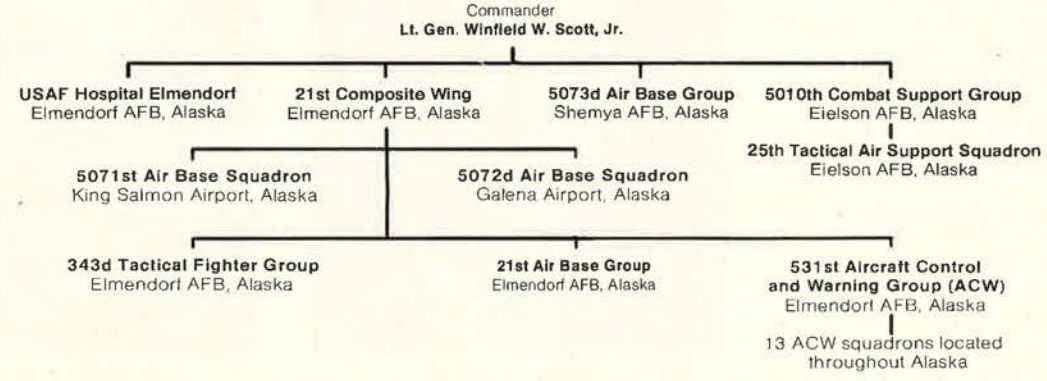
During January-February of this year, more than 17,000 soldiers, sailors, airmen, and Marines took part in Jack Frost '79, experiencing the problems faced during tactical operations in the Arctic.

Whether involved in training or scanning the skies of our northwestern frontier, the men and women of the Alaskan Air Command share a common goal—providing "Top Cover for America." ■

A flight of Alaskan Air Command F-4E Phantoms over the northland's rugged, snow-covered peaks. The aircraft are assigned to the 21st Composite Wing at Elmendorf AFB, bordering Anchorage on Alaska's southern coast.

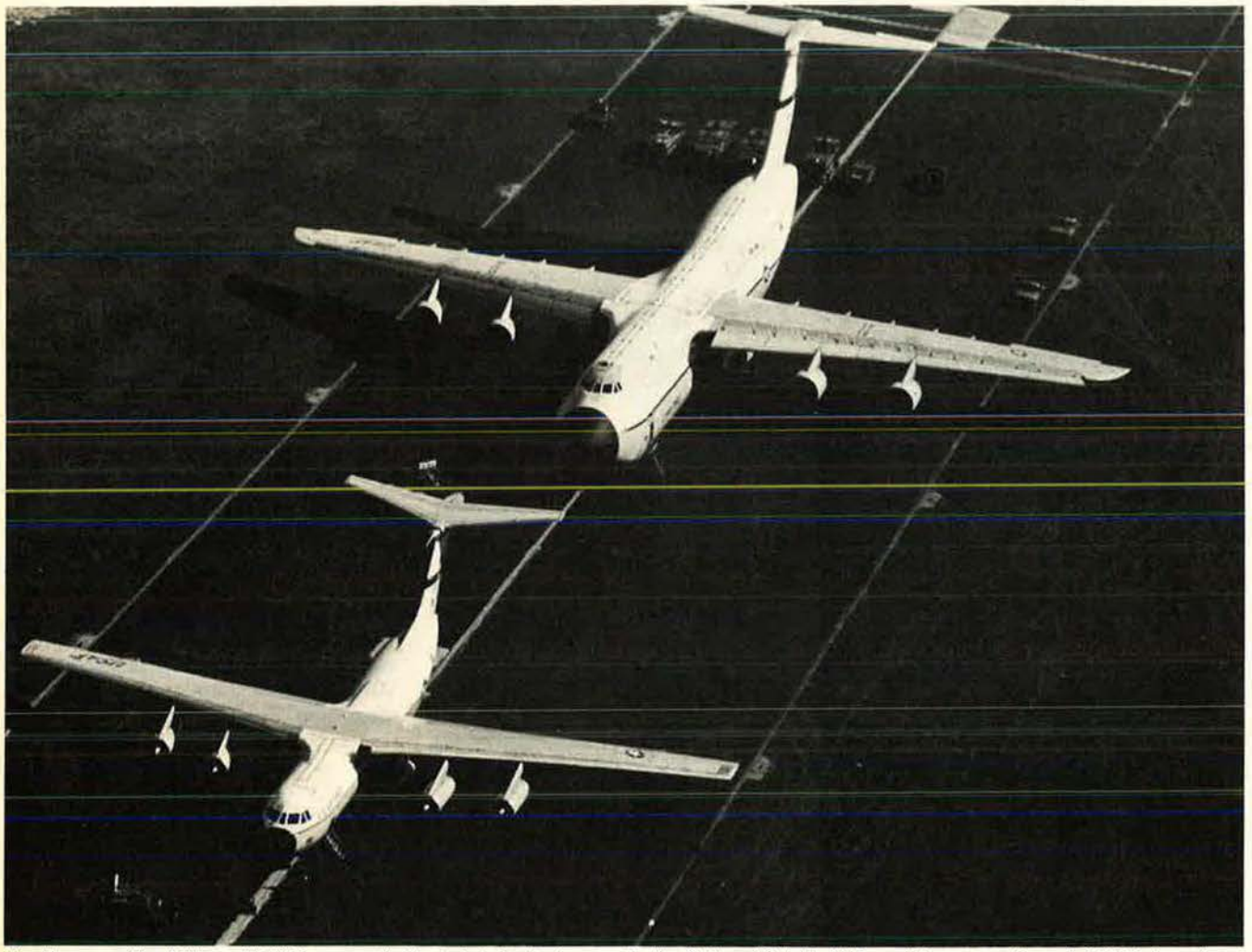
ALASKAN AIR COMMAND

Headquarters, Elmendorf AFB, Alaska



A MAJOR COMMAND

Military Airlift Command



Workhorses of the Military Airlift Command's fleet of strategic transports: the C-5 and C-141. ANG and Reserve units and AFRES Associate crews are components of the command's operations.

Last year marked the thirtieth anniversary of modern airlift—and its first test. In 1948, less than a month after MAC's predecessor, the Military Air Transport Service (MATS), had been formed, the Berlin Airlift began. Nearly 190,000 missions were flown over a period of thirteen months, and airlift broke the Berlin blockade.

Today MAC is a big organization with more than 1,000 operational aircraft and almost 90,000 active-duty people at 350 locations in thirty-three countries.

MAC brings together people and equipment from the command, the Air National Guard, the Air Force Reserve, and civil industry to form a national military air transport system. During the critical early stages of a major conflict, airlift will face enormous demands to move people, equipment, and supplies

Gen. William G. Moore, Jr., CINC, Military Airlift Command.

CMSgt. Edward A. Henges, Senior Enlisted Advisor, MAC.

wherever they are needed and to keep those forces supplied until other means of transportation can be brought to bear. Even the great airlift resources under MAC's direction might not be enough to satisfy the demands of a major contingency overseas, especially the need to move large, heavy, military equipment.

Several initiatives are under way to increase MAC's airlift capacity. The C-5's wing is being strengthened; the C-141 stretched by twenty-three feet and air refueling equipment added. The new KC-10 tanker will allow MAC's airlifters to carry more and carry it further without en-route bases. A replacement is being sought for the command's tactical airlifter, the C-130. Although a proven, reliable performer, the C-130 cannot handle some of the Army's new, heavier equipment.

Air National Guard and Air Force Reserve forces now provide half of MAC's capability, jointly contributing about 51,000 people, as well as C-130, C-7, and C-123 aircraft.

These military airlift capabilities could be doubled through augmentation by civilian crews and equipment in the Civil Reserve Air Fleet, or CRAF. The CRAF is a successful twenty-seven-year partnership between civil air carriers and DoD. Twenty-two US commercial airlines contribute 470 passenger and cargo aircraft to CRAF programs. If needed in a national emergency, the CRAF could move approximately ninety-five percent of DoD's passengers, and thirty-five percent of the cargo. Initiatives are under way to increase the CRAF's cargo capability. By adding features such as wide doors and strong floors to future airliners, these civil transports could carry significantly more cargo—and more kinds of cargo—during contingencies.

OPERATIONAL AIRCRAFT ASSIGNED TO MAC

(As of January 31, 1979)

TYPE	NUMBER
T/UH-1F/P	37
UH-1N	54
HH-1	11
C/HH-3	45
C/HH-53	32
C-5	76
C-6A	1
C-9	23
C-12	4
CT-39	113
C-130	267
HC-130	30
WC-130	14
C-135	11
C-137	5
C-140	11
C-141	270
TOTAL	1,004

Top, MAC ARRS aircraft refuel at low altitude. Above, removing a casualty in the aftermath of the Guyana tragedy.

To maintain its wartime readiness, MAC participates in many deployment exercises such as Gallant Eagle, Crested Cap, Solid Shield, and Reforger. A by-product of both readiness training and MAC's normal airlift operations are the many humanitarian missions flown each year. Another by-product is the airlift MAC provides for other DoD agencies. One example is the command's support of the Army Air Line of Communications (ALOC) to Europe. With this airlift of parts, the Army is able to reduce its inventories and improve supply management and the availability of its equipment.

But the Military Airlift Command is responsible for more than airlift. Its technical services perform several related missions:

- The *Aerospace Rescue and Recovery Service* (ARRS) is responsible for combat search and rescue activities, weather reconnaissance, SAC missile site support, and worldwide airborne weather observation. ARRS forces saved the lives of 553 people during 1978. Over the last thirty-two years, 18,664 lives have been saved by the Rescue Service. ARRS flies HC-130 Hercules aircraft and H-1, HH-3, and HH-53 helicopters.
- The *Air Weather Service* (AWS) supports Air Force and Army combat units with global weather information. Cooperating with ARRS, AWS also provides tropical storm and special weather reconnaissance used during satellite and missile launches.
- The *Aerospace Audio-Visual Service* (AAVS) is the Air Force's single manager of photographic and video products and services. Besides the primary mission of combat photo documentation, AAVS produces training and orientation films, and manages film libraries and depositories.

Aeromedical airlift is another important MAC mission. The 375th Aeromedical Airlift Wing, a special airlift unit, assisted by Reserve Associate crews, flew more than 60,000 patients in 1978. C-9 Nightingales, C-141 StarLifters, and C-130 Hercules aircraft

are used for these missions. In the United States, more than 450 military and civilian airports are used to serve some 600 medical facilities. Missions are also flown in Europe and the Pacific.

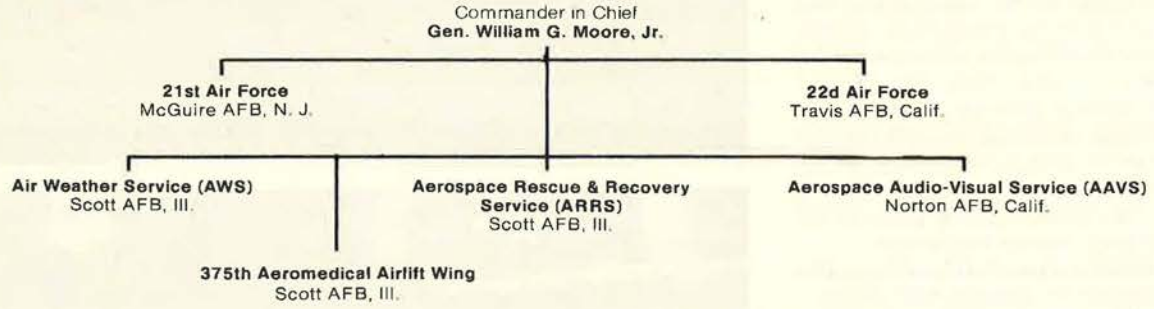
Another special airlift unit, the 89th Military Airlift Group, provides airlift for distinguished foreign visitors and US government officials, including the President.

To further enhance readiness, MAC's new Airlift Operations School will open at Scott AFB, Ill., this year. The four-week course will offer instruction in airlift history, plans, and operations for students from throughout the MAC system.

Every day, everywhere, the MAC system stays ready to meet wartime missions. ■

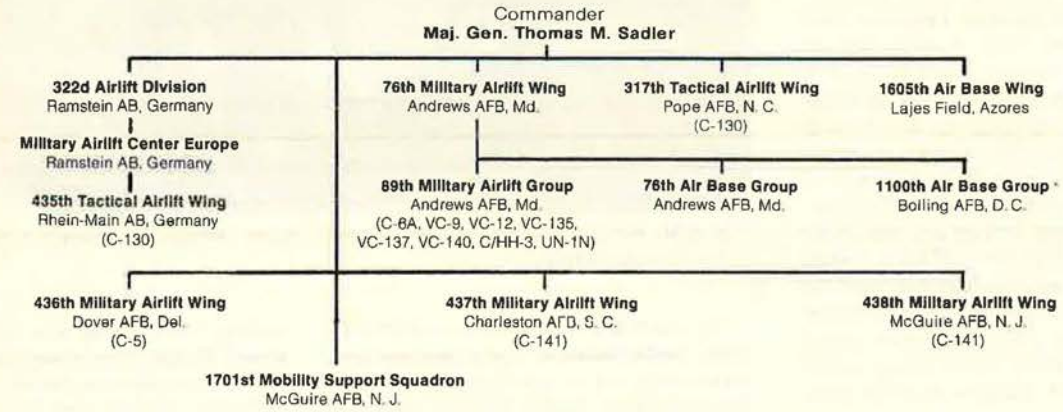
MILITARY AIRLIFT COMMAND

Headquarters, Scott AFB, Ill.



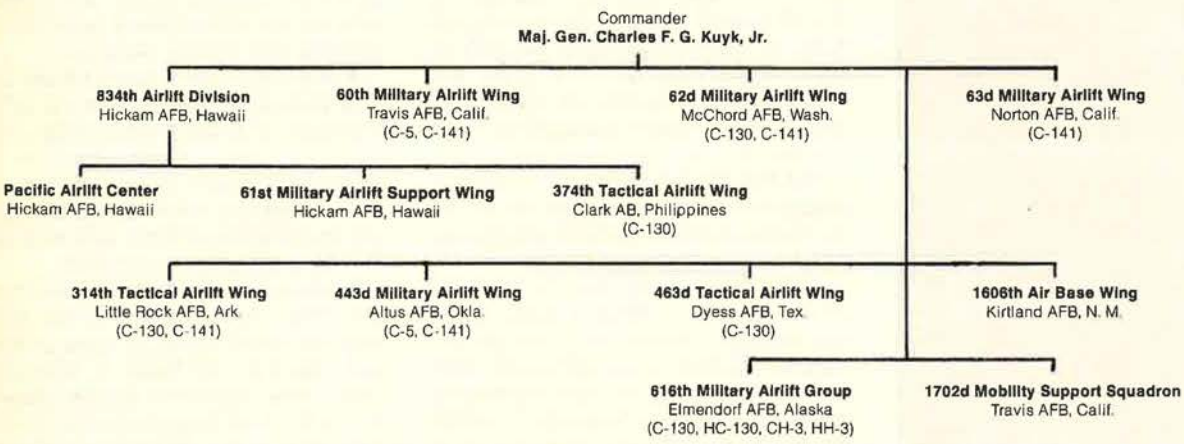
TWENTY-FIRST AIR FORCE (MAC)

Headquarters, McGuire AFB, N. J.



TWENTY-SECOND AIR FORCE (MAC)

Headquarters, Travis AFB, Calif.



HARRIS RF COMMUNICATIONS BUILDS RADIO SYSTEMS FROM THE GROUND UP, THE WORLD OVER.

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Harris RF Communications offers advanced, experience-tested products; *complete* support services; and solid radio system design experience acquired across a broad spectrum of system requirements and environmental conditions.

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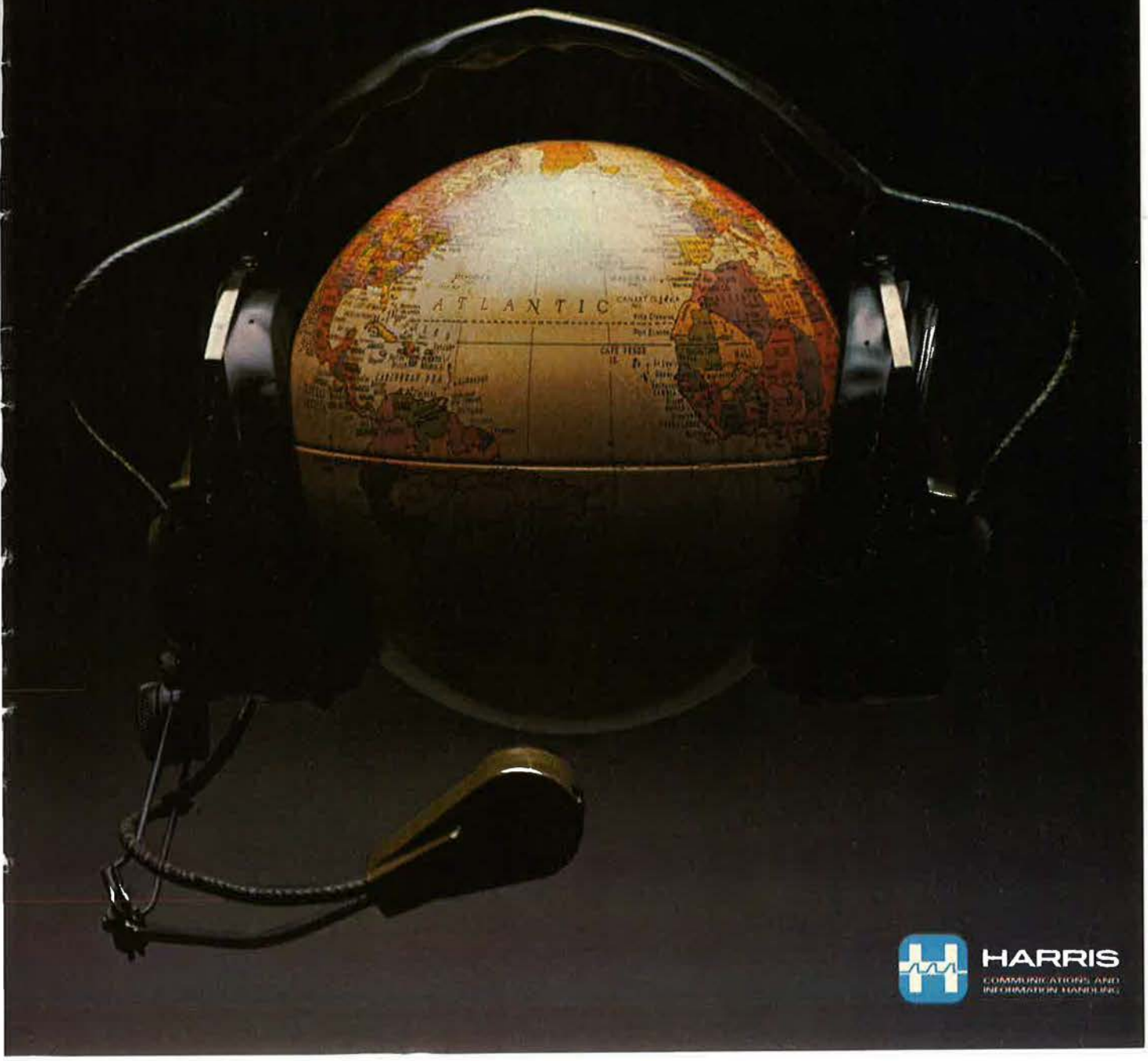


HARRIS
COMMUNICATIONS AND INFORMATION HANDLING

Pacific Air Forces

Above, an E-3A Sentry AWACS aircraft transits Hickam AFB, Hawaii, following an exercise in Korea. Right, an F-4 during Cope Thunder exercise at Clark AB in the Philippines.

Pacific Air Forces (PACAF), with headquarters at Hickam AFB, Hawaii, is the air component of the unified Pacific Command. PACAF's area of responsibility covers more than half the earth's surface and includes some 2,000,000,000 people living under more than thirty-five different flags.

Lt. Gen. James D. Hughes, Commander in Chief, Pacific Air Forces (CINCPACAF), has responsibilities to the Commander in Chief Pacific Command (CINCPAC) and to the USAF Chief of Staff. General Hughes is responsible to CINCPAC for assigned operational missions and serves as principal advisor in the employment of USAF airpower within PACOM. Working with other service component commanders, CINCPACAF supports the CINCPAC mission of maintaining Pacific Command security and defending the United States against attack throughout the Pacific. PACAF also provides military assistance to air forces of friendly nations, and support for other USAF commands operating in the Pacific area.

As a USAF major air commander, CINCPACAF commands more than 34,000 Air Force operational and support personnel stationed at bases and facilities principally located in Japan, Korea, the Philippines, and Hawaii.

During 1978, many improvements strengthened the Pacific Air Forces.

Lt. Gen. James D. Hughes, CINC, Pacific Air Forces.

CMSgt. James C. Binnicker, Senior Enlisted Advisor, PACAF.

The 497th TFS was activated at Taegu AB, Korea. This squadron of twelve F-4s, part of the 8th TFW at Kunsan AB, is unique within the Air Force in that aircraft maintenance is performed jointly by Republic of Korea Air Force (ROKAF) and USAF personnel. The squadron was one of several offset measures outlined in the announcement that US ground forces would be withdrawn from Korea.

Pararescuemen from Kadena AB, Okinawa, Japan, simulate pilot save.

Also during 1978, plans to deploy the F-15 Eagle and the E-3A Sentry AWACS aircraft to Kadena AB, Okinawa, were announced. The F-15s will replace four F-4 squadrons, and, combined with the superior airborne warning and control capability of the E-3A, will provide a quantum improvement in USAF capability to maintain air superiority in the Western Pacific.

Other PACAF aircraft have been modified to use laser-guided bombs and Maverick and Walleye missiles. In addition, ten F-5Es replaced some of the T-38s in PACAF's aggressor training squadron at Clark AB, Philippines.

These upgrade programs, combined with the conversion of one half squadron to the F-4G "Wild Weasel" and the planned assignment of the F-16, will further enhance PACAF's posture.

PACAF sponsored or participated in more than 100 exercises last year. The largest, Team Spirit 79, combined more than 150,000 Republic of Korea and US forces in the largest joint/combined military exercise ever conducted by free world forces.

Cope Thunder, a series of exercises involving PACAF, US Navy, and Marine aircrews at the Crow Valley Range in the Republic of the Philippines, continued to provide tactical aircrews with realistic training in a simulated battle environment. The exercise has been enlarged and expanded, and, in February 1979, the 10,000th sortie was flown. For the first time, night strikes were conducted in a realistic threat environment. Other recurring scenarios include tactical resupply, air defense, reconnaissance, search and rescue, and defense suppression.

Commando Rock tested PACAF's augmentation by Air Training Command (ATC) personnel in a sustained "Sortie Surge." This was the first ATC overseas deployment, and more than 200 personnel, primarily in aircraft maintenance, from ATC bases were flown to Kunsan AB, Korea, to augment the 8th TFW. More than 1,300 sorties were launched during the fifteen-day exercise.

Cope North was the first joint exercise held with the Japan Air Self-Defense Force (JASDF) under the new defense cooperation guidelines recently concluded between the United States and the government of Japan. Six F-4s from the 3d TFW at Clark AB deployed to Misawa AB, Japan, to join with the JASDF crews in air-to-air exercises.

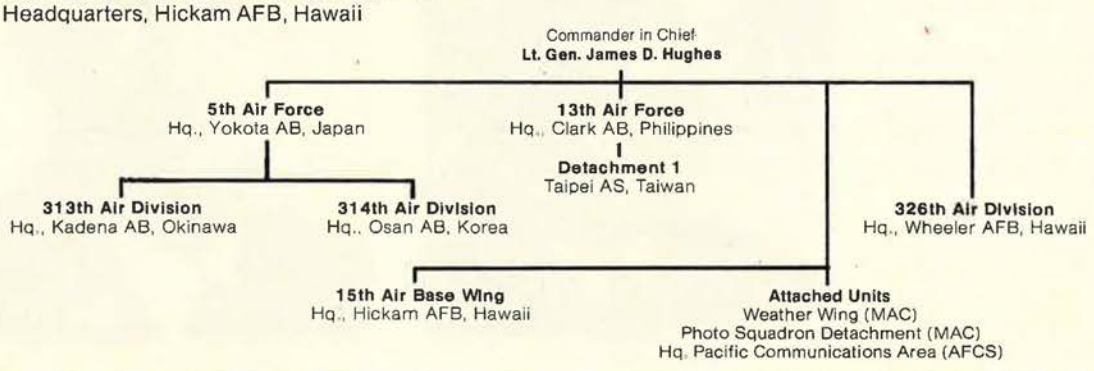
In a rapidly changing geopolitical environment, the men and women of Pacific Air Forces stand ready to protect US national security interests and assist in maintaining peace and stability throughout the region. ■

THE MAJOR UNITS OF PACIFIC AIR FORCES (PACAF)

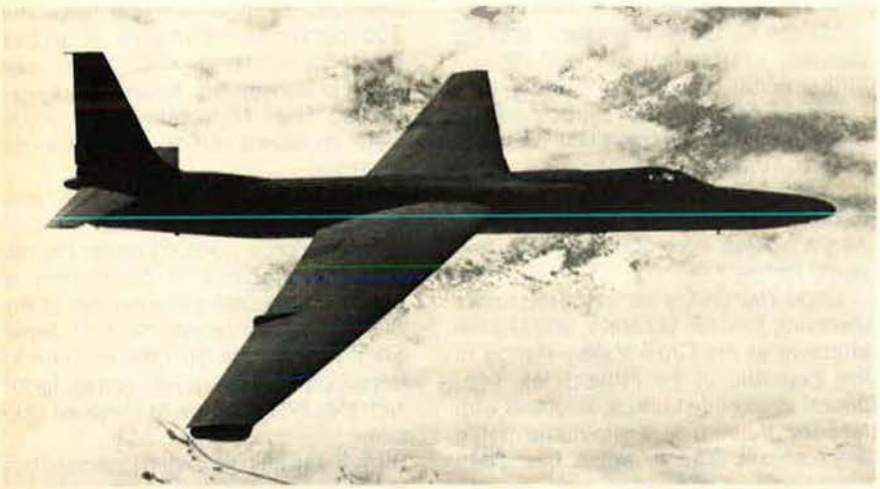
UNIT	LOCATION	AIRCRAFT
15th Air Base Wing	Hickam AFB, Hawaii	EC-135, T-33, O-2 (+ ANG F-4s)
326th Air Base Division	Wheeler AFB, Hawaii	
FIFTH AIR FORCE HQ., YOKOTA AB, JAPAN		
8th Tactical Fighter Wing	Kunsan AB, Korea	F-4
18th Tactical Fighter Wing	Kadena AB, Okinawa	F-4, RF-4, MC-130, T-39
51st Composite Wing (Tactical)	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
6112th Air Base Wing	Misawa AB, Japan	
THIRTEENTH AIR FORCE HQ., CLARK AB, PHILIPPINES		
3d Tactical Fighter Wing	Clark AB, Philippines	F-4, F-5, T-38, T-39, T-33

PACIFIC AIR FORCES

Headquarters, Hickam AFB, Hawaii



Strategic Air Command



A U-2 of SAC's 9th Strategic Recon Wing, Beale AFB, Calif. Right, a Minuteman missile is launched at the USAF Western Test Range.

The primary mission of the Strategic Air Command (SAC) has not changed since 1946: to serve as a worldwide nuclear umbrella that will deter aggressors from attacking the United States or its allies. For the past thirty-three years, SAC also has been prepared to defend this nation in case that umbrella of deterrence fails.

SAC's responsibility, however, has increased over the years to include conventional support of allied theater commanders in Europe and the Western Pacific; sea-control operations in conjunction with the Navy; aerial refueling for US and allied military aircraft; and a reconnaissance gathering and processing operation.

SAC performs its deterrent tasks primarily through use of the two legs of the strategic deterrent triad it maintains: land-launched intercontinental ballistic missiles (ICBMs) and manned penetrating bombers.

The ICBM force of 1,000 Minuteman and fifty-four Titan II missiles maintained an alert rate of nearly 100 percent throughout 1978. The ICBM remains the centerpiece of SAC's nuclear deterrent and is unsurpassed in terms of readiness, immediate reaction, and economy of operation.

The command has a force of nearly 350 operational B-52s, including some eighty D models—now in their third decade of service—and newer G and H models. SAC also has two wings of swingwing FB-111s.

This force of manned penetrating bombers is the most flexible of the triad elements. The presence of a crew allows SAC to use the bomber in virtually any situation. For example, bombers can be employed over land or sea with great effectiveness in conventional conflicts, or as a highly visible show of force and national resolve during crises.

SAC places heavy emphasis on readiness, and in 1978 used a variety of exercises to test the capabilities of its different components. For instance, aircraft and crews of the 7th Bombardment Wing, Carswell AFB, Tex., flew nonstop from Pease AFB, N. H., to West Germany and return to make high-altitude simulated conventional bombing runs in support of ground troops participating in the Cold Fire training exercise. B-52s also participated in collateral operations such as Northern Wedding, a NATO maritime exercise, and flew two different types of aerial mine-laying missions. The SAC missions supported US Navy and

Gen. Richard H. Ellis, CINC, Strategic Air Command.

CMSgt. James M. McCoy, Senior Enlisted Advisor, SAC.

NATO patrol aircraft during the exercise.

The exercises of 1978 were part of SAC's effort to make maximum use of its forces, through more realistic training, refined tactics, and efficient force application. In the words of Gen. Richard H. Ellis, SAC's Commander in Chief, "Because such activities help perfect our skills and increase our overall effectiveness, I intend to place even greater stress on our exercise activities during 1979."

Events in 1978 also demonstrated the importance of SAC's many commitments that are integral to its primary mission of nuclear deterrence. One of these commitments is to manage USAF's air-refueling force. More than 600 KC-135 tankers support both SAC aircraft and those of other commands. A significant portion of SAC's refueling force (128 aircraft) is now assigned to Air National Guard and Air Force Reserve units under the Department of Defense's Total Force policy. These Air Reserve Forces are responsible for meeting SAC day-to-day alert commitments as well as for generating higher states of readiness when directed.

SAC also provides global strategic reconnaissance in support of national requirements. Its reconnaissance units use RC-135, U-2, and SR-71 aircraft to supplement the capabilities of satellites.

SAC must continue to modernize its force to meet the deterrent challenge of advancing weapon technology. A major part of SAC's modernization program involves equipping up to 170 B-52G aircraft with the air-launched cruise missile (ALCM). The B-52/ALCM combination will greatly increase flexibility of the manned penetrator and

STRATEGIC AIR COMMAND

Headquarters, Offutt AFB, Neb.

Commander in Chief
Gen. Richard H. Ellis

8th Air Force
Hq. Barksdale AFB, La.

19th Air Division
40th Air Division
42d Air Division
45th Air Division

1st Strategic Aerospace Division
Hq. Vandenberg AFB, Calif.

3d Air Division
Hq. Andersen AFB, Guam

43d Strategic Wing
Andersen AFB, Guam
(B-52/KC-135)

376th Strategic Wing*
Kadena AB, Okinawa
(KC-135)

7th Air Division
Hq. Ramstein AB, Germany

306th Strategic Wing
Ramstein AB, Germany

15th Air Force
Hq. March AFB, Calif.

4th Air Division
12th Air Division
14th Air Division
47th Air Division
57th Air Division

1st Combat Evaluation Group
Barksdale AFB, La.

544th Aerospace Reconnaissance Technical Wing
Offutt AFB, Neb.

3902d Air Base Wing
Offutt AFB, Neb.

*Tenant Unit

EIGHTH AIR FORCE (SAC)

Headquarters, Barksdale AFB, La.

Commander
Lt. Gen. Richard L. Lawson

19th Air Division
Carswell AFB, Tex.

340th Air Refueling Group*
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.

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

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

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

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

40th Air Division
Wurtsmith AFB, Mich.

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)

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

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)

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

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

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

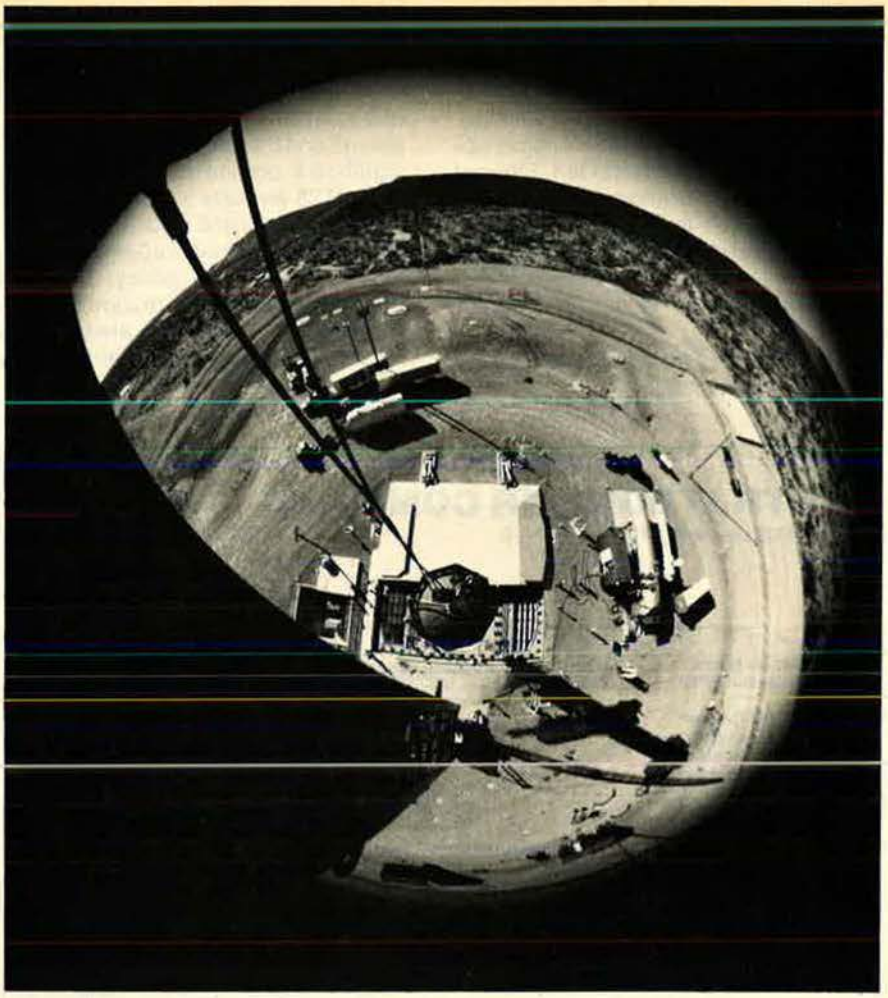
* Tenant Unit

provide many new strategic options.

Another major program relates to the projected vulnerability of silo-based ICBMs in the early 1980s. SAC has studied a follow-on strategic missile since 1965, and one has been in advanced development since 1973. In late 1978, the Air Force recommended to the Department of Defense full scale development of the full-size MX missile, based in multiple protective shelters or, as a backup, in buried tunnels. The project has been delayed for a more detailed study of the feasibility of airmobile basing.

Also, SAC is continuing its efforts to deploy a command and control communications system that is survivable under all conditions; capable of secure, two-way communications; and able to provide reliable surveillance, warning, and attack assessment information.

For more than three decades SAC has provided a strong, modern nuclear deterrent force capable of protecting the interests of the United States and our allies. The men and women of the Strategic Air Command have lived with that responsibility. With the proper resources, SAC will continue that heritage. ■



Although SAC's 1,054 ICBMs are housed in hardened silos such as this one, the missile force will become increasingly vulnerable in the 1980s.

FIFTEENTH AIR FORCE (SAC)

Headquarters, March AFB, Calif.

Commander
Lt. Gen. Bryan M. Shotts

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 II)

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

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

12th Air Division
Dyess AFB, Tex.

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.

9th Strategic Reconnaissance Wing
(SR-71/U-2)

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

100th Air Refueling Wing
Beale AFB, Calif.
(KC-135)

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

307th Air Refueling Group*
Travis AFB, Calif.
(KC-135)

47th Air Division
Fairchild AFB, Wash.

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

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

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

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

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

*Tenant Unit

WHO'S ON FIRST...IN SPACE?

There are hundreds of military satellites in orbit and more on the way. It's vital to our defense to know which types are where at all times... particularly those that may be maneuverable.

To detect and track satellites beyond radar range, the Air Force is now developing GEODSS, which stands for "Ground based Electro-Optical Deep Space Surveillance System". It uses astronomical telescopes with electronics that enhance the light from objects far below the threshold of unaided vision.

As a leader in systems engineering in general and space technology in particular TRW has formed a team of high-technology companies to develop the overall system. Our computer specialists have worked out an ingenious solution for the most difficult problem of all: that of rapidly sorting out, from all the millions of points of light, those anomalous sources that need to be more carefully analyzed. The work is done by high-speed minicomputers and the crucial technology is in their programming. TRW's Moving Target Indicator (MTI) software, developed under contract to the Air Force Systems Command's Electronic Systems Division, almost immediately recognizes and eliminates the natural light sources and zeroes in on the ones that need analysis.

This is one of many areas of space defense in which TRW is active. We're also building military satellites and global communications systems as well as the complex, realtime software that's needed for defense against intercontinental ballistic missiles. We support the Air Force with systems engineering for the Minuteman and Space Transportation System programs... and our electronics people are developing advanced components and systems for digital communications. If you want to know more about our space defense capabilities, please contact Herb Greenbaum, TRW Defense and Space Systems Group, One Space Park, Redondo Beach, CA 90278.

SPACE DEFENSE TECHNOLOGY

from a company called **TRW**

Tactical Air Command

Operating under a new motto, "Readiness Is Our Profession," Tactical Air Command continues to improve its combat capability while modernizing the aircraft inventory and accelerating training for flying and support personnel. TAC resources have increased to more than 98,000 people and approximately 2,000 aircraft at twenty-four bases.

In its thirty-third year, the command continues to organize, equip, and train assigned forces and maintain a combat-ready reserve capable of rapid worldwide deployment.

TAC's combat strength is being increased by the conversion of operational units to the latest tactical aircraft. In July 1978, the 49th Tactical Fighter Wing (TFW), Holloman AFB, N. M., completed conversion to the F-15. In April 1978, the 354th TFW, Myrtle Beach AFB, S. C., converted from A-7s to A-10s. The 35th TFW, George AFB, Calif., is converting from F-105Gs to F-4Gs "Wild Weasels" in a move that TAC officials say will greatly enhance the command's defense-suppression capability. And, in ceremonies held at Hill AFB, Utah, in January 1979, the 388th TFW received TAC's first F-16, a compact, high-performance aircraft designed for air-to-air combat and delivery of air-to-surface weapons.

TAC-gained Air National Guard and Air Force Reserve units also are undergoing aircraft modernization. Conversions scheduled through September 1979 will see aging ANG F-100 fighters and RF-101 reconnaissance aircraft replaced with the A-10, A-7, F-4, RF-4C, and F-105G. In June 1978, the Air Force Reserve received its first F-4 Phantom aircraft, assigned to the 915th TFG (AFRES) at Homestead AFB, Fla.

While converting to new aircraft, TAC combat units maintain readiness in their old aircraft under the "Ready Team" program, which reduces down time while aircrews and maintenance personnel train in the new aircraft. The concept also is being applied to conversions of ANG and Air Force Reserve units.

Organizationally, TAC has shifted the Davis-Monthan AFB, Ariz., Tactical Training Headquarters (TT Davis Monthan) from Ninth Air Force to Twelfth Air Force to more closely align TAC's numbered air force units along geographic lines. The 432d Tactical Drone Group, at Davis-Monthan AFB, formerly the Air Force's single manager of operational remotely piloted vehi-

A mechanic adjusts one of the engines of an E-3A Sentry aircraft. TAC's 552d Airborne Warning & Control Wing at Tinker AFB, Okla., now has fifteen E-3As.

Gen. W. L. Creech, Commander, Tactical Air Command.

CMSgt. Norman O. Gallion, Senior Enlisted Advisor, TAC.

TACTICAL AIR COMMAND

Headquarters, Langley AFB, Va.

Commander
Gen. Wilbur L. Creech

- **9th Air Force**
  Hq., Shaw AFB, S. C.
  - **USAF Southern Air Division**
    Hq., Howard AFB, C. Z.
    - **24th Composite Wing**
      Howard AFB, C. Z.
      (O-2, UH-1)
    - **Inter-American Air Forces Academy**
      Albrook AFS, C. Z.
  - **552d Airborne Warning and Control Wing**
    Tinker AFB, Okla.
    (E-3A, EC-130, EC-135)
- **12th Air Force**
  Hq., Bergstrom AFB, Tex.
  - **USAF Tactical Air Warfare Center**
    Hq., Eglin AFB, Fla.
    - **4441st Tactical Training Group (Blue Flag)**
      Eglin AFB, Fla.
    - **USAF Air-Ground Operations School**
      Hurlburt Field
      (Eglin AF Aux. Field No. 9), Fla.
  - **USAF Tactical Fighter Weapons Center**
    Hq., Nellis AFB, Nev.
    - **Tactical Fighter Weapons Center Range Group**
      Nellis AFB, Nev.
    - **4440th Tactical Fighter Training Group (Red Flag)**
      Nellis AFB, Nev.
    - **57th Tactical Training Wing**
      Nellis AFB, Nev.
      (F-4D/E, F-5E, F-15, F-111E/F, A-10, UH-1)
      - **USAF Air Demonstration Squadron**
        Nellis AFB, Nev.
        (T-38)

NINTH AIR FORCE (TAC)

Headquarters, Shaw AFB, S. C.

Commander
Lt. Gen. A. W. Braswell

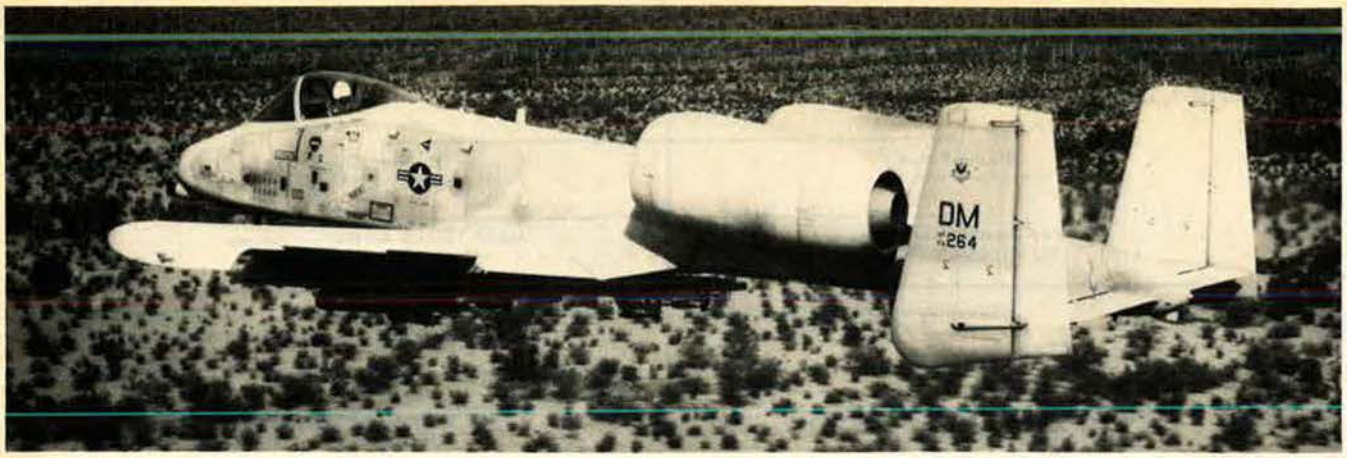
- **1st Tactical Fighter Wing**
  Langley AFB, Va.
  (F-15, EC-135, UH-1)
  - **507th Tactical Air Control Wing**
    Shaw AFB, S.C.
    (O-2, CH-3)
  - **23d Tactical Fighter Wing**
    England AFB, La.
    (A-7D)
  - **354th Tactical Fighter Wing**
    Myrtle Beach AFB, S. C.
    (A-10)
  - **31st Tactical Fighter Wing**
    Homestead AFB, Fla.
    (F-4E)
- **363d Tactical Reconnaissance Wing**
  Shaw AFB, S. C.
  (RF-4C)
  - **4th Tactical Fighter Wing**
    Seymour Johnson AFB, N. C.
    (F-4E)
  - **56th Tactical Fighter Wing**
    MacDill AFB, Fla.
    (F-4D/E, UH-1)
  - **33d Tactical Fighter Wing**
    Eglin AFB, Fla.
    (F-4E)
  - **347th Tactical Fighter Wing**
    Moody AFB, Ga.
    (F-4E)
- **1st Special Operations Wing**
  (CH-3, UH-1, MC/AC-130)
- **USAF Special Operations School**
  Hurlburt Field (Eglin AF Aux. Field No. 9), Fla.

TWELFTH AIR FORCE (TAC)

Headquarters, Bergstrom AFB, Tex.

Commander
Lt. Gen. J. V. Hartinger

- **Headquarters Tactical Training, George**
  - **35th Tactical Fighter Wing**
    George AFB, Calif.
    (F-4C/E/G, F-105G, UH-1)
- **Headquarters Tactical Training, Luke**
  - **58th Tactical Training Wing**
    Luke AFB, Ariz.
    (F-15, F-4, TF-104, UH-1)
- **Headquarters Tactical Training, Holloman**
  - **49th Tactical Fighter Wing**
    Holloman AFB, N. M.
    (F-15)
  - **479th Tactical Training Wing**
    Holloman AFB, N. M.
    (T-38)
- **Headquarters Tactical Training Davis-Monthan**
  Davis-Monthan AFB, Ariz.
  - **355th Tactical Fighter Wing**
    Davis-Monthan AFB, Ariz.
    (A-7D, A-10)
- **602d Tactical Air Control Wing**
  Bergstrom AFB, Tex.
  (O-2, OV-10, CH-53)
- **388th Tactical Fighter Wing**
  Hill AFB, Utah
  (F-4D, F-16)
  - **474th Tactical Fighter Wing**
    Nellis AFB, Nev.
    (F-4D)
- **27th Tactical Fighter Wing**
  Cannon AFB, N. M.
  (F-111D)
  - **67th Tactical Reconnaissance Wing**
    Bergstrom AFB, Tex.
    (RF-4C)
- **366th Tactical Fighter Wing**
  Mountain Home AFB, Idaho
  (F-111A)



An A-10, above, makes a low-level pass on the Gila Bend Range. The F-16, left, joined TAC's inventory at Hill AFB, Utah, in January.

cles, was deactivated March 31, 1979.

TAC units provided the aircraft and personnel for two units deploying to Europe. The 355th TFW, Davis-Monthan AFB, trained A-10 aircrews deploying to RAF Bentwaters/Woodbridge, UK, in January 1979, and the 1st TFW at Langley AFB, Va., readied aircrews and F-15 Eagles for deployment to the 32d TFS, Camp New Amsterdam, the Netherlands, in the fall of 1978.

Since achieving initial operational status in April 1978, TAC's E-3A Sentry has completed deployments to Alaska, Iceland, and the Pacific. Fifteen E-3A aircraft had been delivered to the 552d Airborne Warning and Control Wing at Tinker AFB, Okla., by the end of the year. The E-3A also assumed a role in continental air defense when a North American Air Defense Command (NORAD) detachment was activated at Tinker AFB in January 1979. NORAD personnel will augment E-3A crews on all operational NORAD missions.

Realistic training is the watchword under TAC's various "flag" programs. Red Flag training exercises on the Nellis AFB, Nev., and Fort Irwin, Calif., ranges give fighter aircrews simulated combat experience in a high-threat environment with mock enemy ground and air threats. The exercises involve up to 200 aircraft flying 2,400 sorties over a four-week period. In May 1978, Red Flag was named the corecipient of the Collier Trophy, the nation's oldest aviation award.

Recognizing that in the event of a contingency, security police, civil engineering, medical, and transportation fields would require additional manpower, TAC initiated Silver Flag, a program with three major elements: WARSKIL (Wartime Skill) trains TAC individuals working in less-critical career fields to augment law enforcement, construction, and medical services functions during the early stages of a conflict. WARFIL (Wartime Filler Program) provides preselected personnel from the continental United States (CONUS) for overseas deployment in their own career fields to fill designated contingency positions in the event of war. Base Augmentation Programs provide the transportation support necessary to ensure that TAC forces deploy rapidly and efficiently.

Other "flag" readiness programs include Gold Flag, to improve and increase TAC aircrew training; Black Flag, to organize and train the aircraft maintenance work force for its wartime mission; Blue Flag, to provide training in decision-making for battle management and operations staffs; and Checkered Flag, to provide realistic unit training for wartime operations from overseas bases.

Reversing a long-time decline in sortie rates, TAC fighters flew twelve percent more during the first quarter of FY '79 than during the corresponding period for FY '78.

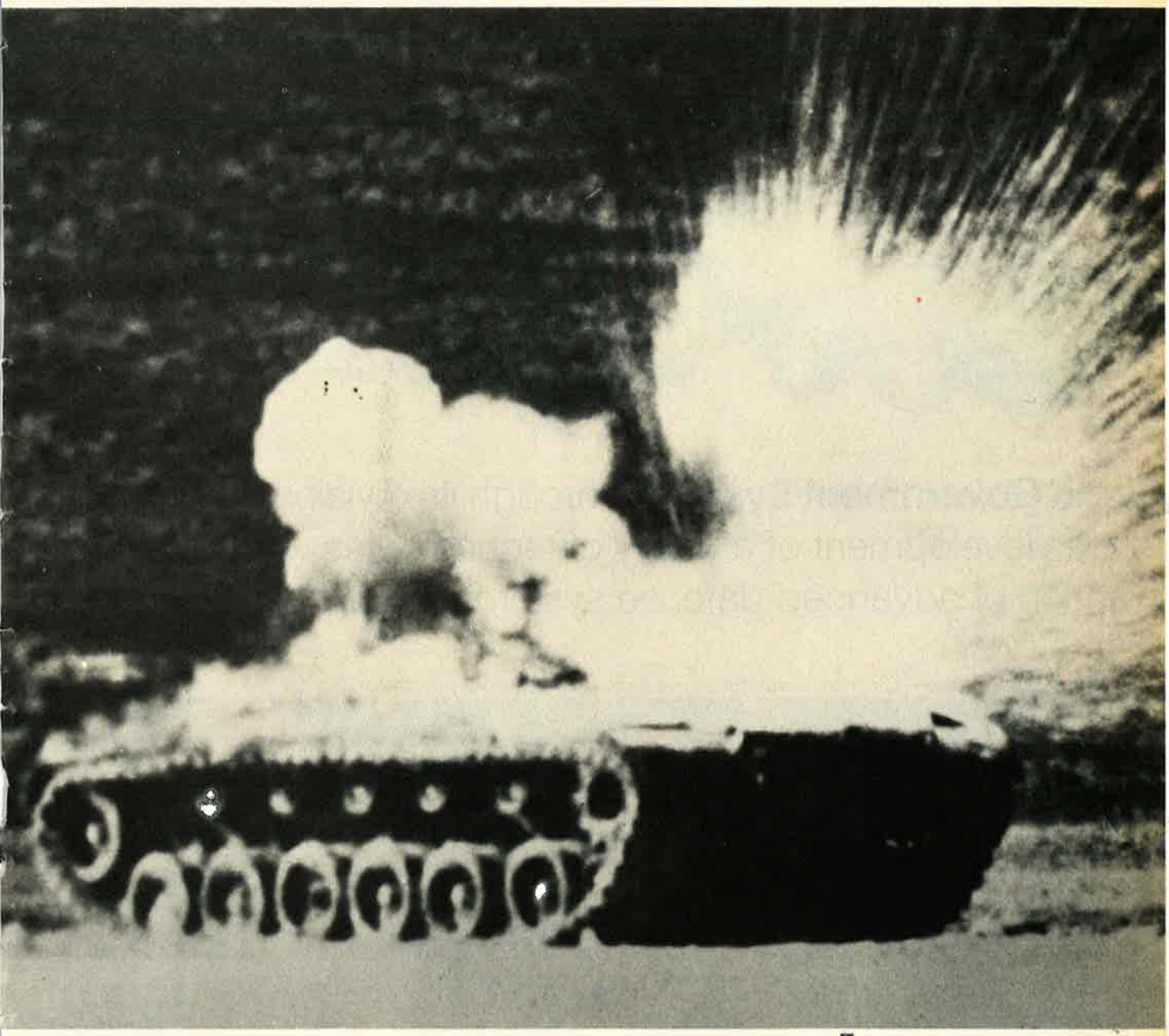
TAC is the USAF component of two unified commands—the Atlantic Command (LANTCOM), Norfolk, Va., and US Readiness Command (USREDCOM), MacDill AFB, Fla. Upon mobilization, TAC also would assume command of more than 50,000 Air National Guard and Air Force Reserve personnel in ninety-eight units across the nation.

During FY '78, units of the ANG and AFRES participated along with TAC's active units in a continuing program of short-term tactical deployments to exercise TAC's ability to reinforce overseas commands and to give aircrews training in operations outside the United States. In twenty-five deployments during FY '78, TAC sent more than 350 aircraft to Europe, Alaska, and the Pacific for two to four weeks. Approximately one-third of these aircraft were flown by Reservists and Guardsmen.

Many of these deployments are to air bases of allied nations designated to receive reinforcement units in periods of increased tension. The deployed units often participate in US or international readiness exercises from their deployed bases. TAC also participates in five annual joint exercises in the United States sponsored by USREDCOM and LANTCOM, including the Brave Shield and Solid Shield series.

TAC's TOP CARE program continues to communicate the concerns of TAC's leaders with the quality of life for TAC people. A number of programs have been initiated to identify and eliminate irritants. TAC's most important element will continue to be its people, whose professionalism and dedication have enabled the command to achieve its objective—total readiness. ■

The USAF Fairchild A-10:
Counterpunch.



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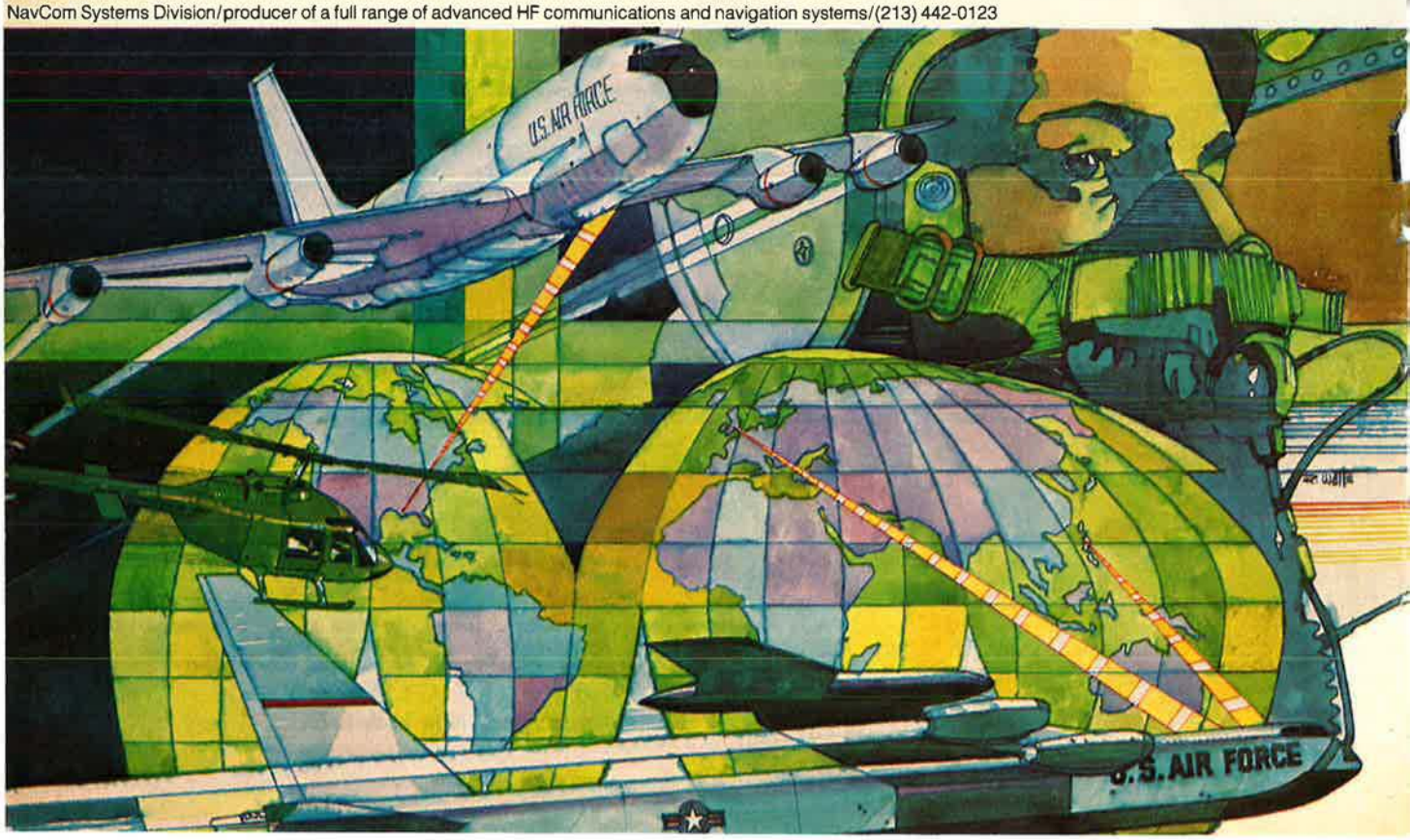

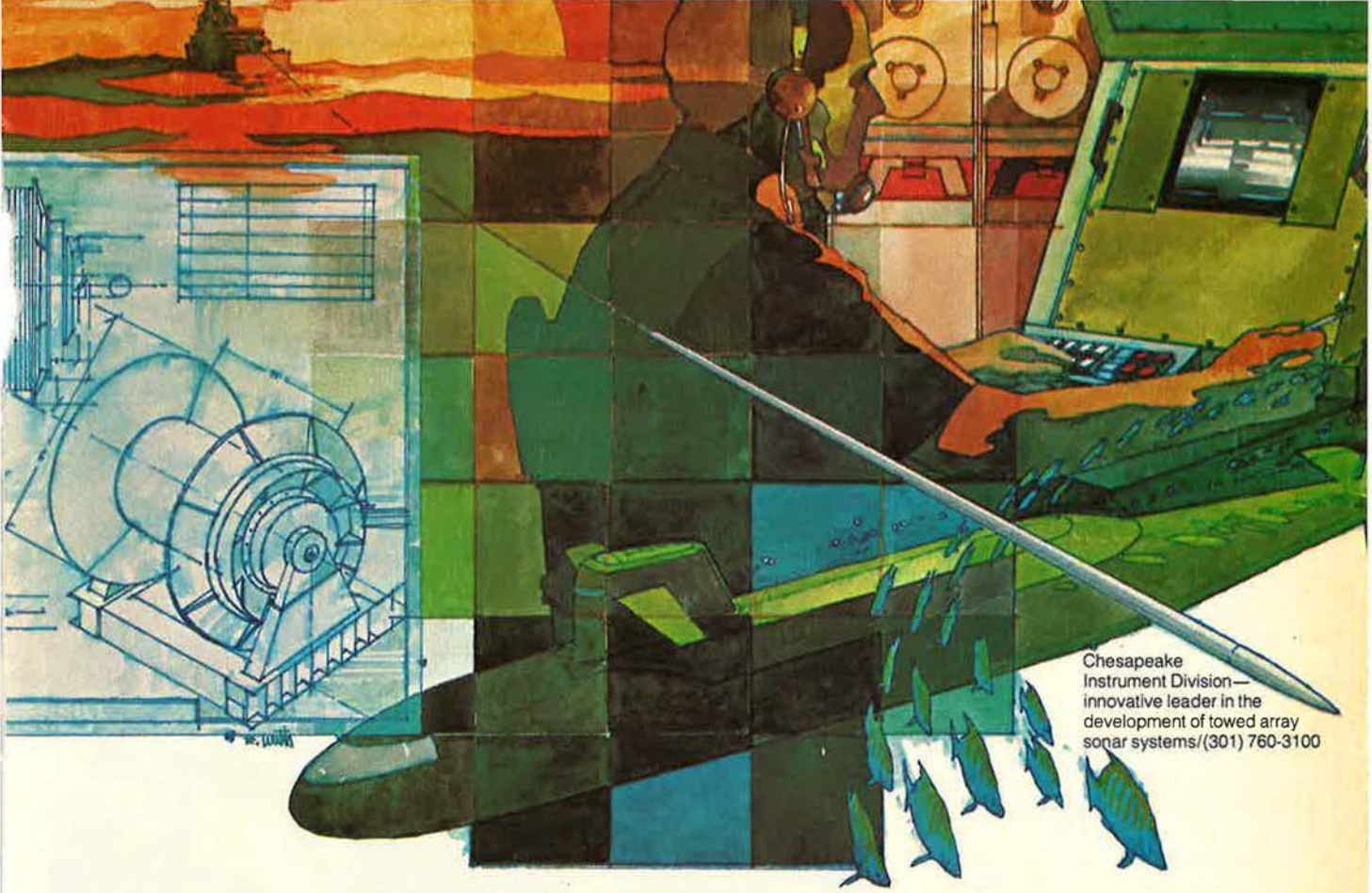

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United States Air Forces in Europe

The long-range, all-weather F-111, above, and the F-15, right, provide USAFE superior capabilities for penetration and air-superiority missions.

In 1979, continued force modernization through the acquisition of new weapon systems and increased emphasis on allied interoperability highlight efforts of the United States Air Forces in Europe (USAFE).

The command's close air support reached new dimensions with the conversion of the 32d Tactical Fighter Squadron at Camp New Amsterdam, the Netherlands, from the F-4 to the F-15 Eagle. F-15 aircraft have been assigned to USAFE's 36th Tactical Fighter Wing at Bitburg AB, Germany, since April 1977.

The command's close-air-support capability was enhanced with the assignment of the A-10 Thunderbolt II "Tank Killer" to the 81st Tactical Fighter Wing at RAF Bentwaters/Woodbridge, UK. Although based in the UK, some of the 81st TFW's A-10s will operate from four forward operating locations in the Federal Republic of Germany. The Thunderbolt II's firepower provides a major counter to the armor threat poised against allied countries in central Europe.

More than 67,000 US Air Force military men and women and more than 650 tactical aircraft stand ready at twenty-four installations from the UK to Turkey as a key armed element of the North Atlantic Treaty Organization (NATO).

Although force modernization is high on USAFE's list of priorities, air base survivability, rapid aircraft sortie generation, flexibility, and efficient commitment and control of the force are considered equally important elements of deterrence.

USAFE's massive command and control system is operated by the 601st Tactical Control Wing headquartered at Sembach AB, Germany, with detached

Gen. John W. Pauly, Commander in Chief, USAFE.

CMSgt. Sam E. Parish, Senior Enlisted Advisor, USAFE.

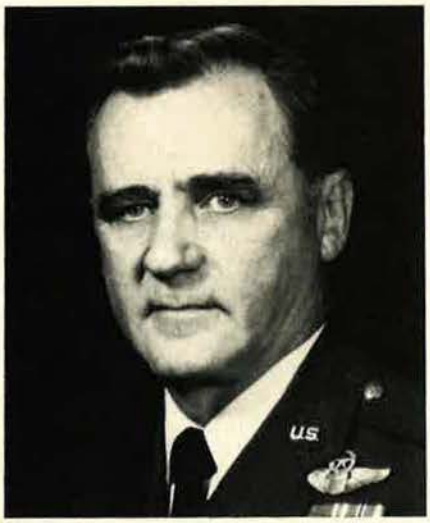
ditors under the guidance of field audit headquarters. Results are reported to the local commander and to the appropriate major command. In addition, local audits are sometimes centrally scheduled at selected bases by AFAA Headquarters to prepare an overall audit assessment that may be forwarded to senior Air Force managers.

The audit force is managed by the Auditor General through two geographic regions and two directorates. The Western Region at Norton AFB includes the western US, Alaska, and the Pacific, with thirty-five area audit offices. The Eastern Region at Langley AFB, Va., includes thirty-one offices and serves the eastern US, the Canal Zone, Greenland, and Europe. Each regional office audits up to three major and twenty-five minor Air Force installations.

The two directorates—Acquisition and Logistics Systems at Wright-Patterson AFB, Ohio, and Service-Wide Systems at Andrews AFB, Md.—provide specialized services. The Directorate of Acquisition and Logistics Systems services Air Force Systems Command and Air Force Logistics Command. It supervises audit offices at AFSC's buying divisions and AFLC's Air Logistics Centers. This centralized management permits coordinated auditing of all phases of a weapon system's life cycle from conception to operational and logistic support.

The Service-Wide Systems Directorate manages Air Force-wide audits of support activities and programs. The Directorate has offices at the Air Force Accounting and Finance Center, Air Force Manpower and Personnel Center, and Air Force Data Systems Design Center.

AFAA auditors issued more than 3,500 audit reports in Fiscal Year 1978, resulting in $211 million in savings or cost avoidance. This amounts to a ninefold return on auditing costs. ■



Brig. Gen. (M/G selectee) Joseph B. Dodds, Commander, AFAA.

CMSgt. Robert S. Wise, Senior Enlisted Advisor, AFAA.

Air Force Engineering and Services Center

The Air Force Engineering and Services Center (AFESC), headquartered at Tyndall AFB, Fla., serves as the focal point for many engineering and services activities throughout the world.

Brig. Gen. Clifton D. Wright, Jr., is the Center Commander. The Center provides guidance and assistance to major commands and bases in the areas of readiness and contingency operations; facility energy; engineering design; operations and maintenance; fire protection; real estate acquisition and disposal; environmental planning; billeting; family housing; food service; and other areas affecting the daily operations of the Air Force community.

The Center, with Air Force Systems Command, also manages the Air Force civil engineering R&D program and serves as the Air Force interface with the Army's Natick Research and Development Command for food service-related programs.

Most of AFESC's 650 personnel are assigned to the Center headquarters. The remainder are located at the three Air Force Regional Civil Engineering offices and at the Air Force Services Office in Philadelphia.

AFESC provides a full range of management, training, and assistance expertise in the engineering and services functional areas. Responsibilities include:

- Coordinating engineering and services readiness issues and initiatives, including training and worldwide deployment of contingency forces.
- Planning and monitoring USAF's fire protection, fire fighting, and equipment capabilities.
- Formulating technical guidance and developing architectural and engineering standards for design of all Air Force buildings and structures.
- Supporting family and unaccompanied personnel housing programs, food service, billeting, linen exchange, clothing management, and laundry/dry cleaning services.
- Acquiring, managing, and disposing of real property worldwide.
- Developing procedures for environmental assessments and pollution abatement, and programs related to airbase development and operations.
- Reviewing the implementation of maintenance management policies, procedures, and methods for base civil-engineering organizations throughout the world.
- Serving as the single point of contact for all facility energy matters within the Air Force.
- Acting as the focal point and lead agency for research and development initiatives involving environmental quality, testing new products and mate-

Brig. Gen. Clifton D. Wright, Jr., Commander, AFESC.

rials, and air-base survivability and recovery.

The Civil Engineering and Services Management Evaluation Team provides management evaluation and consultant service to base-level support activities.

The three Air Force Regional Civil Engineers, located in San Francisco, Dallas, and Atlanta, manage major design and construction projects for the Air Force, Air Force Reserve, and Air National Guard units within their respective areas. They also act as the Air Force point of contact for federal and state environmental agencies.

The Air Force Services Office administers and manages the Air Force food service, laundry, and dry-cleaning programs. Food management assistance teams travel to Air Force installations around the world to provide food preparation and dining hall management assistance.

A new complex to house AFESC's headquarters is under construction at Tyndall AFB and is scheduled for completion in August. ■

Air Force Intelligence Service

The Air Force Intelligence Service (AFIS), established June 27, 1972, as a separate operating agency, provides intelligence services to US Air Force Headquarters and to USAF commanders.

The National Security Act of 1947, as amended, authorizes the Air Force to collect, evaluate, correlate, and disseminate departmental intelligence. Department of Defense (DoD) directives call for the Air Force to provide an organization capable of furnishing adequate, timely, and reliable intelligence for DoD use.

In 1971, the Secretary of the Air Force directed the realignment of Air Staff operating and support functions to other organizations. The following year, the Air Force Intelligence Service was established.

Maj. Gen. James L. Brown, the Assistant Chief of Staff for Intelligence (ACS/I), Hq. USAF, also serves as Commander of AFIS. AFIS Senior Enlisted Advisor is CMSgt. George L. Proud.

AFIS is charged with supporting USAF planning and combat operations, and with responding to the changing intelligence requirements of the Air Force. AFIS engages in the following activities:

• *Substantive intelligence.* AFIS provides the Air Force with all source intelligence affecting Air Force policies, resources, force deployment and employment, indications and warning, intelligence analysis of current operations, and special intelligence research. AFIS provides experts on targeting, weapons, and cartography; serves as Air Force intelligence contact with the Defense Mapping Agency; and ensures that the Secretary of the Air Force, the Chief of Staff, and key Air Staff officers receive the timely and accurate intelligence necessary to assess critical situations in world crises.

• *Security and communications management.* AFIS oversees the worldwide Air Force Special Security Office and Special Activities Office, and ensures compliance with security policies covering special intelligence and intelligence telecommunications.

• *Intelligence data management.* AFIS plans, coordinates, and exercises managerial control of worldwide Air Force intelligence data.

• *The Air Force attaché program.* AFIS supports the Defense Attaché System (DAS) and monitors all matters concerning Air Force participation in DAS.

• *The AFIS Reserve program.* AFIS is responsible for recruiting, administering, training, and using intelligence mobilization augmentees. These Reservists provide immediate support under the Total Force Policy to the active force during peacetime, for contingencies, and for mobilization.

• *Soviet Affairs.* AFIS conducts the Air Force's Soviet Awareness Program, does basic research in Communist military doctrine and strategy, and produces expository materials for use in assessing the impact of Communist doctrine and strategy on USAF plans and operations.

• *The 7602d Air Intelligence Group (AINTELG),* headquartered at Fort Belvoir, Va., is the AFIS agency responsible for the management and collection of worldwide human source intelligence as well as evasion and escape and prisoner-of-war intelligence. A typical project is sifting and reviewing data from POW experiences to better prepare the Air Force for prisoner-of-war situations.

The Air Force Intelligence Service participates in a number of joint and Air Force training exercises each year to improve the readiness of active-duty and Reserve Forces intelligence personnel. ■

Maj. Gen. James L. Brown, Commander, AFIS.

CMSgt. George L. Proud, Senior Enlisted Advisor, AFIS.

Air Force Office of Special Investigations

The Air Force Office of Special Investigations (AFOSI), headquartered in Washington, D. C., directs some 1,900 special agents and administrative people in twenty-nine district offices and 127 detachments and operating locations worldwide. This force supports Air Force commanders who request professional investigative services. AFOSI functions as a fact-finding agency. Judicial or administrative actions then are taken by appropriate commanders upon advice of their Staff Judge Advocates.

AFOSI oversees investigations of criminal offenses ranging from housebreaking to homicide. Investigative responsibility includes crimes against Air Force personnel or property, and those crimes committed on Air Force installations or by people subject to the Universal Code of Military Justice (UCMJ). AFOSI also supervises a cadre of highly trained forensic science specialists.

It is the responsibility of AFOSI to investigate fraudulent activities, violations of public trust involving Air Force procurement, disposal, pay and allowance matters, nonappropriated fund activities, and major administrative irregularities. The office serves as executive agency for coordinating investigations of the Army and Air Force Exchange Service, and provides similar assistance to more than twenty-five percent of the Defense Logistics Agency field offices located throughout the world.

Special agents use a variety of measures to detect, neutralize, and destroy the effectiveness of threats to Air Force security posed by hostile intelligence. A significant AFOSI responsibility is detecting terrorist threats to Air Force facilities and personnel, and warning the affected commanders. It supervises various counterterrorism services for Air Force commanders during periods of heightened terrorist activity and provides protective services to senior personnel as required.

AFOSI manages the Air Force technical surveillance countermeasures program, and provides a wide range of technical investigative support services. It also directs Air Force polygraph and identi-kit programs, maintains the Air Force master terminal to the FBI National Crime Information Center, and performs continuing analysis of crime and counterintelligence patterns and trends.

Part of the AFOSI responsibility is to maintain liaison with law-enforcement and investigative organizations outside the Air Force, including both local and international agencies. Through AFOSI liaison with agencies having varying jurisdictional responsibilities, Air Force commanders are assured of the most thorough investigative service possible.

AFOSI selects and trains special agents from among the most highly qualified and capable Air Force officer, NCO, and civilian volunteers. All agents are trained at an intensive twelve-week course at the Air Force Special Investigations Academy in Washington, D. C. Agents usually return to the Academy for advanced or specialized training after gaining investigative and administrative experience in the field.

In response to Presidential, congressional, Defense Department, and Air Force emphasis, AFOSI in 1979 will expand its white-collar and computer crime detection functions; expand its briefing programs to alert commanders and managers to fraud; increase its participation in joint task forces and surveys of high potential crime areas; and work closely to ensure exchange of information among USAF managers and counterpart agencies. With the support of Air Force commanders, AFOSI will continue its worldwide role of investigative professionalism. ■

Col. Forest A. Singhoff, Commander, AFOSI.

CMSgt. Lawrence A. Shellhammer, Senior Enlisted Advisor, AFOSI.

Air Force Inspection and Safety Center

The Air Force Inspection and Safety Center (AFISC) at Norton AFB, Calif., provides the Air Force Secretary, the Air Force Chief of Staff, and major command and separate operating agency commanders with an assessment of Air Force fighting capability and management effectiveness. AFISC measures operational readiness by evaluating the effectiveness and efficiency of management systems, and by developing and managing the Air Force mishap prevention program. Maj. Gen. Robert W. Bazley commands AFISC and is also the Deputy Inspector General for Inspection and Safety, Hq. USAF.

AFISC has an assigned work force of 301 officers, seventy-nine airmen, and 145 civilians, including forty-three personnel at Kirtland AFB, N. M. In addition, attached to the Center at Norton are twenty-nine people, including foreign exchange officers from Australia, Canada, and West Germany; safety engineers from seven major aerospace companies; staff training officers; Reserve supplement officers; and mobili-

zation augmentees from the Reserve.

To carry out its mission, AFISC is divided into five directorates. Four are primary-mission directorates—Inspection, Aerospace Safety, Medical Inspection, and Nuclear Surety. The fifth—the Directorate of Programs—provides staff support and assists in the development, coordination, and management of inspection and safety programs.

Another office, the Inspector General's Assistant for Inquiries and Complaints located at Norton since June 1976, develops inquiry and complaint policy and publishes directives for the Inspector General of the Air Force. That office also processes administrative inquiries and complaints referred to the Inspector General.

The Directorate of Inspection determines the status of operational readiness within the commands, evaluates the effectiveness and efficiency of USAF management systems, and provides information for corrective actions. The directorate conducts Functional Management Inspections (FMIs) to evaluate well-defined activities and programs; System Acquisition Management Inspections (SAMIs) to review all aspects of weapon system acquisition; and Over-the-Shoulder Inspections (OTSIs) to evaluate the performance of major command and separate operating agency inspection teams. It also conducts Air Force readiness studies for the Chief of Staff. The directorate's Inspection School conducts a training program for all newly assigned USAF, major command, and separate operating agency inspectors.

The Directorate of Aerospace Safety monitors USAF and Air Reserve Forces mishap prevention programs in all areas but nuclear safety. Directorate personnel conduct safety studies and analyses to evaluate the combat effectiveness of mishap prevention programs and participate in mishap investigations of special interest to the Chief of Staff.

The directorate also serves as the focal point for all matters pertaining to USAF implementation of the DoD and USAF Occupational Safety and Health Programs. Its people plan, organize, and administer USAF and Air Force/industry safety conferences, and represent the Air Force at joint services safety conferences, NATO flight safety standardization meetings, and DoD Explosives Safety Board meetings. The directorate is custodian of all Air Force mishap reports and is responsible for identifying problems in all areas but nuclear safety.

The Safety Directorate administers the mishap reporting system established by the DoD and studies mishap trends to identify areas that may have a high number of mishaps. Recently it established an International Data Exchange Program with thirty-nine countries and an F-16 Mishap Data Exchange Program with European governments participating in the F-16 Multinational Fighter Program.

Directorate personnel design, plan, and develop resources for safety education programs, including university-level safety courses, the publication of *Aerospace Safety*, *Driver*, and *Maintenance* magazines, and the Safety Officer's Study Kit.

The Directorate of Medical Inspection was formed in 1974 when major command medical inspection teams were dissolved. The directorate is charged with planning and directing all Air Force and Air Reserve Forces medical inspection programs to ensure that health-care resources are managed efficiently and economically. Directorate personnel conduct Health Services Management Inspections, which are compliance and management-oriented, and Functional Management Inspections, which address Air Force-wide management problems requiring major command or Air Staff actions.

AFISC conducts Functional Management Inspections to evaluate well-defined activities and programs.

The Directorate of Nuclear Surety at Kirtland AFB, N. M., plans, develops, directs, and evaluates the Air Force Nuclear Surety Program. The directorate analyzes and evaluates all aspects of nuclear surety and makes recommendations to improve nuclear surety and the management of nuclear resources. Its people direct the accident, incident, deficiency (AID) reporting system and give technical advice for investigating and preventing nuclear accidents. Directorate personnel also serve as the chairman and secretariat of the Nuclear Weapon System Safety Group (NWSSG). The NWSSG evaluates each nuclear weapon system to ensure that it satisfies DoD nuclear safety standards, and originates the weapon system safety rules for the approval of the Defense Secretary. The directorate also publishes each quarter the *USAF Nuclear Surety Information Kit*, which disseminates nuclear safety, security, and inspection information to nuclear-capable units.

As the "eyes and ears" of the Chief of Staff, AFISC inspects all areas of operational readiness and safety. ■

Maj. Gen. Robert W. Bazley, Commander, AFISC.

CMSgt. Philip A. Arvizo, Senior Enlisted Advisor, AFISC.

Air Force Test and Evaluation Center

Now in its fifth year, the Air Force Test and Evaluation Center (AFTEC) continues to play a major role in the system acquisition process. As the Air Force's independent manager for operational test and evaluation (OT&E), AFTEC determines how well hardware proposed for procurement meets the combat needs of the personnel who will use and maintain it.

AFTEC currently has the overall OT&E management of fifty-six major Air Force weapon systems and monitors more than 250 other acquisition programs managed by various major air commands.

For his management initiatives and achievements, the AFTEC Commander, Maj. Gen. Howard W. Leaf, was selected by the Secretary of the Air Force as recipient of the 1978 Eugene M. Zuckert Management Award.

General Leaf reports the results of AFTEC testing to the Chief of Staff, the Secretary, and principals of the Defense Systems Acquisition Review Council to assist in making hardware production decisions.

While AFTEC Headquarters is located at Kirtland AFB, N. M., there are eighteen other locations in the CONUS and Europe where AFTEC heads OT&E testing. Among those are detachments at Kapaun AS, Germany (near Ramstein); Eglin AFB, Fla.; and Nellis AFB, Nev. The Center has 342 military and seventy-eight civilian personnel, seventy-five percent of whom are officers or civilian officer equivalents.

AFTEC staff members design OT&E tests to answer a series of critical operational questions that must be addressed in testing each new system. The Center is then provided operations and maintenance people from appropriate using and supporting commands to help fly and maintain the hardware in an environment resembling as closely as possible an operational situation. In line with that philosophy, AFTEC has tested several major weapon systems in the European area, including the F-15, E-3A, A-10, IIR Maverick missile, and, most recently, the F-16 multinational fighter.

AFTEC also is involved with a wide variety of supporting systems. Near- and long-term future programs will place heavy emphasis on computer systems, simulators, software, communications systems (ground-based and satellite), and strategic systems. Hence, AFTEC is managing OT&E on the F-16 Operational Flight Trainer, the A-10 Simulator, the F-5E Instrument Flight Simulator under the "Peace Hawk" Foreign Military Sales program to Saudi Arabia, and the B-52/KC-135 Weapon Systems Trainer. The Center also is involved in numerous tactical and strategic communications programs such as TRI-TAC, SACDIN, JTIDS, ATEC, and AUTOSEVOCOM. In the space area, the Center manages OT&E on DoD elements of the Space Shuttle, the Air Force Satellite Communications System, NAVSTAR, and the Simplified Processing Station, a ground-based satellite readout facility. Additionally, the Center will manage OT&E on the multibillion-dollar Automatic Data Processing System (Phase IV), that eventually will replace existing base support computers.

Another vital area of AFTEC responsibility involves joint testing, with the AFTEC Directorate of joint test serving as the focal point for such DoD-directed testing.

In 1978, several important OT&E phases of the following programs were completed:

- F-4G "Wild Weasel" Follow-On Test & Evaluation (FOT&E).
- AIM-7F Air-to-Air Missile, Phase I, Initial Operational Test & Evaluation (IOT&E).
- EF-111A, IOT&E.

General Leaf summed up the Center's achievements and goals when he stated, "Last year was a telling one for AFTEC in that many of the initiatives we began a couple of years ago started showing very positive results. Our number-one priority in 1979 is to refine our OT&E assessments even more. . . . We have a major challenge to provide progressively better information to our top decision-makers, and that's what we will do." ■

Maj. Gen. Howard W. Leaf, Commander, AFTEC.

CMSgt. Ralph V. McKeown, Senior Enlisted Advisor, AFTEC.

Air Force Manpower and Personnel Center

A change in name and increased focus on retention highlighted the past year at the Air Force Manpower and Personnel Center (AFMPC), Randolph AFB, Tex.

The name change reflected the merger of manpower and personnel at Hq. USAF. AFMPC continues as the operational arm of the DCS/Manpower and Personnel, working in close coordination with Air Force major commands and functional managers.

About 550 officers, 950 enlisted people, and 600 civilians are assigned to the Center to manage programs that affect Air Force people from the time they enter active duty until into their retirement years. An additional 450 people are assigned to the Office of Civilian Personnel Operations and the Air Force Management Engineering

Agency, both named activities of AFMPC.

In an atmosphere of austerity with fewer people, scarce training funds, and increasing mission requirements, retention assumed even greater importance in the past year.

Air Force reenlistment rates for first-term airmen remained high—over forty percent. The actual number of reenlistments was below the goal for the year; however, the shortage was more than offset by the FY '77 reenlistments that had exceeded the goal that year.

Among officers, the major issue was pilot retention. By the fall of 1978 the loss rate had increased about twenty percent over that of 1976. To help offset this trend, Air Force leadership began a broad program that includes efforts to retain career-motivating entitlements, eliminate known irritants, improve duty conditions, and increase individual visibility in the assignment process. Retention is expected to remain a significant area of concern in 1979.

Approximately thirty central selection boards met at the Center during the past year to select Air Force people for promotion to temporary and permanent officer grades and to evaluate eligible NCOs for senior and chief master sergeant. Boards also selected officers for regular appointment and professional military education and chose some highly qualified chief master sergeants for high-year-of-tenure extensions to thirty-three years.

Assignment actions for Air Force people continue with added emphasis on stability to cut moving costs and to increase production through greater experience on the job. Those assigned to continental US locations normally stay a minimum of three years before moving to another CONUS location or two years before going overseas.

AFMPC is also deeply involved in better utilization of women and is sensitive to the changes necessary as more women enter the Air Force. Presently about nine percent of enlisted Air Force personnel and six percent of the officers (line, medical, chaplain, and judge advocate) are women. By 1983, 16.7 percent of enlisted personnel and 12.8 percent of officers are expected to be women. Programs have been initiated to evaluate the utilization of women as pilots and navigators. Test programs are under way to evaluate women in flight engineer, loadmaster, and inflight refueling operator specialties. In addition, women are serving on Titan II missile launch crews.

Recognizing achievements and helping people with problems are other AFMPC roles. Recognition comes through operation of awards and decorations programs and the Air Force Suggestion program. AFMPC lends a helping hand through management of the Air Force Aid Society, Individualized Newcomer's Treatment and Orientation (INTRO) program, and fund raising activities.

Many very sensitive functions are performed by AFMPC's casualty office. During the past year, responsibility for all Air Force mortuary services was added. Casualty assistance is provided to more than 5,000 Air Force next of kin annually, and status reviews and hearings for the 116 members still carried as missing in action (MIA) are being conducted.

AFMPC acts as the "home office" and focal point for all matters that affect the worldwide network for military personnel operations below the Air Staff level. This network includes the major commands and 123 consolidated base personnel offices (CBPOs).

The Center also provides policy guidance and assistance for such Air Force off-duty leisure-time programs as open messes, sports, recreation and entertainment programs, and child-care centers. ■

Maj. Gen. Leroy W. Svendsen, Jr., Commander, AFMPC.

CMSgt. W. D. "Bud" Humphries, Senior Enlisted Advisor, AFMPC.

Air Force Service Information and News Center

A new Separate Operating Agency, the Air Force Service Information and News Center (AFSINC), became operational in October 1978, with headquarters at Kelly AFB, Tex. The agency, commanded by Col. Harry B. Casterlin, Jr., reports to the Air Force Secretary's Office of Information.

AFSINC was established following an Air Force study that recommended combining special information activities into a single separate operating agency. Units in AFSINC include Internal Information and the Magazine and Book Branch, both relocated from the Pentagon; the Command Services Unit, moved from Bolling AFB, D. C.; and the Home Town News Center, scheduled to move from Tinker AFB to Kelly AFB this year. Metropolitan Information Offices in Chicago, Los Angeles, and New York are detachments assigned to the AFSINC for budgetary and administrative support.

The agency has a total of 156 people, including thirty-three officers, sixty-six airmen, and fifty-seven civilians. An important overall function is to develop and recommend to the Air Force Director of Information procedures for stan-

dardizing Air Force information products.

AFSINC is organized into the Directorate for Internal Information and the Directorate for Administration/ Resources. A third division, the Directorate for Home Town News, will be established in 1979.

The Directorate for Internal Information prepares the Commander's Policy Letter and its Supplement for Air Force commanders, Air Force News Service releases for base newspapers, general officer and high-ranking civilian biographies, the *Air Force Now* monthly film, *Air Force Weekly*, and *Airman* magazine. It also manages the Air Force's base newspaper program and Air Force activities associated with the operation of the American Forces Radio and Television Stations overseas.

The Directorate for Administration/ Resources manages AFSINC manpower, budgeting, and production and distribution of film, tapes, news releases, and other material prepared by the Directorate for Internal Information.

The Directorate for Home Town News has been assigned the Home Town News and the Magazine and Book programs. The Home Town News program gathers information about Air Force members and their activities and provides news releases, photos, films, and other material to newspapers and radio and television stations in the individual's home town. The Magazine and Book program assists writers and editors in preparing articles about Air Force people and activities for commercial publishers. ■

Col. Harry B. Casterlin, Jr., Commander, AFSINC.

CMSgt. Herbert W. Vaughn, Senior Enlisted Advisor, AFSINC.

Air Force Medical Service Center

The Air Force Medical Service Center (AFMSC) was established on July 1, 1978, and became operational October 1, 1978, as a separate operating agency headquartered at Brooks AFB, Tex. Maj. Gen. Murphy A. Chesney, the AFMSC Commander, also serves as Deputy Surgeon General for Operations and Director of Professional Services.

AFMSC assists the Air Force Surgeon General in developing policies and practices concerning routine and emergent health care in peace and war. The Center acts as the Air Force Surgeon General's agent for implementing policies, studies, and management and administrative research.

AFMSC has three directorates and two corps chiefs' offices. The directorates are Professional (clinical) Services, Health Care Support, and Health Plans and Programs; the two corps are the Medical Service and Biomedical Sciences Corps.

The Health Care Support Directorate, largest in AFMSC, develops plans and procedures to ensure that needed medical facilities are available, required medical supplies and material are provided, and that patient affairs, including medical records and statistics, are properly managed.

The Professional Services Directorate is involved in programs associated with the practice of medicine in the Air Force, including clinical, flight, and preventive medicine and professional specialties associated with these areas.

The Health Plans and Programs Directorate develops and implements guidance to support health-care delivery, in both contingency and peacetime operations. The directorate is concerned with emergent health-care systems, and is responsible for medical planning and ensuring there are manpower authorizations appropriate to the various missions.

The Medical Service Corps (MSC) and Biomedical Sciences Corps (BSC) chiefs are responsible for policy development and advice to the Surgeon

Maj. Gen. Murphy A. Chesney, Commander, AFMSC.

CMSgt. Paul F. Greenwood, Senior Enlisted Advisor, AFMSC.

General on matters involving their respective corps, including career development, monitoring and progression, and professional education. The MSC is concerned with health-care administration, and the BSC with the scientists and engineers who support the physicians in clinical and aerospace medicine professions.

AFMSC is directly involved on a daily basis with the Air Force Surgeon General, other Air Staff directorates, major commands, and other federal agencies. Continuing interface is required as policy and practices for medical support are developed and implemented. ■

Air Force Legal Services Center

AFLSC reviews cases of the Board of Correction of military records.

The Air Force Legal Services Center in Washington, D. C., was established in 1978. The Center is commanded by Maj. Gen. Walter D. Reed, who also is The Judge Advocate General (TJAG).

The duties of The Judge Advocate General and his department are imposed by statute and by direction from the Secretary of Defense and the Secretary of the Air Force. In partial fulfillment of those duties, the Center provides Air Force-wide legal services in the areas of military justice, patents, claims and tort litigation, general litigation, labor law, preventive law, and legal aid. The Center also manages personnel programs for active-duty and Reserve judge advocates and civilian and legal services airmen, and administers the Federal Legal Information Through Electronics (FLITE) Program for the Air Force.

Personnel at the Center are responsible for the administration of military justice throughout the United States Air Force. This task begins with The Judge Advocate General's designating commanders authorized to convene courts-martial and providing judges and trial counsel (prosecutors) whom those commanders may detail. TJAG also provides defense counsel and attorneys to serve as legal advisors for administrative boards and as pretrial (Article 32) investigating officers.

Statutory post-trial review of the records of proceedings occurs at the Center. Appellate-level government and defense counsel there assure proper appellate action is taken. These attorneys—experts in their field—advise and counsel attorneys at the trial level. Center personnel also provide clemency evaluations and review cases of the Board for Correction of Military Records that involve military justice issues.

Military justice activity in process is monitored by a computer system called Automated Military Justice Analysis and Management System (AMJAMS), which tracks individual actions from their early stages to final disposition, and analyzes data in search of trends or problem areas.

AFLSC claims activity probably is the civil law activity most familiar to Air Force families. Claims on behalf of and against the USAF as well as tort claims and litigation arising out of USAF operations and activities are administrated at the AFLSC. These claims arise from activities ranging from household moves to aircraft accidents and medical malpractice. Another computer program, the Claims Administrative Management Program, tracks the progress and disposition of Air Force claims.

The patents division recommends policies and manages programs concerning inventions, patents, copyrights, and trademarks. The litigation division handles disputes, controversies, and litigation involving the USAF, its employees, agents, and contractors; reviews and processes appeals under the Freedom of Information Act; and furnishes a member to the Privacy Act Appeals Panel.

AFLSC also provides counsel in unfair labor practice complaints and representation proceedings under Executive Order 11491, as well as other civilian personnel proceedings.

Civil-law professionals under General Reed's command administer the Air Force preventive law and legal aid programs and serve as Air Force representatives on the Armed Services Individual Income Tax Council and the Armed Forces Tax Group.

The Legal Services Center is also responsible for FLITE, or Federal Legal Information Through Electronics, a computer data bank that gives quick access to years of case law and precedent which ordinarily would fill many rooms with law books. With the assistance of attorney specialists at computer terminals in Denver, Colo., Air Force lawyers can reduce their legal research by hours or days. ■

Maj. Gen. Walter D. Reed, Commander, AFLSC.

CMSgt. Thomas R. Castleman, Senior Enlisted Advisor, AFLSC.

Air Force Commissary Service

The Air Force Commissary Service (AFCOMS), with headquarters at Kelly AFB, San Antonio, Tex., was activated in January 1976, and assumed operational control of USAF commissaries the following October. From April 8, 1977, to November 30, 1978, AFCOMS was a component of the Air Force Engineering and Services Agency. On December 1, 1978, it regained separate operating agency status.

When Congress rejected proposals in 1975 and 1976 to phase out commissary appropriations, AFCOMS was created to streamline operations, reduce costs, and improve commissary service.

AFCOMS is managed by a Board of Directors responsible to the Air Force Chief of Staff and comprised of senior Air Force officers and the Chief Master Sergeant of the Air Force. The board provides direction to the AFCOMS Commander for commissary operations and approves basic policies, plans, and programs.

AFCOMS is commanded by Maj. Gen. Charles E. Woods and includes approximately 9,200 civilians and 690 military people who operate 160 commissaries and 117 troop issue and subsistence functions in the CONUS and overseas. Total sales in FY '78 exceeded $1.4 billion.

The headquarters manages commissaries through fifteen Stateside complexes and two regions—Pacific (including Far East and Alaska) and European.

AFCOMS supports the troop issue and subsistence program and provides patrons with food and household items at the lowest practical cost. It is required by law to generate sufficient earnings through the surcharge program to pay for certain reimbursable operating expenses and for construction costs.

Automated systems for inventory control and accounts payable are one of the improvements made by AFCOMS in 1978 to improve customer service.

In 1978, management improvements and overhead consolidation were emphasized. The management and control of from three to eight stores are being consolidated into administrative offices under AFCOMS's "complexing" concept. As this consolidation program progresses, more savings are anticipated.

Other economies and enhanced services include more frequent vendor deliveries to reduce inventories, and automated systems for reports, inventory control, and accounts payable. The Air Force Audit Agency and the Office of Special Investigations assist in reducing inventory losses. AFCOMS also coordinates with local and national vendors on special offers, discounts, and sales promotions.

The AFCOMS construction program is budgeted at $170 million through FY '82. It provides for thirty-five new commissaries and approximately one hundred renovations. New or renovated stores will have better lighting, heating, and refrigeration; wider aisles; more shelf space; and better traffic flow.

Data automation, electronic cash registers with scanners, and electronic scales are other improvements recently implemented or under consideration. Another long-range program involves training commissary employees in administrative, technical, professional, and management skills.

AFCOMS Headquarters has contributed toward customer savings through a vigorous Patron Savings Program. Innovative programs such as anniversary sales, mandatory stockage, and Best Buy sections have saved shoppers millions of dollars.

AFCOMS operates for the good of the commissary patrons under the motto: "We Serve Where You Serve!" ■

Maj. Gen. Charles E. Woods, Commander, AFCOMS.

CMSgt. Fred Dickinson, Senior Enlisted Advisor, AFCOMS.

Air Force Reserve

Among the AFRES aircraft supporting Tactical Air Command are these F-105s.

During the past decade, 100 percent of the Air Force Reserve (AFRES) flying force has converted to more modern equipment. The most recent conversion involved airborne early warning and control EC-121s, which were replaced by F-4 Phantoms in October 1978. Current plans call for AFRES units to fly A-10 close air support aircraft and F-16 multipurpose fighters.

This modernization reflects increasing Department of Defense reliance on AFRES as a vital component of the Total Force. At the end of 1978, all equipped flying units were rated combat-ready.

During the 1978 fiscal year, AFRES personnel participated in twenty-six joint Field Training exercises overseas and in the continental United States. The Autumn Forge exercise saw Reserve C-7 Caribous and C-123 Providers, along with support personnel, deployed to Germany for a successful linking with active-duty forces. During the exercise, Reserve crews flying the C-7 and C-123 participated in assault landings on a cleared section of a German autobahn. The twenty-six joint field exercises along with eight Command Post Exercises, and an internal exercise, established a new record of thirty-five exercises for AFRES personnel. This illustrates the steady growth of AFRES involvement.

In May 1978, AFRES tested its rapid-response capability with Operation Redoubt. More than 18,000 Reservists demonstrated AFRES's ability to mobilize and deploy large numbers of personnel and units in an emergency situation.

Typical of AFRES response without being mobilized was the Guyana airlift operation in mid-November, in which Reserve aircraft, crews, medical evacuation, and other support personnel participated.

In the area of humanitarian missions, four AFRES aerospace rescue and recovery units equipped with HC-130, HH-1H, and HH-3H aircraft flew 1,187 hours on 772 sorties in 1978 and were credited with saving forty-seven lives.

In July 1978, AFRES joined the Military Assistance to Safety and Traffic (MAST) program. The 304th Aerospace Rescue and Recovery Squadron at Portland International Airport, Ore., was designated as a MAST unit by the Defense and Transportation Departments. In the last half of the year, 304th crews flew five missions, totaling 7.2 hours, and saved five lives.

An AFRES WC-130 weather reconnaissance group accounts for more than seventy percent of the nation's hurricane surveillance. Other C-130s with airborne fire-fighting gear helped the US Forest Service contain fires that threatened thousands of acres of woodland.

AFRES personnel assigned to C-141 StarLifter and C-5 Galaxy associate units comprise almost fifty percent of MAC's strategic aircrews and thirty-five percent of that command's strategic maintenance forces. Other AFRES aircraft, including more than 240 C-7 Caribou and C-123 Provider transports, represent thirty-five percent of the Air Force's tactical airlift capacity.

The Tactical Air Command's strike forces can be beefed up with more than 190 AFRES aircraft and crews. Reserve units fly F-105 Thunderchiefs, A-37 Dragonflys, F-4 Phantoms, AC-130 gunships, and CH-3E Jolly Green Giant helicopters. AFRES gunships and special-operations helicopters make up about half of the Air Force's special-operations inventory.

AFRES units are assigned KC-135 Stratotankers that support Strategic Air Command and other Air Force commands. Planning calls for the activation of an associate KC-10 Advanced Tanker unit that will provide half of the KC-10 aircrews when the new tanker is added to the SAC inventory.

The Air Force Reserve's 128 nonflying units also are an important part of the Total Force Concept. Civil engineering units perform construction projects at US and overseas bases, accomplishing training while assisting the regular Air Force. Other Reservists augment base hospitals and fly with aeromedical evacuation units. Aerial port personnel are deployed overseas to handle cargo, passengers, and mail. Combat logistics support squadrons assist the Air Force Logistics Command in depot work as a part of their training.

AFRES headquarters is at Robins AFB, Ga., where the command administers Reserve units and more than 450 aircraft. Accomplishing the diverse AFRES missions are some 45,000 Air Force Reservists in units, including about 7,000 Air Reserve Technicians (ARTs), more than 4,000 non-ART civilians, and 500 active-duty military personnel. These dedicated individuals ensure that the Air Force Reserve is trained and ready to respond to any national emergency. ■

Maj. Gen. Richard Bodycombe, Commander, AFRES.

CMSgt. Jackie R. Farley, Senior Enlisted Advisor, AFRES.

AIR FORCE RESERVE FLYING WINGS AND ASSIGNED UNITS

AIR FORCE	WING HQ.	GROUP	SQUADRON	TYPE AIRCRAFT	LOCATION	GAINING COMMAND
Fourteenth Air Force (Hq., Dobbins AFB, Ga.)		932d AAG (Assoc)	73d AAS (Assoc)	C-9	Scott AFB, Ill.	MAC
	94th TAW		700th TAS	C-7A	Dobbins AFB, Ga.	MAC
		908th TAG	357th TAS	C-7A	Maxwell AFB, Ala.	MAC
	302d TAW		355th TAS	C-123K	Rickenbacker AFB, Ohio	MAC
			356th TAS	C-123K	Rickenbacker AFB, Ohio	MAC
		911th TAG	758th TAS	C-123K	Greater Pittsburgh AP, Pa.	MAC
	315th MAW (Assoc)		300th MAS (Assoc)	C-141	Charleston AFB, S. C.	MAC
			701st MAS (Assoc)	C-141	Charleston AFB, S. C.	MAC
			707th MAS (Assoc)	C-141	Charleston AFB, S. C.	MAC
	439th TAW		337th TAS	C-130B	Westover AFB, Mass.	MAC
			731st TAS	C-123K	Westover AFB, Mass.	MAC
		914th TAG	328th TAS	C-130A	Niagara Falls IAP, N. Y.	MAC
	459th TAW		756th TAS	C-130E	Andrews AFB, Md.	MAC
		913th TAG	327th TAS	C-130E	Willow Grove NAS, Pa.	MAC
		927th TAG	63d TAS	C-130A	Selfridge ANG Base, Mich.	MAC
	512th MAW (Assoc)		326th MAS (Assoc)	C-5	Dover AFB, Del.	MAC
			709th MAS (Assoc)	C-5	Dover AFB, Del.	MAC
	514th MAW (Assoc)		335th MAS (Assoc)	C-141	McGuire AFB, N. J.	MAC
			702d MAS (Assoc)	C-141	McGuire AFB, N. J.	MAC
			732d MAS (Assoc)	C-141	McGuire AFB, N. J.	MAC
Tenth Air Force (Hq., Bergstrom AFB, Tex.)			302d SOS	CH-3E	Luke AFB, Ariz.	TAC
		915th TFG	93d TFS	F-4C	Homestead AFB, Fla.	TAC
		919th SOG	711th SOS	AC-130A	Eglin AFB, Fla. (Aux. 3)	TAC
	301st TFW		457th TFS	F-105D/F	Carswell AFB, Tex.	TAC
		507th TFG	465th TFS	F-105D/F	Tinker AFB, Okla.	TAC
		508th TFG	466th TFS	F-105B	Hill AFB, Utah	TAC
	434th TFW		45th TFS	A-37B	Grissom AFB, Ind.	TAC
		910th TFG	757th TFS	A-37B	Youngstown Municipal AP, Ohio	TAC
		917th TFG	47th TFS	A-37B	Barksdale AFB, La.	TAC
		926th TFG	706th TFS	A-37B	NAS, New Orleans, La.	TAC
	452d ARW	931st ARG (Heavy)	72d ARS (Heavy)	KC-135	Grissom AFB, Ind.	SAC
			336th ARS (Heavy)	KC-135	March AFB, Calif.	SAC
		940th ARG (Heavy)	314th ARS (Heavy)	KC-135	Mather AFB, Calif.	SAC
Fourth Air Force (Hq., McClellan AFB, Calif.)	349th MAW (Assoc)		301st MAS (Assoc)	C-5A	Travis AFB, Calif.	MAC
			312th MAS (Assoc)	C-5A	Travis AFB, Calif.	MAC
			708th MAS (Assoc)	C-141	Travis AFB, Calif.	MAC
			710th MAS (Assoc)	C-141	Travis AFB, Calif.	MAC
	403d RWRW		305th ARRS	HH-3E, HC-130H/N	Selfridge ANG Base, Mich.	MAC
			301st ARRS	HH-1H, HH-3E	Homestead AFB, Fla.	MAC
			303d ARRS	HC-130H	March AFB, Calif.	MAC
			304th ARRS	HH-1H	Portland IAP, Ore.	MAC
		920th WRG	815th WRS	WC-130H	Keesler AFB, Miss.	MAC
	433d TAW		68th TAS	C-130B	Kelly AFB, Tex.	MAC
		924th TAG	704th TAS	C-130B	Bergstrom AFB, Tex.	MAC
	440th TAW		95th TAS	C-130A	Gen. Billy Mitchell Fld., Wis.	MAC
		928th TAG	64th TAS	C-130A	Chicago-O'Hare IAP, Ill.	MAC
	442d TAW		303d TAS	C-130E	Richards-Gebaur AFB, Mo.	MAC
		934th TAG	96th TAS	C-130A	Minneapolis-St. Paul IAP, Minn.	MAC
	445th MAW (Assoc)		728th MAS (Assoc)	C-141	Norton AFB, Calif.	MAC
			729th MAS (Assoc)	C-141	Norton AFB, Calif.	MAC
			730th MAS (Assoc)	C-141	Norton AFB, Calif.	MAC
	446th MAW (Assoc)		97th MAS (Assoc)	C-141	McChord AFB, Wash.	MAC
			313th MAS (Assoc)	C-141	McChord AFB, Wash.	MAC

AAG/S (Assoc) Aeromedical Airlift Group/Squadron (Assoc)
ARRS Aerospace Rescue & Recovery Squadron
ARW/G/S Air Refueling Wing/Group/Squadron
IAP International Airport
MAW/S (Assoc) Military Airlift Wing/Squadron (Assoc)
RWRW Rescue & Weather Reconnaissance Wing
SOG/S Special Operations Group/Squadron
TAW/G/S Tactical Airlift Wing/Group/Squadron
TFW/G/S Tactical Fighter Wing/Group/Squadron
WRG/S Weather Reconnaissance Group/Squadron

Air Reserve Personnel Center

ARPC's master personnel records file houses more than 200,000 records of Ready Reservists. The records are being converted to microfilm.

The Air Reserve Personnel Center (ARPC) celebrated its twenty-fifth anniversary on March 1, 1979. Organized originally to centralize records and to facilitate mobilizing the Air Reserve Forces, ARPC now gives personnel support to more than a half-million active and retired Reserve force members. Mobilization times have been reduced from weeks to days through up-to-date technology and management.

Improved communications with Reservists is accomplished through Project Awareness, a program developed to inform Air National Guardsmen and Air Force Reservists of the services available to them from ARPC. The initial visit by an ARPC "Awareness" briefing team was to Homestead AFB, Fla., in mid-1978. Before the year ended, nine other AFRES units and three ANG units with a total of about 6,100 people were visited. Four visits per month to ANG and AFRES units are planned for 1979.

Two toll-free numbers (1-800-525-1391 and 1395) and an AUTOVON number (926-4617) have been added to the ARPC to handle inquiries on the revised Survivor Benefit Plan (SBP), which allows Reservists to insure a portion of retired pay for their survivors.

During the year, the ARPC completed the assumption of Air National Guard records. In March, 82,301 microfilmed enlisted Guard records were transferred to the Center and were fully operational in the ARPC system on June 6, 1978.

Completion of the "Enhancement I" program in 1978 gives ARPC direct access to the microcomputer system at the Manpower and Personnel Center, Randolph AFB, Tex. In the past, data was keypunched and electronically transmitted, resulting in a high degree of rejection and error. Now, with editing capability and immediate access to the AFMPC computer, personnel records transactions can be completed with better quality control than previously and in less time.

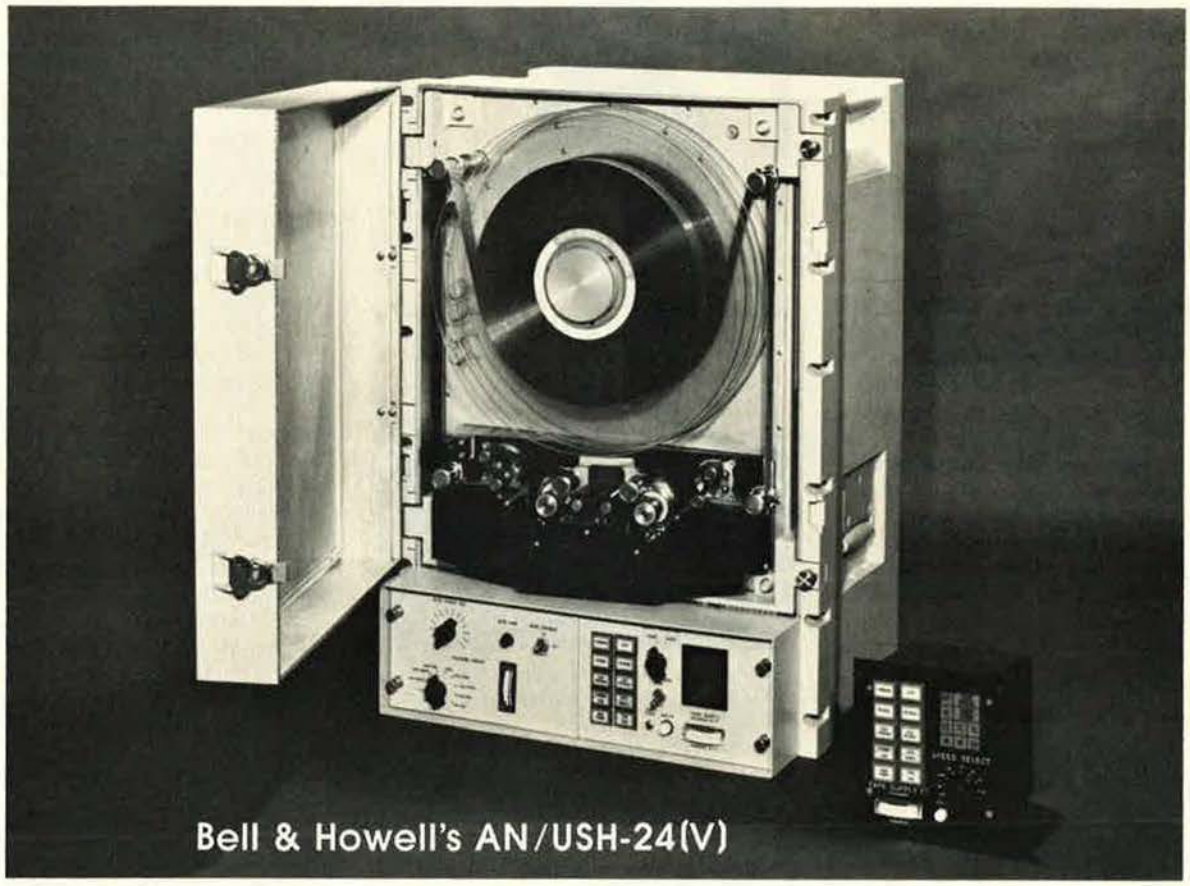
A new AFRES Point Credit Accounting and Reporting System (PCARS II) became operational in 1978. PCARS, which keeps an accounting of Reserve participation points, had previously been a separate system that also faced the quality control problems common to punch cards. The new PCARS is a subsystem of the Advanced Personnel Data System, allowing remote terminal input with immediate edits. It will generate up to an eight-year summary of participation points to be used by selection and promotion boards. The success of the system was demonstrated by only a two percent error rate in the first 1,000,000 transactions.

ARPC continues to emphasize improvement in the total Reserve personnel system. In 1979, every effort will be made to increase both speed and accuracy in the transfer, maintenance, and availability of personnel records. The Center's goals will remain unchanged—quality support of the active force and maximum capacity for mobilization in a national emergency. ■

Col. Frank D. Hardee, Commander, ARPC.

CMSgt. Richard C. Platt, Senior Enlisted Advisor, ARPC.

The portable, airborne, laboratory, hostile environment, MIL-spec recorder-reproducer.



Since its introduction nearly three years ago, the AN/USH-24(V) has proven to be one of the most versatile recorder designs ever produced. Its basic excellence allows a broad range of flexibility for tailoring to specific applications, resulting in important time and cost savings for each program.

Nearly 18 months of exhaustive environmental testing qualified the original design to MIL-E-16400 for the U.S. Navy. It was modified to MIL-E-5400 for the U.S. Air Force. A high density digital model has been delivered for shipboard and airborne applications. Yet another version is being supplied for the LAMPS MARK III program. Among its other major program credits are WLQ-4, WLR-6, NOMAD and ARIA.

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A unique dual motor, dual capstan tape drive which gives servo performance unequalled by any recorder its size.

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Air National Guard

The Air National Guard (ANG), with both federal and state missions, is unique among the world's reserve military forces. It provides an effective and economical military force for national defense and a trained, equipped, and disciplined force to protect life and property during disasters, civil disorders, and other emergencies.

ANG units are commanded by their state governors, unless called to federal duty. They may be called for federal service by the President, by Congress, or when otherwise authorized by law. All Air Guard units are assigned for mobilization purposes to active Air Force major gaining commands. The gaining commands are responsible for assuring that ANG units are ready to function effectively. The gaining commands establish training standards, provide advisory assistance, and evaluate unit training, readiness, and safety.

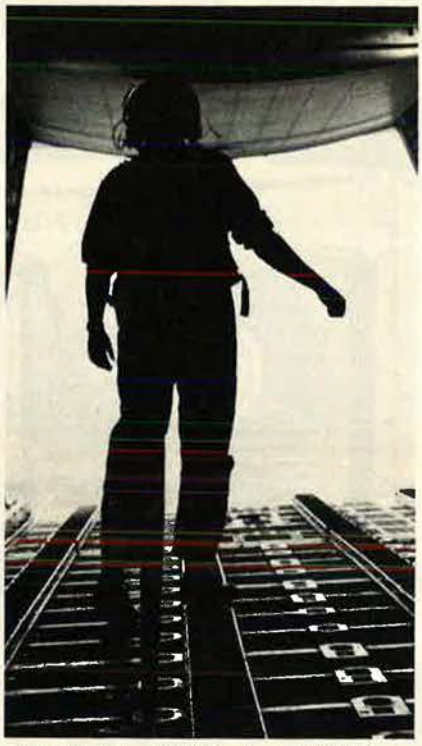
The Air Guard force structure includes twenty four wings, ninety-one flying squadrons, and 231 major nonflying units. The flying squadrons operate sixteen different types of mission aircraft with a strength of 92,500 men and women.

For twenty-five years, the ANG has performed an air defense alert mission for ADCOM. That mission has taken a new direction now as two ANG units have assumed detached alert commitments in North Carolina and Louisiana. KC-135 units continue to participate in rotating tanker task force operations in the United Kingdom and will soon begin similar operations in Guam and Alaska. C-130 units provide airlift support for the US Southern Command on a rotational basis, and on October 1, 1978, A-7 units began the Coronet Cove rotational commitment in the Canal Zone, providing close air support missions in joint training programs with the US Army.

This year, two veteran aircraft, the F-100 and the RF-101, will be replaced by F-4s, F-105Gs, A-7s, A-10s, and RF-4s.

On October 1, 1978, the Air National Guard reorganized under the Tri-Deputy concept. Approximately 4,500 manpower positions were made available for realignment into more critical wartime missions. In another change, the ANG has been authorized to pay an enlistment and reenlistment bonus to certain enlisted members of the Guard.

More than fifty ANG Civil Engineering Prime BEEF teams deployed for annual training to active Air Force installations in support of Civil Engineering maintenance and repair projects last year. ANG units provide fire protection support during JCS exercises and on two occasions furnished exclusive fire protection coverage for NASA during movement of Space Shuttle Enterprise.



A C-130 of the 133d Tactical Airlift Wing, New Mexico ANG, completes an airdrop mission.

Communications-Electronics and Meteorology units provided the Air Force approximately 50,000 man-days last year for engineering and installation projects.

By the end of FY '79, half of ANG tactical control units will have converted to the new three-dimensional tactical radars (AN/TPS-43E) with the remaining units converting in FY '80. Also during FY '80, eighteen ANG weather flights will convert from air to Army support, resulting in a total of twenty-six ANG weather flights supporting the Army Guard and three ANG flights continuing to support the ANG and USAF. Twenty-eight ANG medical units performed their annual training in active Air Force hospitals and clinics with critical manning assistance provided in the areas of anesthesiology, surgery, dentistry, optometry, obstetrics and gynecology, radiology, and operating room nurses.

The ANG has participated in sixteen overseas deployments in support of USAFE and NATO, gaining realistic training in locations where the units may be called to fight. Realistic training is also being accomplished through such joint exercises as the Brave Shield series—exercises where ANG has provided up to eighty percent of the combat communications and tactical control forces employed. Deployments, exercises, and direct support of the Air Force on a day-to-day basis have given the ANG a solid base for maintaining proficiency and a high level of readiness. ■

Maj. Gen. John T. Guice, Director, ANG.

CMSgt. Lynn E. Alexander, Senior Enlisted Advisor, ANG.

THE AIR NATIONAL GUARD BY MAJOR COMMAND ASSIGNMENT

(As of April 1, 1979)

AEROSPACE DEFENSE COMMAND

F-101 Voodoo

107th	Fighter Interceptor Gp.	Niagara Falls, N. Y.
142d	Fighter Interceptor Gp.	Portland, Ore.
147th	Fighter Interceptor Gp.	Ellington AFB, Tex.*

F-106 Delta Dart

102d	Fighter Interceptor Wg.	Otis AFB, Mass.*
144th	Fighter Interceptor Wg.	Fresno, Calif.
120th	Fighter Interceptor Gp.	Great Falls, Mont.
125th	Fighter Interceptor Gp.	Jacksonville, Fla.
177th	Fighter Interceptor Gp.	Atlantic City, N. J.

F-4C/D Phantom

119th	Fighter Interceptor Gp.	Fargo, N. D.
191st	Fighter Interceptor Gp.	Selfridge ANGB, Mich.

EB-57

158th	Defense System Evaluation Gp.	Burlington, Vt.

STRATEGIC AIR COMMAND

KC-135 Stratotanker

101st	Air Refueling Wg.	Bangor, Me.
126th	Air Refueling Wg.	Chicago, Ill.
141st	Air Refueling Wg.	Fairchild AFB, Wash.
171st	Air Refueling Wg.	Pittsburgh, Pa.
128th	Air Refueling Gp.	Milwaukee, Wis.
134th	Air Refueling Gp.	Knoxville, Tenn.
151st	Air Refueling Gp.	Salt Lake City, Utah
157th	Air Refueling Gp.	Pease AFB, N. H.
160th	Air Refueling Gp.	Rickenbacker AFB, Ohio
161st	Air Refueling Gp.	Phoenix, Ariz.
170th	Air Refueling Gp.	McGuire AFB, N. J.
189th	Air Refueling Gp.	Little Rock AFB, Ark.
190th	Air Refueling Gp.	Forbes Field, Kan.

MILITARY AIRLIFT COMMAND

C-130 Hercules

118th	Tactical Airlift Wg.	Nashville, Tenn.
133d	Tactical Airlift Wg.	Minneapolis/St. Paul, Minn.
136th	Tactical Airlift Wg.	NAS, Dallas, Tex.
137th	Tactical Airlift Wg.	Oklahoma City, Okla.
146th	Tactical Airlift Wg.	Van Nuys, Calif.
109th	Tactical Airlift Gp.	Schenectady, N. Y.
130th	Tactical Airlift Gp.	Charleston, W. Va.
139th	Tactical Airlift Gp.	St. Joseph, Mo.
143d	Tactical Airlift Gp.	Providence, R. I.
145th	Tactical Airlift Gp.	Charlotte, N. C.
153d	Tactical Airlift Gp.	Cheyenne, Wyo.
164th	Tactical Airlift Gp.	Memphis, Tenn.
165th	Tactical Airlift Gp.	Savannah, Ga.
166th	Tactical Airlift Gp.	Wilmington, Del.
167th	Tactical Airlift Gp.	Martinsburg, W. Va.
172d	Tactical Airlift Gp.	Jackson, Miss.
176th	Tactical Airlift Gp.	Anchorage, Alaska
179th	Tactical Airlift Gp.	Mansfield, Ohio

C-7A Caribou

135th	Tactical Airlift Gp.	Baltimore, Md.

HC-130 Hercules/HH-3 Jolly Green Giant

106th	Aerospace Rescue & Recovery Gp.	Suffolk Co. Airport, N. Y.
129th	Aerospace Rescue & Recovery Gp.	Hayward, Calif.

PACIFIC AIR FORCES

F-4 Phantom

154th	Composite Gp.	Hickam AFB, Hawaii

* No longer a major active Air Force base

TACTICAL AIR COMMAND

A-7D Corsair II

121st	Tactical Fighter Wg.	Rickenbacker AFB, Ohio
127th	Tactical Fighter Wg.	Selfridge ANGB, Mich.
132d	Tactical Fighter Wg.	Des Moines, Iowa
140th	Tactical Fighter Wg.	Buckley ANGB, Colo.
112th	Tactical Fighter Gp.	Pittsburgh, Pa.
114th	Tactical Fighter Gp.	Sioux Falls, S. D.
138th	Tactical Fighter Gp.	Tulsa, Okla.
150th	Tactical Fighter Gp.	Kirtland AFB, N. M.
156th	Tactical Fighter Gp.	San Juan, Puerto Rico
162d	Tactical Fighter Gp.	Tucson, Ariz.
169th	Tactical Fighter Gp.	McEntire ANGB, S. C.
178th	Tactical Fighter Gp.	Springfield, Ohio
185th	Tactical Fighter Gp.	Sioux City, Iowa

F-100D Super Sabre

103d	Tactical Fighter Gp.	Windsor Locks, Conn.
104th	Tactical Fighter Gp.	Westfield, Mass.
180th	Tactical Fighter Gp.	Toledo, Ohio
181st	Tactical Fighter Gp.	Terre Haute, Ind.
188th	Tactical Fighter Gp.	Fort Smith, Ark.

F-105B Thunderchief

108th	Tactical Fighter Wg.	McGuire AFB, N. J.

F-105D Thunderchief

113th	Tactical Fighter Wg.	Andrews AFB, Md.
192d	Tactical Fighter Gp.	Byrd Field, Sandston, Va.

F-105F Thunderchief

184th	Tactical Fighter Training Gp.	McConnell AFB, Kan.

F-105G Thunderchief

116th	Tactical Fighter Wg.	Dobbins AFB, Ga.

A-37B Dragonfly

174th	Tactical Fighter Gp.	Syracuse, N. Y.
175th	Tactical Fighter Gp.	Baltimore, Md.

F-4C Phantom

122d	Tactical Fighter Wg.	Fort Wayne, Ind.
131st	Tactical Fighter Wg.	St. Louis, Mo.
149th	Tactical Fighter Gp.	Kelly AFB, Tex.
159th	Tactical Fighter Gp.	NAS, New Orleans, La.
183d	Tactical Fighter Gp.	Springfield, Ill.

RF-4C Phantom

117th	Tactical Reconnaissance Wg.	Birmingham, Ala.
123d	Tactical Reconnaissance Wg.	Louisville, Ky.
124th	Tactical Reconnaissance Gp.	Boise, Idaho
148th	Tactical Reconnaissance Gp.	Duluth, Minn.
152d	Tactical Reconnaissance Gp.	Reno, Nev.
155th	Tactical Reconnaissance Gp.	Lincoln, Neb.
186th	Tactical Reconnaissance Gp.	Meridian, Miss.
187th	Tactical Reconnaissance Gp.	Montgomery, Ala.

O-2A Super Skymaster

105th	Tactical Air Support Wg.	White Plains, N. Y.
128th	Tactical Air Support Wg.	Truax Field, Wis.
110th	Tactical Air Support Gp.	Battle Creek, Mich.
111th	Tactical Air Support Gp.	Willow Grove NAS, Pa.
163d	Tactical Air Support Gp.	Ontario, Calif.
182d	Tactical Air Support Gp.	Peoria, Ill.

EC-130E

193d	Tactical Electronic Warfare Gp.	Harrisburg, Pa.

Air Force Academy

April 1, 1979, marked the silver anniversary of the United States Air Force Academy at Colorado Springs, Colo. Lt. Gen. K. L. Tallman, Academy Superintendent, directs the activities of some 4,400 men and women cadets with his staff of about 1,100 officers, 1,200 noncommissioned officers, and 1,882 civilians.

Military training, which includes programs in flying, parachuting, and soaring, is under the direction of Brig. Gen. Thomas C. Richards, Commandant of Cadets.

The academic curriculum, accredited by the North Central Association of Colleges and Secondary Schools, is under the leadership of the Dean of Faculty, Brig. Gen. William A. Orth.

A rigorous physical education program, which includes intercollegiate and intramural competition as well as physical education, is run by Col. John J. Clune, Director of Athletics.

Military training takes place in every class and at every formation. Military discipline is first learned by cadets at the "follower" level. Later, as upperclassmen, cadets are given responsibilities and duties comparable to those of junior officers.

Field training is conducted in the summer. During the academic year, military training continues, emphasizing individual performance and responsibility. Supplementing formal classroom military studies is a series of lectures and presentations pertinent to leadership.

Flying programs begin during the first summer with sailplane orientation flights. Courses in aviation fundamentals and navigation are available during the third, second, and first class years and in some summers. Cadets eligible for pilot training may take the T-41 training program.

Two graduates were fighter aces in Southeast Asia, where 112 Academy men were killed in action and thirteen are still missing. Four graduates are astronauts.

The academic curriculum is administered by fourteen departments organized into four divisions: basic sciences, engineering sciences, social sciences, and humanities. Each of the faculty's 560 officers and four civilians has at least a master's degree and is a volunteer.

A core curriculum of 153 semester hours must be completed by every cadet. It is divided about evenly between the social sciences and humanities and the basic and engineering sciences. Cadets may elect to major in one of twenty-three disciplines with about half choosing science or engineering. Twenty Academy graduates have won Rhodes Scholarships and forty-four have been Guggenheim Fellows.

Aviation activities at the Academy include soaring, ballooning, and parachuting. Cadets eligible for pilot training also take instruction in powered flight.

The Academy's athletic program offers eighteen intercollegiate sports for men and ten for women, with forty-one varsity and junior varsity teams competing nationwide. The physical education program includes sixteen intramural sports, fielding 640 teams. With this extensive program and outstanding facilities, the Academy has produced 144 All-American athletes.

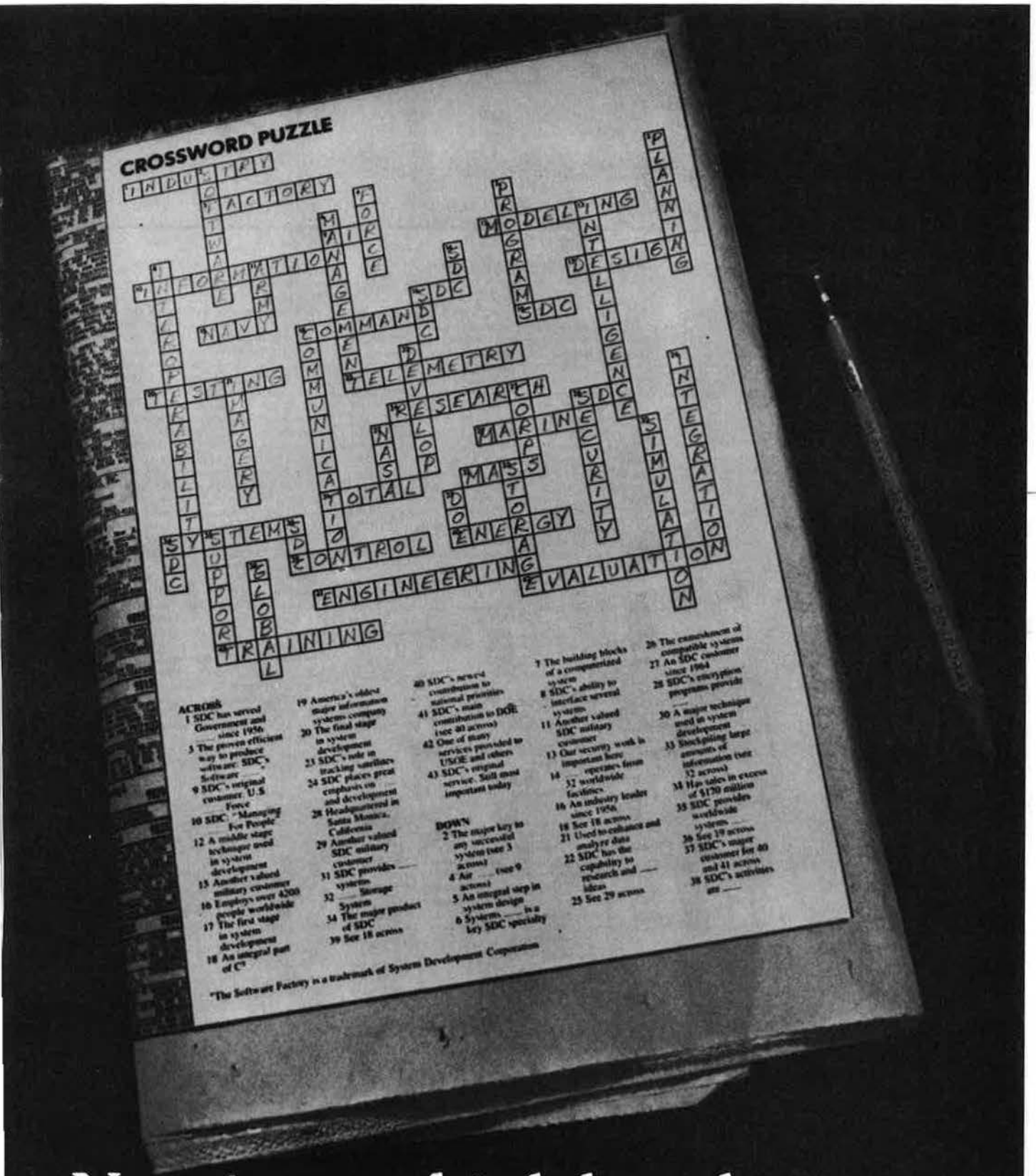
Academy cadets are frequently involved in community activities. In 1978, the freshman class hosted the first statewide Special Olympics ever held at a military academy. Basic cadets escorted handicapped contestants for two days in an event that was nationally televised.

Academy personnel also helped Colorado Springs become the first US city to host a National Sports Festival, under sponsorship of the US Olympic Committee. In addition to providing meals and housing for 1,400 athletes, the Academy was host for ten of the sporting events. The Academy will assist Colorado Springs in hosting the 1979 festival this summer.

The Academy will continue to provide a solid educational background for future Air Force leaders, who will serve their country with pride, dedication, and a continuing commitment to excellence. ■

Lt. Gen. Kenneth L. Tallman, Superintendent, USAFA.

CMSgt. Elmer W. Wienecke, Senior Enlisted Advisor, USAFA.



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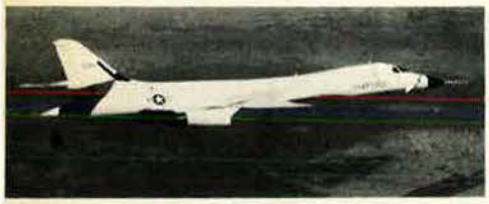
Bombers



B-1

B-52 with low-light-level TV sensors

FB-111A

B-1

Production plans for this intended replacement for the B-52 were canceled by the President in June 1977. The DoD Annual Report for FY '80 states, "We are continuing the testing of the B-1 bomber design so that the technical base will be available, in the very unlikely event that, because alternative strategic systems run into difficulty, we decide to reconsider B-1 deployment. This program will evaluate the penetration effectiveness of the B-1; provide information on current and future applications of the B-1 defensive avionics and engine design; and measure the B-1's resistance to nuclear effects. The fourth and last B-1 aircraft is scheduled for delivery this February [1979] with both the offensive and defensive avionics installed. The data from this aircraft's flight-test program will help in the design of future strategic penetrating aircraft, as well as provide a measure of the B-1's capability as a cruise missile carrier."

The B-1 is a variable-geometry aircraft with a blended wing-body configuration, and was intended to maintain the effectiveness of the SAC manned bomber force into the next century. Its nuclear hardening, high alert rate, and fast takeoff would give it excellent launch survivability. It was intended, normally, to cruise to its target at subsonic speed, then attack at high subsonic speed and low altitude. Alternatively, it would be capable of supersonic over-the-target dash at high altitude. Its radar signature is approximately 10% that of the B-52; it carries twice the latter's payload, and can use shorter runways. A unique structural mode control system (SMCS), utilizing small canard foreplanes and the bottom rudder section, minimizes the effect of turbulence on crew and airframe during high-speed, low-level terrain-following. Variable-geometry inlets, which allow speeds of up to Mach 2.1, were eliminated as a cost-reduction measure on the proposed production aircraft, although they could be fitted if required. Operational test flights demonstrated the B-1's ability to fulfill its designed role, in terms of base escape, high-altitude cruise with aerial refueling, low-altitude high-speed terrain-following penetration, simulated weapons release, and recovery. Mach 2.0 was exceeded for the first time in April 1976. Defensive avionics that have been under development for the aircraft include radio frequency surveillance and warning equipment, electronic countermeasures, and other countermeasures such as chaff.

Contractor: Rockwell International Corporation, North American Aircraft Group, Los Angeles Division.
Power Plant: four General Electric F101-GE-100 afterburning turbofan engines; each approximately 30,000 lb thrust.
Accommodation: four: two pilots and two systems operators, in pairs.
Dimensions: span spread 136 ft 8½ in, fully swept 78 ft 2½ in, length overall 150 ft 2½ in, height 33 ft 7¼ in.
Weight: gross 389,800 lb.
Performance: max speed at 50,000 ft Mach 2.1, max range without refueling 6,100 miles.
Armament: three internal weapon bays, accommodating 24 AGM-69 SRAMs on three rotary dispensers, or 75,000 lb of free-fall bombs. Provision for 8 more SRAMs or 40,000 lb of free-fall weapons externally.

B-52 Stratofortress

Although now in its third decade of operational service, the B-52 Stratofortress still constitutes the major piloted element of SAC. About 350 aircraft remain in the inventory, capable of delivering a wide range of weapons, including conventional and nuclear bombs, and nuclear-tipped air-to-surface short-range attack missiles. Apart from its primary strategic mission, the B-52 can be deployed in four conventional roles: show of force; area denial; precision strikes; and defense suppression. Other missions in recent years have included sea-surveillance flights in cooperation with the US Navy.

Since first entering USAF service in 1955, the B-52 has undergone numerous improvement programs in order to satisfy prevailing defense requirements. More than 300 B-52s are expected to continue in the USAF inventory for the remainder of the century. Versions still operational are: **B-52D,** total of 170 built with J57-P-29W turbojet engines, with delivery from December 1956. Eighty "D"s were refurbished in 1975–77 to extend their service life. These aircraft are equipped with an MA-6A bombing/navigation system and A-3A or MD-9 fire control for the tail guns. They will be retained at least until the mid-eighties, their conventional warfare capability being greater than that of the later still-operational models. **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; deliveries 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 multibarrel tail gun; 102 were built, with deliveries starting in May 1961. Under a major USAF program initiated in 1971, 281 B-52Gs and "H"s were modified to carry 20 AGM-69A Short-Range Attack Missiles (SRAM), six under each wing and eight in the bomb bay. Additionally, all "G"s and "H"s have been equipped with an AN/ASQ-151 Electro-optical Viewing System (EVS), using forward-looking infrared (FLIR) and low-light-level TV sensors to improve low-level flight capability. Under USAF's Rivet Ace program, initiated in 1974, about 270 "G"s and "H"s are being progressively updated with Phase VI ECM. This will include, by 1981, ALQ-122 SNOE (Smart Noise Operation Equipment) countermeasures and AN/ALQ-155(V) advanced ECM; and, in 1978–82, an AFSATCOM kit permitting worldwide communication via satellite. Other equipment is being developed for future procurement, with relevant funding being sought.

In addition, the B-52G/H will be adapted as carrier aircraft for the cruise missile. Full-scale development of the relevant equipment, as an integral part of the cruise missile program, began last year; four modified B-52Gs will be used in the flyoff this year between the Boeing and General Dynamics missiles.

Updating B-52G/Hs is anticipated until at least the end of the eighties, in order to prolong their effectiveness as both cruise missile carriers and bombers. (Data for B-52G.)

Contractor: The Boeing Aerospace Company.
Power Plant: eight Pratt & Whitney J57-P-43WB 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 160 ft 11 in, height 40 ft 8 in.
Weight: gross 488,000 lb.
Performance: (approx): max speed at 20,000 ft 660 mph, service ceiling 55,000 ft, range 7,500 miles.
Armament: four 0.50 caliber guns in tail turret; up to 20 SRAM missiles, plus nuclear free-fall bombs.

FB-111A

A two-seat, medium-range, high-altitude strategic bomber version of the basic swingwing F-111, the **FB-111A** was developed originally to provide SAC with a replacement for some of its B-52C/F versions of the Stratofortress and B-58A Hustlers. It is also capable of supersonic speed at sea level. The first of 76 production aircraft flew in July 1968, and the initial delivery was made in October 1969 to the 340th Bomb Group. Operational units equipped with a total of 60 FB-111As are the 380th and 509th Bomb Wings.

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.

AF WEAPONS

EDITED BY JOHN W. R. TAYLOR, EDITOR, JANE'S ALL THE WORLD'S AIRCRAFT

Fighters

F-4 Phantom II

Essentially a two-seat, twin-engine, all-weather fighter designed in the mid-1950s, the F-4 has undergone continuous updating in order to remain an effective force in USAF's tactical inventory. Well over 600 F-4s equip TAC units; about 450 are based with USAFE in Europe; PACAF units in Hawaii, Korea, Okinawa, and the Philippines, AAC's 43d Tactical Fighter Squadron, ADCOM's 57th FIS, Iceland, and one ADCOM (ANG) squadron are similarly equipped. Latest equipment produced for USAF Phantoms includes the Pave Spike day tracking/laser ordnance designator pod, for use with "smart" weapons, and the advanced ALQ-131 ECM system capable of covering the complete range of threat radars. First Phantom version supplied to USAF was the **F-4C,** a two-seat tactical fighter developed from the basic F-4B naval version, with J79-GE-15 turbojet engines and provision for a large external weapon load. Modifications included dual controls, an inertial navigation system, and boom flight refueling, instead of drogue. The 583 aircraft completed between May 1963 and May 1966 were deployed by TAC, PACAF, and USAFE for close-support, attack, and air-superiority duties, and with ANG from January 1972. Two squadrons are operational in a "Wild Weasel" defense suppression role, carrying ECM warning sensors, jamming pods, chaff dispensers, and antiradiation missiles. The **F-4D** was developed from the F-4C with major systems changes, 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. Total of 843 built, primarily for USAF, but 32 were supplied to Iran and 36 transferred from USAF to the Republic of Korea. The **F-4E** is a multirole 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, 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, to improve maneuverability, have been retrofitted to all USAF F-4Es. In addition, from early 1973, some 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 F-4Es have been built for USAF. Latest improvements include the Pave Tack system, which provides a day/night adverse weather capability to acquire, track, and designate ground targets for laser, infrared, and electro-optically guided weapons, and a digital intercept computer that includes launch computations for all USAF AIM-9 and AIM-7 missiles. The **F-4G** or "Wild Weasel" is a modified F-4E with sophisticated electronic warfare equipment that enables it to detect, identify, and locate enemy radars, and to direct against them weapons for their destruction or suppression. Changing EW threats are covered by use of reprogrammable software. Primary armament includes Shrike (AGM-45), Standard ARM (AGM-78), and HARM (AGM-88), with optional availability of the CBU Rockeye area weapon for suppression purposes, and the Maverick missile. The last 39 of the scheduled 116 modification kits are being procured in 1979. (Data for F-4E.)

Contractor: McDonnell Aircraft Company, Division of McDonnell Douglas Corporation.

Power Plant: two General Electric J79-GE-17A turbojets; each 17,900 lb thrust with afterburning.

Accommodation: pilot and weapon systems operator in tandem.

Dimensions: span 38 ft 7½ in, length 63 ft 0 in, height 16 ft 5½ in.

Weights: empty 30,328 lb, gross 61,795 lb.

Performance: max speed at 40,000 ft, Mach 2.0 class, range with typical tactical load 1,300 miles.

Armament: one 20-mm M-61A1 multibarrel gun; provision for up to four AIM-7E Sparrow, AGM-45A Shrike, or AIM-9 Sidewinder missiles on four underfuselage and four underwing mountings, or up to 16,000 lb external stores.

F-5E/F Tiger II

Intended primarily to provide America's allies with an uncomplicated air-superiority tactical fighter, which could be operated and maintained relatively inexpensively, the Tiger II was developed as the successor to Northrop's F-5A export fighter. The single-seat **F-5E,** first flown in August 1972, is basically a VFR day/night fighter with limited all-weather capability. Design emphasis is on maneuverability rather than high speed, notably through the use of maneuvering flaps. More than 900 F-5Es and two-seat **F-5Fs** have been ordered by a dozen countries. TAC, assisted by ATC, is training pilots and technicians of user air forces. 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. Deliveries of the F-5F began in the summer of 1976. TAC also operates two "aggressor squadrons" of camouflaged F-5Es, simulating late-model MiG threat aircraft, in "Red Flag" exercises at Nellis AFB, Nev. Similar training is provided by F-5Es of the 527th Tactical Fighter Training Aggressor Squadron, USAFE, at RAF Alconbury, England, and by PACAF's 26th Tactical Fighter Training Squadron, located at Clark AB, Philippines. (Data for F-5E.)

Contractor: Northrop Corporation, Aircraft Division.

Power Plant: two General Electric J85-GE-21A turbojet engines; each 5,000 lb thrust with afterburning.

Accommodation: pilot only.

Dimensions: span 26 ft 8 in, length 48 ft 2 in, height 13 ft 4 in.

Weights: empty 9,583 lb, gross 24,675 lb.

Performance (at 13,220 lb): max level speed at 36,000 ft Mach 1.63, service ceiling 51,800 ft, range with max fuel, with reserve fuel for 20 min max endurance at S/L (with external tanks retained) 1,595 miles.

Armanent: two AIM-9 Sidewinder missiles on wingtip launchers; two M-39A2 20-mm cannon in nose, with 280 rounds per gun (one 20-mm in F-5F); up to 7,000 lb of mixed ordnance on four underwing attachments and one underfuselage station. Optional armament and equipment includes AGM-65 Maverick, laser-guided bombs, centerline multiple ejector rack, and (F-5F only) a laser designator.

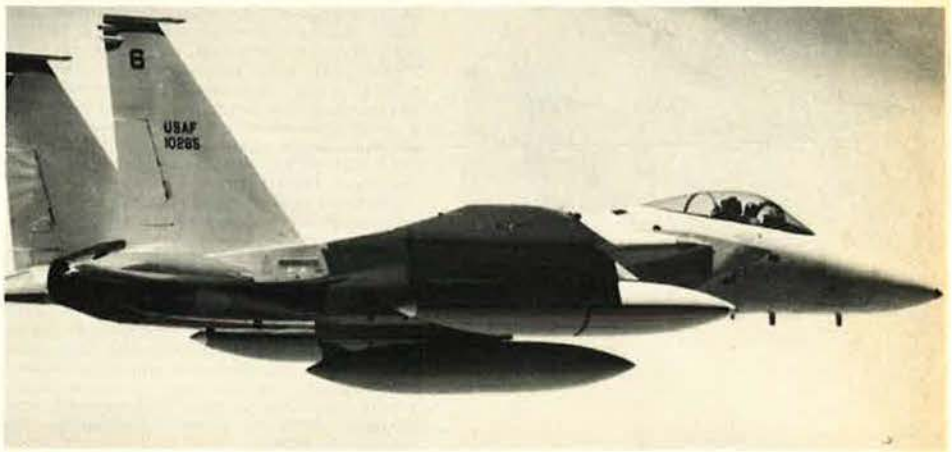
F-15 Eagle

Although designed specifically for an air-superiority role, the single-seat **F-15A** and two-seat **F-15B** (originally TF-15A) fixed-wing, all-weather fighters have an inherent air-to-surface attack capability. The F-15A is progressively replacing the F-4 as USAF's primary air-superiority aircraft. From mid-1980, the current versions will be followed by the single-seat **F-15C** and two-seat **F-15D,** embodying Production Eagle Package (PEP-2000) improvements. These include 2,000 lb of additional internal fuel, provision for carrying conformal fuel and sensor packs, and increased maximum takeoff weight of 68,000

F-4E Phantoms

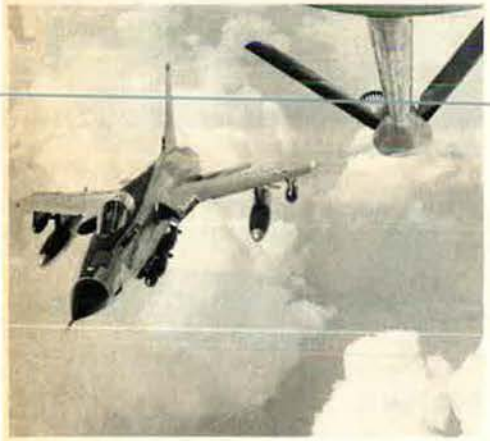
F-5E Tiger II

F-15 Eagle



F-16

F-101B Voodoo



F-105 Thunderchief

F-106 Delta Dart

lb. The F-15C/D will also have a programable signal processor to enhance radar capability and flexibility. Planned total production of all models is 729 aircraft for USAF by FY '84. Orders to date total 501 for operational use by USAF. An additional 78 were approved in the FY '79 budget, and 60 are requested for FY '80. The first F-15A flew in July 1972. TAC's 1st TFW at Langley AFB, Va., and 49th TFW at Holloman AFB, N.M., USAFE's 36th TFW at Bitburg AB, Germany, and 32d TFS at Camp New Amsterdam, the Netherlands, have been fully equipped. The 33d TFW at Eglin AFB, Fla., will be equipped this year, and PACAF's 18th TFW at Kadena AB, Okinawa, will start equipping late this year. F-15 pilot training is accomplished at Luke AFB, Ariz., in both single-seat and two-seat Eagles. Specialized equipment in the F-15 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 weapons delivery, with a headup display for close-in dogfights. The IFF system embodies a Hazeltine interrogator to inform the pilot if an aircraft seen visually or on radar is friendly; an inertial navigation system is fitted.

Eight world time-to-height records were set by the specially-prepared **F-15 Streak Eagle** in early 1975, of which six remain unbeaten, including climb to 20,000 m (65,616 ft) in 2 min 2.94 sec. (Data for F-15A.)

Contractor: McDonnell Aircraft Company, Division of McDonnell Douglas Corporation.

Power Plant: two Pratt & Whitney F100-PW-100 turbofan engines; each 25,000 lb thrust class.

Accommodation: pilot only.

Dimensions: span 42 ft 9¾ in, length 63 ft 9 in, height 18 ft 5½ in.

Weight: empty 27,300 lb; gross F-15A 56,000 lb; F-15C 68,000 lb.

Performance: max speed Mach 2.5, combat ceiling 65,000 ft, ferry range, without external fuel pallets, more than 2,878 miles.

Armament: one internally mounted M-61A1 20-mm multibarrel cannon; four AIM-9L Sidewinder and four AIM-7F Sparrow air-to-air missiles carried externally. Provision for carrying up to 15,000 lb of ordnance on three weapon stations.

F-16

Almost four years to the day from the announcement of source selection, the first operational F-16 was delivered to Tactical Air Command. On January 6, 1979, the 388th TFW at Hill AFB, Utah, received its first F-16s. These aircraft, which evolved from the USAF Lightweight Fighter Prototype Program, incorporate a number of advanced technologies, making the F-16 one of the most maneuverable fighters ever built. These advances include: decreased structural weight through the use of composites; decreased drag resulting from reduced static stability margin; 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-edge flaps. The F-16 is powered by a single afterburning turbofan engine. All digital avionics are integrated through a digital multiplex system, to reduce permanent wiring as well as to take advantage of the versatility of modern high-speed computers. Other equipment includes a multimode radar with clutter-free look-down capability, advanced radar warning receiver, a headup display, internal chaff or flare dispensers, and a 500-round 20-mm internal gun. The aircraft also has provisions for ECM.

USAF has initiated procurement of the first 250 F-16s, with a total planned purchase of 1,388 aircraft. These will equip ten active fighter wings, as well as modernize the Air Reserve Forces. In addition, four NATO allies (Belgium, Denmark, the Netherlands, and Norway) have signed a Memorandum of Understanding with the US to purchase 348 F-16s under coproduction arrangements. The first European aircraft flew in December 1978 and was accepted by Belgium in January 1979. Israel has signed a Letter of Offer and Acceptance to purchase 75 F-16s, with a number of additional nations expressing serious intent to procure the type, in **F-16A** single-seat and **F-16B** two-seat versions. (Data for F-16A.)

Contractor: General Dynamics Corporation.

Power Plant: one Pratt & Whitney F100-PW-200(3) turbofan engine; approximately 25,000 lb thrust with afterburning.

Accommodation: pilot only.

Dimensions: span 32 ft 10 in, length excl probe 47 ft 7.7 in, height 16 ft 5.2 in.

Weight: empty operating 15,979 lb; gross with external loads 33,000 lb (growth to 35,400 lb).

Performance: max speed Mach 2 class, service ceiling more than 50,000 ft, ferry range more than 2,000 miles.

Armament: one M-61A1 20-mm multibarrel cannon, with 500 rounds, mounted in fuselage; externally-mounted infrared missiles; seven other external stores stations for fuel tanks, air-to-air and air-to-surface munitions.

F-100 Super Sabre

By the end of this FY, the last twelve ANG units still operating the F-100 will have been re-equipped with more modern aircraft. First flown in May 1953, the original prototype was the first operational fighter capable of supersonic speed in level flight. Most of the remaining operational aircraft are F-100Ds, as described below.

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 missiles, rockets, etc.

F-101B Voodoo

This two-seat long-range all-weather interceptor was first flown in March 1957. The ANG has three groups of F-101Bs assigned to Aerospace Defense Command, providing a significant part of the air defense interceptor force for the continental United States. The aircraft also continues to serve with the Canadian Armed Forces under NORAD control. *(For reconnaissance versions see page 121.)*

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-105 Thunderchief

Of more than 600 **F-105D** single-seat all-weather fighter-bombers built, several remain in squadron service with the ANG and AF Reserve, equipped with NASARR monopulse radar system, for use in both high- and low-level missions, and Doppler for night or bad weather operations. About 30 were modified to carry the T-Stick II system to improve all-weather bombing. Also in the ANG and Reserve are a few **F-105Bs** and 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 have also flown 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 electronic countermeasures pods mounted on the underfuselage. During FY '79 some F-105Gs are being transferred to the ANG, beginning a new mission for the Guard. 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 multibarrel 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. Constant updating has enabled Aerospace Defense Command to maintain its effectiveness, and 231 continued to serve with active USAF squadrons until FY '77, by the end of which about half of the F-106s had been transferred to the ANG. The two production versions are: **F-106A,** single-seat interceptor with J75 engine, first flown in January 1957; 277 were built, with deliveries from 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 has been updated periodically. Other modifications have included installation of supersonic drop tanks, in-flight refueling, and a 20-mm cannon, which gives greater effectiveness against low altitude/ECM/maneuvering targets. (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 3½ in.
Weights (approx): empty 25,300 lb, gross 42,400 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; four AIM-4F/G Falcon air-to-air missiles carried internally; and a 20-mm cannon on most F-106As.

F-111

Four versions of this pioneer variable-geometry tactical fighter are currently in service with USAF. Initial **F-111A** aircraft, delivered to a training unit in July 1967, were development models. Deliveries of production aircraft to the first operational wing began in October 1967. A total of 141 production F-111As was built; this version served with distinction in SEA in 1972–73 and currently equips the 366th TFW. The "A" was superseded in production by the **F-111E,** a version with modified air intakes which improved engine performance above Mach 2.2. Ninety-four were built, and most of these serve 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 were built, has uprated turbofans. It is being modified to carry in its weapons bay the Pave Tack system, which provides a day/night all-weather capability to acquire, track, and designate ground targets for laser, infrared, and electro-optically guided weapons. The F-111F-equipped 48th TFW moved to RAF Lakenheath in 1977.

Production of the F-111 was completed in 1976. Its EW capabilities are being updated, with the ALQ-131 ECM system. In addition, the **EF-111A,** an ECM conversion of the F-111A, is under development by Grumman as a potential replacement for USAF's EB-57s. The first flight of a prototype was made in March 1977, and the complete system was flown for the first time on the second prototype in May of the same year. A further 40 conversions are envisaged, to equip two USAF squadrons in the early 1980s, with five aircraft requested in the FY '79 budget and another one in the FY '80 budget. Basic equipment comprises ALQ-99A jammers. SAC has a strategic bomber version of the F-111, designated **FB-111A** *(see page 116).* The Royal Australian Air Force 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-111F): empty 47,481 lb, gross 100,000 lb.
Performance (F-111F): max speed at S/L Mach 1.2, max speed at altitude Mach 2.5, service ceiling more than 59,000 ft, range with max internal fuel more than 2,925 miles.
Armament: one 20-mm M-61A1 multibarrel cannon and two nuclear bombs in internal weapon bay; four swiveling and fixed jettisonable wing pylons carrying total external load of up to 25,000 lb of bombs, rockets, missiles, or fuel tanks.

F-111

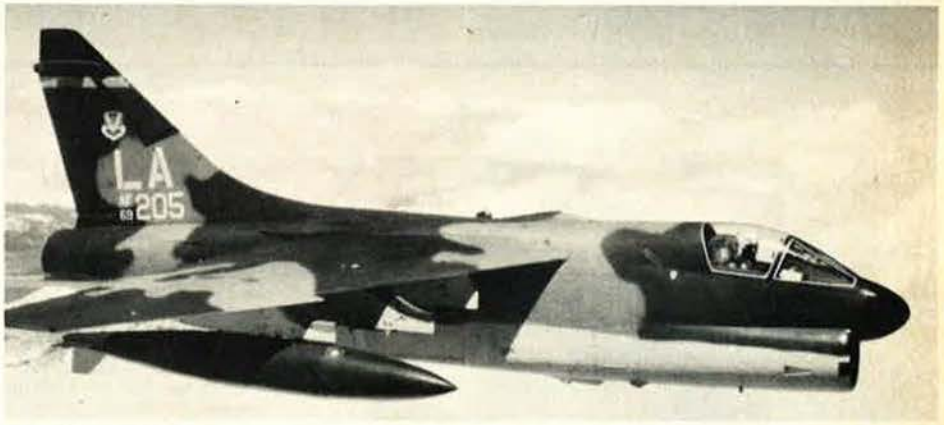
Attack and Observation Aircraft

A-7D Corsair II

A total of 459 A-7D single-seat, subsonic tactical fighters was delivered to the USAF between 1968 and 1976. 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 TF41-engined model. The 354th TFW, first operational unit equipped with A-7Ds, demonstrated the outstanding target kill capability of the type in Southeast Asia. Accuracy is achieved with the aid of a continuous-solution navigation and weapon-delivery system, including all-weather radar bomb delivery. Additionally, 383 A-7Ds have been modified to carry a Pave Penny laser target designation pod.

Since 1973, A-7Ds have been delivered also to ANG units in ten states and Puerto Rico, representing the first new aircraft received by these units in more than 20 years. To facilitate transition training, 12 two-seat **A-7Ks** were funded in the FY '79 budget.

Detachments from the 23d TFW won the Royal Air Force Tactical Bombing Competition (TACOMP) in 1977 and 1978, beating both UK and other US fighters. (Data for A-7D.)
Contractor: Vought Corporation, subsidiary of the LTV 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 multibarrel gun; up to 15,000 lb of air-to-air or air-to-surface missiles, bombs, rockets, or gun pods on 6 underwing and two fuselage attachments; Pave Penny AN/AAS-35 laser target designation pod installed on 383 aircraft.



A-7D Corsair II

A-10 Thunderbolt II

Designed specifically for the close air support (CAS) mission, the A-10 offers a unique combination of large payload, long loiter, and wide combat radius to ensure operational flexibility. It can carry up to 16,000 lb of mixed ordnance with partial fuel, or 12,086 lb with full internal fuel. The 30-mm GAU-8/A gun can fire 2,100 or 4,200 rds/min, and provides a cost-effective weapon with which to defeat the whole array of ground targets encountered in the CAS role, including tanks. The A-10 achieves its survivability through a combination of high maneuverability and design features that make it a "hard" aircraft. Equipment includes a headup display, laser seeker, target penetration aids, and associated equipment for Maverick missiles. Two prototypes, six pre-production, and 483 production A-10s have been funded to date, with a further 144 requested in the FY '80 budget. The first operational squadron was activated at Myrtle Beach AFB, S. C., in June 1977 and achieved operational capability in October, approximately three months ahead of schedule. By January 1978, the first A-10 squadron had completed an operational readiness inspection by deploying to Travis Field, Ga., and operat-

A-10 Thunderbolt II

A-37B Dragonfly

AC-130A gunship

O-2A

OV-10A Bronco

ing under simulated combat conditions. Six squadrons of A-10s are being deployed at RAF Bentwaters and Woodbridge in the UK early this year. Procurement of the currently planned total of 733 aircraft will be completed by 1983, equipping five active-duty wings and two Reserve Force wings. A two-seat attack version, converted from a pre-series DT&E aircraft, is expected to fly in the spring of this year. Additional payload includes an inertial navigation system and a Pave Tack FLIR/laser designation pod, as well as a weapons officer. (Data for A-10A.)

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 53 ft 4 in, height 14 ft 8 in.
Weight: max gross weight 47,400 lb.
Performance: combat speed at S/L, clean 449 mph, range with 9,500 lb of weapons and 1.8 hr loiter, 20 min reserve, 288 miles.
Armament: one 30-mm GAU-8/A gun; eight underwing hard points and three under fuselage for up to 16,000 lb of ordnance, including various types of free-fall or guided bombs, gun pods, or 6 AGM-65 Maverick missiles, and jammer pods. Chaff and flares carried internally to counter radar or infrared directed threats. The centerline pylon and the two flanking fuselage pylons cannot be occupied simultaneously.

A-37B Dragonfly

Evolved from the T-37 trainer for use in armed counterinsurgency (COIN) missions from short unimproved airstrips, the A-37B is currently in service with the 434th TFW of the Air Force Reserve, and with the 174th and 175th TFG of the ANG. A total of 511 was built, of which many served in Southeast Asia. Others have been delivered to foreign air forces, mainly in Latin America.

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 excluding fuel probe 28 ft 3¼ 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

Most of the AC-130 gunships still in USAF's inventory were transferred to the Air Force Reserve in 1976. Each of the original batch of AC-130As was fitted with four 20-mm Vulcan cannon, four 7.62-mm Miniguns, searchlight, and sensors, including forward-looking infrared target acquisition equipment and low-light-level TV and laser target designators. AC-130As are now equipped with two 40-mm cannon, two 20-mm cannon, and two 7.62-mm guns. In the AC-130H, one of the 40-mm cannon is replaced by a 105-mm howitzer.

Contractor: Greenville (Texas) Division of E-Systems, Inc. Other data basically as for C-130 *(page 122)*.

O-2A

Intended originally to replace the Cessna O-1 in the forward air controller role in Vietnam, a total of 346 specially equipped variants of the "push-and-pull" Cessna 337 Skymaster was ordered by USAF from 1966. Six ANG units now fly the O-2A, which has specialized equipment and electronics to permit control of air strikes, visual reconnaissance, target identification and marking, ground-air coordination, and damage assessment.

Contractor: Cessna Aircraft Company.
Power Plant: two Continental IO-360-C/D piston engines; each 210 hp.
Accommodation: pilot and observer side-by-side; one passenger 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

First flown in August 1967, the OV-10A is a counterinsurgency combat aircraft acquired by USAF for use in the forward air control role, and for limited quick-response ground support pending the arrival of tactical fighters. One hundred fifty-seven were delivered to USAF before production of the OV-10A for the US services ended in April 1969. Versions are also in service with the USN, US Marine Corps, and foreign air forces.

Contractor: Rockwell International Corporation, North American Aircraft Group.
Power Plant: two Garrett AiResearch T76-G-416/417 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 6,893 lb, overload gross weight 14,444 lb.
Performance: max speed at S/L, without weapons, 281 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 center fuselage. Provision for carrying one Sidewinder missile on each wing and, by use of a wing pylon kit, various stores, including rocket and flare pods, and free-fall ordnance. Max weapon load 3,600 lb.

Reconnaissance and Special-Duty Aircraft

SR-71

SR-71A/C

Known unofficially as "Blackbirds," these multisensored supersonic, strategic reconnaissance aircraft were developed initially to succeed the U-2; at least 30 are thought to have been built. In July 1976, the SR-71A established a series of world records which confirmed it as the fastest, highest-flying production aircraft ever built. Flown by three USAF crews from Beale AFB, Calif., the SR-71A set an absolute speed record of 2,193.167 mph over a 15/25 km straight course; a speed of 2,092.294 mph around a 1,000 km closed circuit; and a sustained altitude of 85,069 ft in horizontal flight. The prototype flew for the first time in December 1964, and delivery of production aircraft began in January 1966, for operation by the 9th Strategic Reconnaissance Wing at Beale. Each SR-71A carries equipment ranging from simple battlefield surveillance systems to multiple-sensor, high-performance systems capable of specialized surveillance of up to 100,000 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 two-seat training version, with elevated rear cockpit.

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.
Weights (estimated): empty 60,000 lb, gross 170,000 lb.
Performance (estimated): max speed at 78,750 ft more than 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.

TR-1 and U-2

The FY '79 budget initiated funding for the **TR-1** single-seat, single-engine variant of the well-proven U-2R, for high-altitude standoff surveillance missions by USAF, primarily in Europe. The first two aircraft are expected to be approved in FY '80, and will be equipped with electronic sensors to provide continuously available, day or night, all-weather surveillance of the battle area, or potential battle area, in direct support of US and allied ground and air forces during peace, crises, and war situations. Currently planned equipment includes an advanced synthetic aperture radar system (ASARS), all-weather side-looking airborne radar (SLAR) with a standoff range of approximately 35 miles, and modern ECM.

Production of the basic U-2 began in the late 1950s, and it remains an important element of the USAF inventory. It is essentially a powered glider, with high aspect ratio wing and lightweight structure, evolved to carry out

clandestine strategic reconnaissance for long periods at very high altitudes over non-allied nations. Fifty-five are believed to have been built, 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. Versions such as the U-2D, U-2CT tandem-cockpit trainer, U-2EPX (electronics patrol experimental), **WU-2** weather reconnaissance model, and HASP U-2 (high-altitude sampling program) are conversions of basic models. All have similar dimensions except for the **U-2R,** which is 63 ft long, with a span of 103 ft and height of 16 ft. (Data for U-2B.)

Contractor: Lockheed Aircraft Corporation.

Power Plant: one Pratt & Whitney J75-P-13 turbojet engine; 17,000 lb thrust, in all current models.

Dimensions: span 80 ft 0 in, length 49 ft 7 in, height 13 ft 0 in.

Weights: gross, with slipper tanks, 17,270 lb; max permissible more than 21,000 lb.

Performance: max speed at 40,000 ft 528 mph, operational ceiling about 80,000 ft, range about 4,000 miles.

RF-101

First supersonic daylight tactical reconnaissance aircraft operated by USAF, the RF-101 has, in recent years, been flown by only ANG's 186th Tactical Reconnaissance Group, which now is reequipping with RF-4s. Data similar to F-101B.

RF-4C

Developed to replace the RF-101 in USAF service, the RF-4C is a multisensor reconnaissance version of the F-4C Phantom II. The first production model flew in May 1964, and 505 were built before manufacture ended in December 1973. They are operated by TAC, PACAF, and USAFE tactical reconnaissance units, and were taken into ANG service in February 1972. 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 conventional cameras, side-looking airborne radar (SLAR) infrared line scanner, and a tactical electronic reconnaissance (TEREC) system. Current modifications include the ARN-101 digital avionics package, the Pave Tack system, the AAD-5 infrared set, and a planned data link. The major improvement will result from integration of these latter systems on an RF-4C to provide a quick strike reconnaissance (QSR) capability. Lear Siegler will be the integrating contractor for QSR, which will provide for the first time a near real time day/night capability to identify targets using data-linked infrared data. In addition, this system will provide a capability to designate ground targets for laser weapons, and to acquire targets for infrared weapons. QSR development was initiated in FY '78, with further funding of $10.1 million requested in FY '80. Data similar to F-4.

EC-121

Derived from the C-121 Super Constellation transport, a few versions of this early-warning, fighter-control, and reconnaissance aircraft continue in service, easily distinguished by the massive radomes above and below the fuselage. The **EC-121D** is a development of the EC-121C, with added wingtip fuel tanks, first delivered in May 1954. Under subsequent modification programs, some "D"s became **EC-121Hs,** with additional electronics to feed data into NORAD's SAGE defense system. Others became **EC-121Ts,** operated by the 79th AEW&C Squadron of the AF Reserve until replaced by F-4s. (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.

Several aircraft in the KC-135 Stratotanker series were modified for specialized missions 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. It is equipped as a Flying Command Post in support of SAC's airborne alert role, and is fitted with extensive communications equipment. EC-135Cs can be refueled by SAC tankers. Fourteen were built and have been adapted to provide control of Minuteman ICBMs. At least one SAC EC-135C is airborne at all times, accommodating a flight crew of 5, a general officer, and a staff of 18. Versions of the C-135 Stratolifter series used for reconnaissance include 12 turbofan **RC-135Vs,** equipped also for electronic reconnaissance with SAC; 2 **RC-135Ss,** and 2 **RC-135Us;** and 7 **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 program. Although they have been in service for many years, EC/RC-135s continue to perform valuable roles, and the aircraft's lower wing skins are being replaced to add 27,000 flying hours to their operational life. Data basically as C-135 *(page 123)*.

E-3A SENTRY (AWACS)

Deliveries of production E-3As began in March 1977, when the first aircraft was handed over to TAC's 552d Airborne Warning and Control Wing at Tinker AFB, Okla. Of the 34 E-3A AWACS (Airborne Warning and Control System) aircraft required by TAC, 25 have been authorized to date, with three more requested under the FY '80 budget. Fourteen were scheduled for delivery by the beginning of 1979. In addition, NATO has approved purchase of 18 E-3As to upgrade the command and control of its airborne forces. AWACS was 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. On October 31, 1975, the first E-3A with production electronics began engineering test and evaluation as a preliminary to formal qualification testing, which was completed in January 1977. The unique capability of AWACS is provided by its Westinghouse Electric Corporation look-down radar, which makes possible all-altitude surveillance over land or water, thus correcting a serious deficiency in earlier surveillance systems. In addition, Westinghouse is developing a maritime surveillance capability which could be incorporated retrospectively in the radar of all operational E-3As. AWACS can support a variety of tactical and/or air defense missions with no change in configuration. Deliveries are expected to extend into 1984.

Contractor: The Boeing Aerospace Company.

Power Plant: four Pratt & Whitney TF33-P100/100A 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 6 hr on station 1,000 miles from base.

E-4A/B

SAC is now sole support manager of the Airborne Command Post force, which is equipped with Boeing 747s modified to serve as the National Emergency Airborne Command Post (NEACP) and, eventually, the Hq. Strategic Air Command airborne command post. Main operating base for these aircraft is at Offutt AFB, Neb. Three **E-4As** provide an interim NEACP capability, utilizing existing EC-135 command control and communications (C^3) equipment. A fourth aircraft, delivered in August 1975 and equipped for inflight refueling, serves as a test-bed for advanced C^3 equipment and is designated **E-4B.** It began flying in the spring of 1976 with a new 1,200kVA electrical system designed to support advanced electronics, including a wide variety of radio communications equipment, such as a new LF/VLF system employing a trailing-wire antenna that is towed behind the aircraft in flight. Installation of this equipment began in mid-1978. Present plans envisage procurement of two additional E-4Bs, and retrofit of the E-4As to E-4B configuration, for a total of six E-4B aircraft.

Contractor: The Boeing Aerospace Company.

Power Plant: four General Electric F103-GE-100 turbofan engines; each 52,500 lb thrust.

Dimensions: span 195 ft 8 in, length 231 ft 4 in, height 63 ft 5 In.

Weight (E-4A): gross 778,000 lb.

Performance: unrefueled endurance 12 hours.

U-2

RF-4C Phantom II

EC-135

E-3A Sentry

E-4A

EB-57

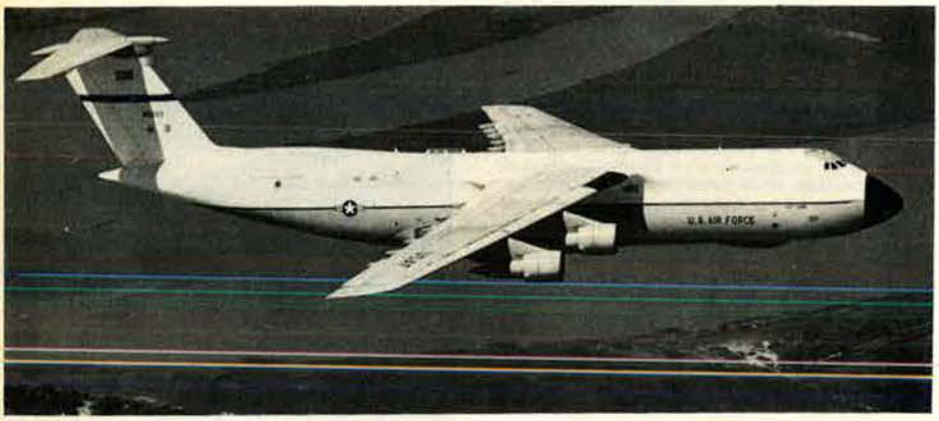
EB-57

A two-seat version of the EB-57 continues in service with ANG's 158th Defense System Evaluation Group and ADCOM's 17th Defense System Evaluation Squadron at Malmstrom AFB, Mont. Equipped with the latest devices for jamming and penetrating air defenses, the task of the EB-57s is to simulate an enemy bomber force, and attempt to find gaps in air-defense systems by day or night, at variable 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

Twenty-one 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. They are assigned to the 41st Rescue and Weather Reconnaissance Wing of MAC's Aerospace Rescue and Recovery Service and the 815th WRS of the Air Force Reserve. Data similar to C-130.

Transports and Tankers



C-5 Galaxy

C-7A Caribou

C-9A Nightingale

C-123K Provider

C-5 Galaxy

Largest aircraft in service anywhere in the world, the C-5 flew for the first time in June 1968. A total of 81 was delivered to MAC between December 1969 and May 1973, each capable of airlifting loads of up to 214,000 lb, such as two M-60 tanks or three CH-47 Chinook helicopters, over transoceanic ranges. With an inflight refueling capability, the 77 aircraft in service have participated in many special airlift missions, including a nonstop flight from Chicago to Moscow in June 1977 when the first C-5 to land in the Soviet Union carried a forty-ton superconducting magnet for a joint US-Soviet magnetohydrodynamic electrical project. Early last year a contract was awarded for the manufacture of two new sets of wings for the C-5, aimed at extending the aircraft's operational life to 30,000 hours. Except for the moving surfaces the design of these wings is virtually new, with one set for ground testing, and one for flight trials next year. Funding of $91.3 million has been sought in the FY '80 budget for the project, with $78.6 million for modification of five aircraft and $12.7 million for R&D.
Contractor: Lockheed-Georgia Company.
Power Plant: four General Electric TF39-GE-1 turbofan engines; each 41,000 lb thrust.
Accommodation: crew of five, rest area for 15 (relief crew, etc.); 75 troops and 36 standard 463L pallets or assorted vehicles, or additional 270 troops.
Dimensions: span 222 ft 8½ in, length 247 ft 10 in, height 65 ft 1½ in.
Weights: empty 323,000 lb, gross (for 2.25*g*) 769,000 lb.
Performance: max speed at 25,000 ft 571 mph, service ceiling (at 615,000 lb) 34,000 ft, range with 112,600 lb payload 6,529 miles.

C-7A Caribou

Continuing in service with AF Reserve's 94th Tactical Airlift Wing and with ANG's 135th Tactical Airlift Group, the C-7A is a Canadian-built twin-engine STOL utility transport which flew for the first time in July 1958. The US Army was the principal customer and in January 1967 still had 134 C-7As 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.
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 and VC-9C

Utilized by USAF on aeromedical evacuation missions, the **C-9A** Nightingale 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. 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 theater aeromedical evacuation missions in Europe. Three specially configured **VC-9Cs** were delivered to the Special Air Missions Wing at Andrews AFB, Md., in 1975. (Data for C-9A.)
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 more than 2,000 miles.

C-12A

The C-12A is a military version of the Beechcraft Super King Air 200, of which 30 were delivered to USAF. Its role is to support attaché and military assistance advisory missions throughout the world. MAC uses two C-12As to train aircrews and to supplement support airlift.
Contractor: Beech Aircraft Corporation.
Power Plant: two Pratt & Whitney Aircraft of Canada PT6A-38 turboprop engines; each 750 shp.
Accommodation: crew of two; up to 8 passengers or 4,764 lb of cargo.
Dimensions: span 54 ft 6 in, length 43 ft 9 in, height 15 ft 0 in.
Weight: gross 12,500 lb.
Performance: max speed at 14,000 ft 299 mph, service ceiling 31,000 ft, range at max cruising speed 1,824 miles.

C-123 Provider

Currently in service with four Air Force Reserve squadrons, the C-123K is the only version of the basic C-123 troop and supply transport still in the USAF inventory. First flown in 1966, it is fitted with two underwing pylon-mounted auxiliary turbojets, improved landing gear, and a new stall warning system. (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

Production of the C-130 continues, although the TAC specification under which the Hercules was designed dates back to 1951. The initial production model was the **C-130A,** first flown in April 1955, powered by 3,750 ehp Allison T56-A-11 or -9 turboprops; 219 were ordered, with deliveries beginning in December 1956. Two special variants, **DC-130As** (originally 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 ehp Allison T56-A-7 turboprops; the first of 134 entered USAF service in April 1959. Six C-130Bs were modified in 1961 for air-snatch recovery of classified USAF satellites, to

replace C-119s of the 6593d Test Squadron at Hickam AFB. 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. Ten were modified to MC-130E standard, for flight-refueling operations, with special emphasis on exterior lighting to facilitate night missions. This version is used by Air Force Special Operations Forces. 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 in April 1975. C-130s are currently active in USAF regular, Reserve, and ANG airlift squadrons. Variants include **HC-130H/N/P** for the Aerospace Rescue and Recovery Service and for ARRS units of the ANG and Reserve, and the **AC-130A/H** and **WC-130B/E/H** described separately. (Data for C-130H.)

Contractor: Lockheed-Georgia Company.

Power Plant: four Allison T56-A-15 turboprop engines; each 4,508 ehp.

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 75,331 lb, gross 175,000 lb.

Performance: max speed 386 mph, service ceiling at 130,000 lb 33,000 ft, range with max payload 2,487 miles.

HC-130

Sixty-six extended-range C-130s, designated **HC-130H,** were ordered in 1963 for the Aerospace Rescue and Recovery Service, with uprated T56-A-15 engines and specialized search and rescue equipment for the recovery of aircrews and retrieval of space hardware. This includes advanced direction-finding equipment, and surface-to-air (STAR) and air-to-air (ATAR) recovery systems. Initial flight was made in December 1964. Crew complement is ten to twelve. Twenty HC-130Hs have been modified into **HC-130Ps** for the combat rescue mission, and are capable of refueling helicopters in flight. Four were modified into **JHC-130Hs,** with added equipment for aerial recovery of reentering space capsules. Under a USAF contract dated December 1974, another HC-130H was modified by LAS to **DC-130H** standard, with four pylons each capable of carrying a 10,000 lb new-generation RPV. Fifteen **HC-130Ns,** a newer search and rescue version of the HC-130P with advanced direction-finding equipment, were ordered in 1969; these aircraft are capable of refueling helicopters in flight but are not equipped with the surface-to-air recovery system. Other data similar to C-130, except length is 98 ft 9 in with STAR recovery system folded.

KC-135 Stratotanker

As single manager of all USAF KC-135 tankers, SAC supports its own strategic bombardment and reconnaissance aircraft, and the cargo and tactical aircraft of other Air Force commands, the US Navy and Marines, and other nations. The high-speed, high-altitude capabilities of the **KC-135A** enable it to be used also as a long-range passenger and/or cargo transport. A total of 732 was built, of which the first flew in August 1956; about 600 remain operational, including those currently assigned to sixteen Air Force Reserve and ANG units, replacing older types such as the KC-97. Variants include the **KC-135Q,** adapted to refuel Lockheed SR-71s; and **KC-135R** and **KC-135T** for special reconnaissance. The lower wing skins of all aircraft are being replaced, to extend flying life by 27,000 hours. (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

Ordered originally to serve as interim jet passenger/cargo transports, pending delivery of C-141s, only 11 basic C-135 transports remain operational with MAC. The original Stratolifter was a KC-135A with the tanker's refueling equipment deleted, and minor internal changes. Three converted KC-135As, known as C-135A "Falsies," were followed by 15 production **C-135As** with J57-P-59W turbojet engines, and 30 **C-135Bs** with Pratt & Whitney TF33-P-5 turbofans. 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

Five specially modified Boeing 707 transports are operated by MAC's 89th Military Airlift Wing from Andrews AFB, Md., for VIP duties. Best known is "Air Force One," a **VC-137C** 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. A second VC-137C is also operated, together with three smaller 707-120s, originally designated VC-137As but later modified to **VC-137B** standard by the installation of turbofan engines.

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-130 Hercules

HC-130

KC-135 Stratotanker

VC-137B

C-141 StarLifter

C-140 JetStar

KC-10

C-140 JetStar

Deliveries of the C-140 JetStar began in late 1961. Five **C-140As** are used currently by Air Force Communications Service (AFCS) for inspecting worldwide military navigation aids. Six **VC-140B** transport versions are in service with the 89th Military Airlift Wing, Special Missions, of MAC, operating from Andrews AFB, Md.

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-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. It was soon making virtually daily flights to Southeast Asia, and played a key role in the civilian evacuation program in both South Vietnam and Cambodia. Lockheed built 284, of which some were modified to carry Minuteman ICBMs, with local structural strengthening to accommodate this 86,207 lb load. In service, loads have often been space-limited; so, to utilize more fully the potential of its C-141s, USAF funded the development of a prototype **YC-141B**, with the fuselage lengthened by 23 ft 4 in. The prototype conversion increases the aircraft's cruise speed and provides an in-flight refueling capability. The YC-141B made its maiden flight in March 1977. Current negotiated contracts indicate that MAC's fleet of 271 operational C-141s will be modified to "B" standard by the end of 1982, with funding of $76 million for a further increment of 124 aircraft being sought in the FY '80 budget. (Data for C-141.)

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.

KC-10A

Competitive evaluation of the McDonnell Douglas DC-10 and the Boeing 747 to fulfill USAF requirements for an Advanced Tanker/Cargo Aircraft (ATCA), resulted in a contract being awarded to the former company in December 1977. The Air Force exercised production options for the first two KC-10As in November 1978; delivery is anticipated for October and December 1980. The McDonnell Douglas design is based on an advanced version of the commercial DC-10 Series 30CF, modified to include body bladder fuel cells in the lower cargo compartments, a boom operator's station, an aerial refueling boom, a hose and drogue, and military avionics. In its primary role of increasing US air mobility, a single KC-10A will be able to combine the tasks of a tanker and a cargo aircraft by refueling fighters and simultaneously carrying the fighters' support equipment and support personnel on overseas missions. It will refuel strategic transports such as the C-5 and C-141, nearly doubling, for example, the nonstop range of a fully loaded C-5. It will refuel strategic offensive and reconnaissance aircraft during long-range conventional operations; and it will augment cargo-carrying capability on a selected basis. The range of refueling equipment installed will enable the KC-10A to service USN, USMC, and NATO aircraft, as well as older types of fighters still operated by ANG and Reserve units. In terms of active deployment, the KC-10A's refueling capabilities and long range will, in most situations, dispense with the need for forward bases, while also leaving vital fuel supplies in the theater of operations untouched. Available funding over the next five years will determine the number of aircraft to be ordered by USAF, but a force of about 20 aircraft is anticipated, with funding for four requested in the FY '80 budget proposals.

Contractor: McDonnell Douglas Corporation.

Power Plant: three General Electric CF6-50C1 turbofan engines; each 52,500 lb st.

Accommodation: max cargo payload 170,000 lb.

Dimensions: span 165 ft 4 in, length 181 ft 7 in, height 58 ft 1 in.

Weight: gross 590,000 lb.

Performance: range with max cargo payload 4,370 miles; or delivery of 193,000 lb of transfer fuel to a receiver 2,000 nm from its home base, and return.

Trainers

T-33A

Thirty-six years after the first flight of the Shooting Star jet fighter, from which they were evolved, at least 300 T-33As remain in service for use in combat support missions and for proficiency and radar target evaluation training. Compared with the fighter, a lengthened fuselage accommodates a second cockpit in tandem, with the canopy extended to cover both. Combat armament is replaced by an all-weather "navigational nose."

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-caliber machine guns on some early aircraft only.

T-37B

Some 680 of these two-seat primary trainers are currently in service with Air Training Command, which, in cooperation with SAC, has also implemented the Accelerated Copilot Enrichment (ACE) program to provide increased flying experience in T-37s and T-38s for SAC junior pilots. The original T-37A was the first USAF jet trainer designed as such from the start. From November 1959, deliveries switched to the T-37B, and all "A" models were subsequently converted to "B" standard. Well over a thousand T-37s were built, and versions are used by many foreign countries for their pilot training programs, as well as for military surveillance and low-level attack duties. (Data for T-37B.)

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 2.3 in.
Weights: empty, 3,870 lb, gross 6,600 lb.
Performance: max speed at 25,000 ft 426 mph, service ceiling 35,100 ft, range at 360 mph, standard tankage 870 miles.

T-38 Talon

Maintaining the best safety record of any USAF supersonic aircraft, the T-38 is a lightweight twin-jet advanced trainer, which was in continuous production from 1956 to 1972. Like the F-5 tactical fighter, it was derived from Northrop's private-venture N-156 design and is almost identical in structure to the F-5. The first T-38 flew in April 1959, and production models entered operational service in March 1961. More than 1,100 of the total 1,187 T-38s built were delivered to USAF and more than 900 remain in service throughout the Air Force.

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.

CT-39 Sabreliner

To meet USAF requirements for a combat-readiness trainer and utility aircraft, Rockwell built as a private venture the prototype Sabreliner, which made its first flight in September 1958, powered by two General Electric J85 turbojets. Subsequent production models utilized by USAF are CT-39B basic utility and training aircraft with J60 turbojet engines, of which 143 were delivered for service throughout the Air Force. Of those still in the inventory, 113 are assigned to MAC for airlift support, and are stationed at 15 CONUS bases. Sabreliners are also in service with PACAF and USAFE.

Contractor: Sabreliner Division 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 program 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. Fifty-two remain in the ATC inventory. The more powerful **T-41C,** based on the Cessna Model R172E, was ordered by USAF in October 1967 for cadet flight training at the USAF Academy. A total of 52 "C"s was built. (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

Derived from the commercial Boeing Model 737-200, the T-43A navigation trainer made its first flight in April 1973. It was developed as a replacement for the piston-engined T-29, and 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 for ATC were completed in July 1974 and 15 remain in the ATC inventory.

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-33A


T-37B


T-38 Talon


CT-39 Sabreliner


T-41 Mescalero

T-43A

Helicopters

UH-1F

UH-1N

CH-3E

HH-3E Jolly Green Giant

HH-53B

UH-1F and HH-1H

Basically a military version of the Bell Model 204, the UH-1F was developed to take part in a design competition for a missile site support helicopter. USAF subsequently ordered 146, of which the first flew in February 1964. Deliveries began, to the 4486th Test Squadron, in September of the same year, and were completed in 1967. 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. A total of 39 of these three versions are in service with MAC. In November 1970, USAF ordered 30 larger 12/15-seat **HH-1Hs,** based on the Model 205, for local base rescue duties. Deliveries were completed in 1973. (Data for UH-1F.)

Contractor: Bell Helicopter Textron.

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: gross 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

The UH-1N is a twin-engined version of the UH-1 utility helicopter, developed originally to meet a Canadian government requirement. Initial orders on behalf of the US services included 79 for USAF. Deliveries began in 1970.

Contractor: Bell Helicopter Textron.

Power Plant: Pratt & Whitney (Canada) 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 4,000 lb.

Dimensions: rotor diameter (with tracking tips) 48 ft 2¼ in, length of fuselage 42 ft 4¾ in, height 14 ft 10¼ in.

Weight: gross 10,500 lb.

Performance: max cruising speed at S/L 115 mph, service ceiling 15,000 ft, max range, no reserves, 248 miles.

Armament (optional): two General Electric 7.62-mm Miniguns or two 40-mm grenade launchers; two seven-tube 2.75-in rocket launchers.

CH-3E

Although based on the US Navy's SH-3A, this twin-engined amphibious transport helicopter incorporates important design changes that 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. Introduction of uprated engines led to the designation CH-3E in February 1966, applicable to both 42 new production aircraft and 41 re-engined CH-3Cs, of which 50 were adapted subsequently as HH-3Es *(see below).*

Contractor: Sikorsky Aircraft, Division of United Technologies 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 16 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 7.62-mm machine gun.

HH-3E Jolly Green Giant

Modified version of the CH-3E evolved for USAF's Aerospace Rescue and Recovery Service, originally to facilitate penetration deep into North Vietnam on rescue missions. Additional equipment includes self-sealing fuel tanks, armor, defensive armament, a rescue hoist, and a retractable in-flight refueling probe. HH-3s also are assigned to ARRS units of the Reserve and ANG. An unarmed version (HH-3F Pelican) is used by the US Coast Guard. Other data basically similar to CH-3E above.

HH-53B

This twin-turbine heavy-lift helicopter was ordered in September 1965 for USAF's Aerospace Rescue and Recovery Service to supplement the HH-3E. The HH-53B carries the same general equipment as the Jolly Green Giant, including the in-flight refueling probe and all-weather avionics and armament, but is faster and larger. The first of eight 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 Technologies 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 refueling 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

The **HH-53C** is an improved version of the HH-53B, powered by 3,925 shp T64-GE-7 turboshaft engines. It was 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 72 HH-53B/Cs were built. Ten generally similar **CH-53Cs** are used to provide battlefield mobility for the Air Force mobile Tactical Air Control System. Under USAF's Pave Low III program, eight HH-53s are being modified for night search and rescue operations, following the initial flight of a prototype in June 1975. Equipment includes a stabilized FLIR installation mounted below the refueling boom; a B-52-type inertial navigation system; a new Doppler navigation system; and the computer, projected map display, and radar from the **A-7D,** with the radar installed in an offset "thimble" fairing on the nose. Completion of the eight conversions is scheduled for 1980.

Strategic Missiles

LGM-25C Titan II

In service 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 reentry vehicle, which finally separates from the burnt-out second stage. A new guidance system has been selected for Titan II, aimed at increasing cost effectiveness rather than improving accuracy, with a reduction in the missile's weight, volume, and power requirements.

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 reentry vehicle.
Dimensions: length 103 ft 0 in, max body diameter 10 ft 0 in.
Weight: launch weight 330,000 lb.
Performance: max speed 17,000 mph (approx), max range 6,300 miles.

LGM-30F/G Minuteman

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 Malmstrom AFB, Mont., Ellsworth AFB, S. D., and Whiteman AFB, Mo.

LGM-30G Minuteman III: MIRV capability enables this version to place warheads on three targets with a high degree of accuracy; Minuteman III also increases the possibility of penetrating enemy defense systems. First test launch was made in 1968, and Minuteman III is now operational at Minot AFB, N. D., F. E. Warren AFB, Wyo., Grand Forks AFB, N.D., and Malmstrom AFB, Mont. Under a force modernization program, SAC has provided Minuteman III with the Command Data Buffer System that permits rapid missile retargeting.

With the Minuteman force made up of the planned 450 Minuteman IIs and 550 Minuteman IIIs, production ended in November 1978; current funding, extending into the 1980s, is primarily for the purchase of components, guidance systems, and spares. Recent R&D has been aimed at development of the Mk 12A reentry vehicle, which increases the yield of the Minuteman III warhead, and refinements to improve accuracy. The Mk 12A is being tested and is scheduled for deployment on 300 of the Minuteman IIIs, with initial operational capability in 1980.

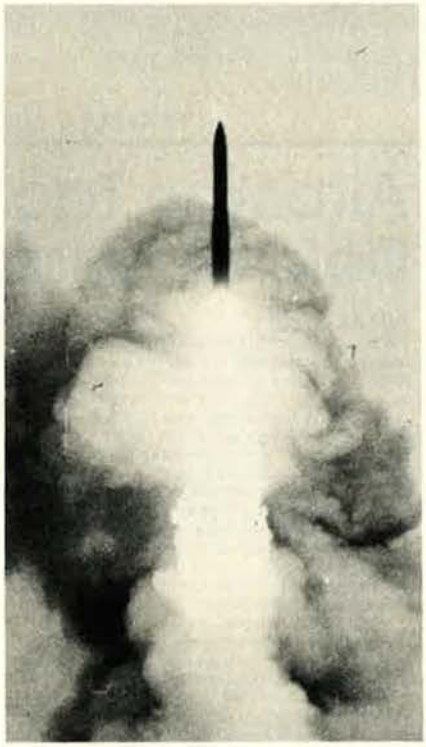
Assembly and Checkout: The Boeing Aerospace Company.
Power Plant: first stage: Thiokol M-55E solid-propellant motor; 210,000 lb thrust; second stage: Aerojet-General SR19-AJ-1 solid-propellant motor; 60,300 lb thrust; third stage: LGM-30F Hercules, Inc., solid-propellant motor; LGM-30G Thiokol solid-propellant motor; 34,400 lb thrust.
Guidance: Autonetics Division of Rockwell International inertial guidance system.
Warhead: LGM-30F single thermonuclear warhead in Avco reentry vehicle; LGM-30G multiple thermonuclear warheads, each in a General Electric Mk 12 reentry vehicle.
Dimensions: length 59 ft 10 in, diameter of first stage 5 ft 6 in.
Weights: launch weight (approx) LGM-30F 73,000 lb, LGM-30G 78,000 lb.
Performance: speed at burnout more than 15,000 mph, 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-69 SRAM

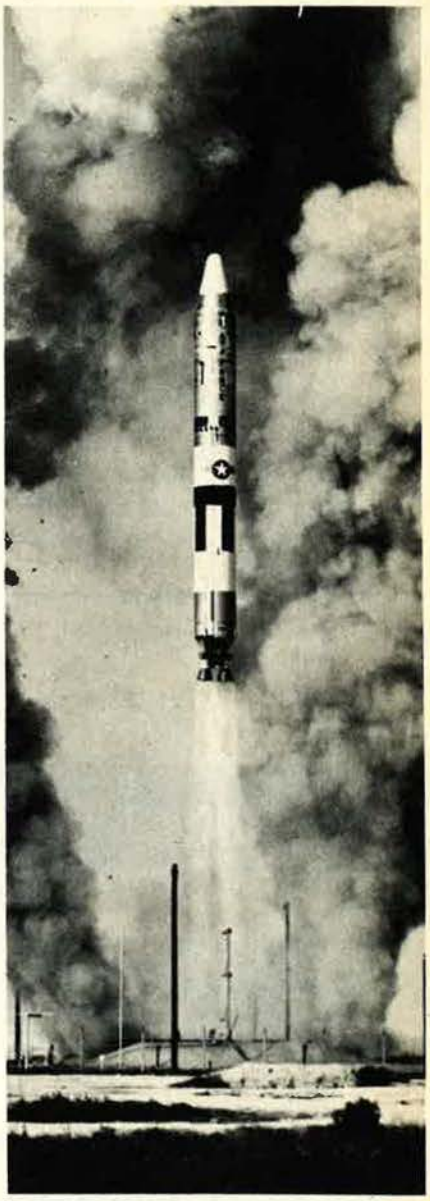
Deployment of this defense suppression and primary attack missile by SAC began in August 1972, when the B-52Gs of the 42d Heavy Bombardment Wing became operational with SRAM at Loring AFB, Me. USAF contracts covering the production of 1,500 AGM-69As had been authorized in 1971, and deliveries to equip 17 B-52 wings and two FB-111 wings at 18 SAC bases were completed in July 1975. Development of an improved propellant for SRAM's rocket motor has been undertaken, aimed at ensuring a minimum service life of ten years.

The supersonic air-to-surface SRAM, which has a nuclear warhead, was designed fundamentally to attack and neutralize enemy terminal defenses, such as surface-to-air missile sites. An inertial guidance system makes the missile impossible to jam. Each SAC B-52G/H can carry 20 AGM-69A 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. An FB-111A can carry four AGM-69As on swiveling underwing pylons and two internally. When carried externally, a tailcone, 22.2 in long, is added to the missile to reduce drag.

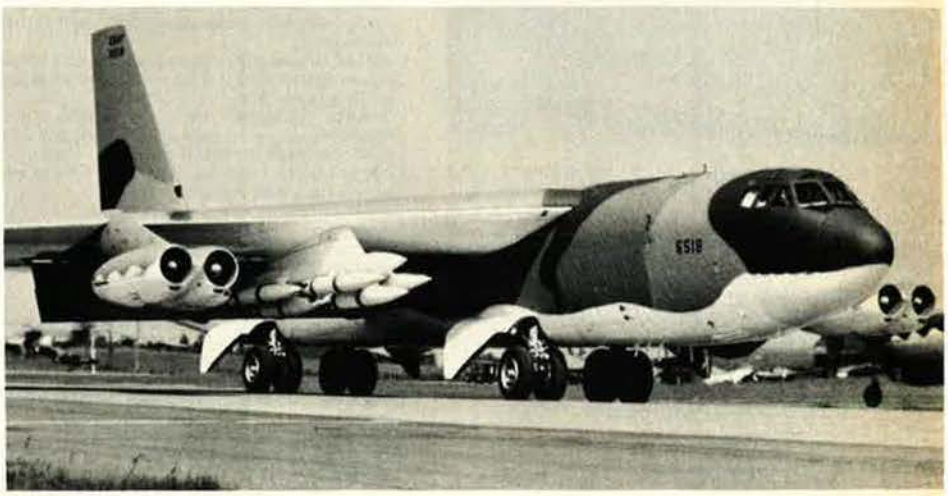
Contractor: The Boeing Aerospace Company.
Power Plant: Lockheed Propulsion Company LPC-415 restartable solid-propellant two-pulse rocket engine.
Guidance: General Precision/Kearfott inertial system, permitting attack at high or low altitude, and dogleg courses.
Warhead: nuclear, of similar yield to that of single Minuteman III warhead.
Dimensions: length 14 ft 0 in, body diameter 1 ft 5½ in.



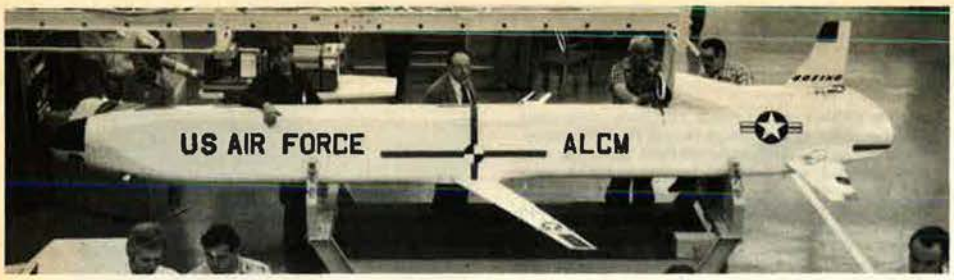
Minuteman III



Titan II



AGM-69 SRAM aboard B-52



Boeing ALCM

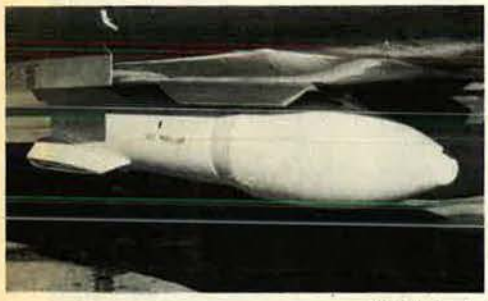
General Dynamics ALCM

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.

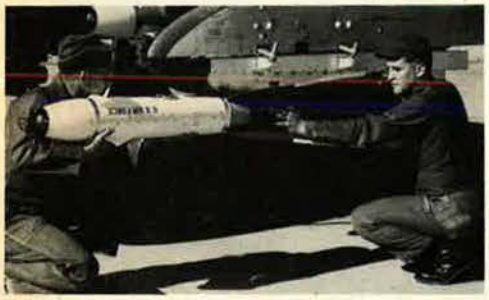
ALCM

The ALCM (Air-Launched Cruise Missile) program is now in full-scale development, with a competitive fly-off between the Boeing **AGM-86B** and the General Dynamics **AGM-109,** an air-launched version of the Tomahawk Submarine-Launched Cruise Missile, scheduled to take place between June and November this year. A selection decision is anticipated in January 1980, to provide an initial operational capability on the B-52G by late 1982. The ALCM is a small unmanned winged air vehicle capable of sustained subsonic flight following launch from a carrier aircraft. It has a turbofan engine and a nuclear warhead, and is programmed for precision attack on surface targets. When launched in large numbers, each of the missiles would have to be countered, making defense against them both costly and complicated. Additionally, by diluting defenses, the ability of manned aircraft to penetrate to major targets would be improved. Guidance is by a combination of inertial and terrain comparison techniques. Small radar signature and low-level flight capability enhance the missile's effectiveness. A B-52 could carry 12 ALCMs externally while retaining current internal loads of free-fall bombs and SRAMs.
Contractors: Boeing Aerospace Company; General Dynamics (Convair).
Power Plant: Williams Research Corporation F107-WR-100 turbofan engine; 600 lb st.
Dimensions: length 18–21 ft, body diameter 20–30 in, wing span 8–12 ft.
Weights: 2,500–3,500 lb.
Performance: classified.

Airborne Tactical and Defense Missiles



AIR-2A Genie



AIM-4D Falcon being loaded on F-4

AIM-7F Sparrow

AIR-2A Genie

Many thousands of AIR-2A Genies were delivered before production ceased in 1962, and the type continues in first-line service, arming the F-106 squadrons of USAF, as well as the F-101Bs of the Canadian Armed Forces. A Genie was the first nuclear-tipped air-to-air rocket ever tested in a live firing when, in July 1957, it was launched from an F-89J Scorpion. 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

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 infrared guidance system. About 9,500 were delivered simultaneously with the "A"s.

AIM-4D: "cross-bred" version, combining the improved infrared homing head of the AIM-4G Super Falcon with the basic airframe of the AIM-4C. Used to arm F-101 interceptors. 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 semiactive radar homing system; AIM-4C/D: infrared 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.
Weights: 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

A developed version of the AIM-4A/C Falcon, with reduced susceptibility to enemy countermeasures and higher performance, the Super Falcon arms the F-106 Delta Dart, on which 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 semiactive radar homing guidance; AIM-4G: infrared 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.
Weights: launch weight AIM-4F 150 lb, AIM-4G 145 lb.
Performance: max speed Mach 2.5, max range 7 miles.

AIM-7E/F Sparrow

One of the most important guided weapons in service with NATO air forces and their allies, the Sparrow is a radar-homing air-to-air missile with all-weather, all-altitude capability. Some 34,000 of the AIM-7C, D, and E versions were produced. Current basic operational model, the **AIM-7E,** is standard armament of the F-4 Phantom II and is suited also for use against shipping targets from aircraft or ships. The **AIM-7E-2** is similar but has better maneuverability to improve its "dogfight" capability. In production for both USAF and USN is the advanced solid-state **AIM-7F,** with larger motor, Doppler guidance, and good capability over both dogfight and medium ranges. This version was approved for deployment in early 1977, and USAF procurement of the "F" is expected to total more than 9,150, to supersede the AIM-7E and to arm the F-15, with a further USAF/USN increment of 1,560 requested in the FY '80 budget. General Dynamics has been brought in as a second source contractor. Development of a monopulse seeker for the AIM-7F was started in 1975, aimed at reducing cost and improving performance in the ECM and look-down/clutter areas. The "F" with monopulse seeker is expected to enter operational service in 1981. (Data for AIM-7F.)
Contractor: Raytheon Company.
Power Plant: Hercules Mk 58 Mod O solid-propellant rocket motor.
Guidance: Raytheon semiactive Doppler radar homing system.
Warhead: high-explosive.
Dimensions: length 12 ft 0 in, body diameter 8 in, wing span 3 ft 4 in.
Weight: launch weight 500 lb.
Performance (estimated): max speed more than Mach 3.5, range AIM-7E 14 miles; AIM-7F more than 25 miles.

AIM-9 Sidewinder

The AIM-9 Sidewinder is a close-range air-to-air missile using infrared guidance. Versions currently

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SCIENCE/SCOPE

A ducted-rocket tactical missile with a new propulsion system obtains from the air nearly all the oxygen it needs for combustion. By not having to carry a full supply of oxidizer, it promises to go faster and farther than contemporary counterparts for the same weight and volume. The missile could be adapted for air-to-air, air-to-ground, or ground-to-air missions. Its distinguishing characteristics are a fuel-rich, solid-propellant motor and two intake ducts that feed air into the combustion chamber. Hughes is designing a prototype missile for validation flight tests under a U.S. Air Force contract.

The first production model of a radar that can track an artillery shell in flight and determine its origin before it hits has been delivered to the U.S. Army for tests. The Hughes-built system, called the AN/TPQ-37 artillery-locating radar, is designed to let crews return hostile fire more quickly and accurately than ever before. The system erects a sensitive electronic barrier over a broad area and can detect any projectile piercing the screen. After tracking a shell and plotting its path, the system's computer backtracks the trajectory to the firing location. The TPQ-37 is similar to the smaller, highly mobile TPQ-36 that Hughes developed for locating hostile weapons.

The Marine Corps' A4-M Skyhawk attack plane will be more accurate on bombing runs, even at long range, thanks to a system that computes exactly when weapons should be released for a bull's-eye. In making its calculations, the Hughes-developed Angle Rate Bombing System (ARBS) considers such factors as bomb ballistics, line-of-sight angle to the target, airspeed, and aircraft flight angle. Bombs and air-to-ground rockets can be released automatically or manually at the pilot's option.

ARBS has two ways to acquire and track a target. In daylight the pilot can select the TV sensor to locate a target visually and lock on the tracker. During the day or at night he can use the laser spot tracker, which automatically locks on a target that is illuminated by either a ground or airborne laser.

A communications terminal almost one-third the size and less than half the weight of the three pieces of equipment it replaces serves a key role in an advanced military network. The Hughes Improved Terminal (HIT) combines a transmitter-receiver, signal processor, and computer into one unit that's more reliable and less costly to build than the separate units. HIT is designed to let all four military services exchange data instantaneously and securely via the Joint Tactical Information Distribution System. The terminal can transmit coded digital data over a single channel in preassigned time slots of several milliseconds. It can receive all information sent by other units or simply select what it wants.

under development for USAF or in service are:

AIM-9E: modification by Philco of original-production AIM-9B, with improved guidance and control. Production completed, with more than 3,000 in service.

AIM-9G: advanced model with airframe changes, new motor and guidance, improved target acquisition and lock-on. Production by Raytheon completed in 1970.

AIM-9H: version with improved close-range capability, produced for USN; one-time procurement of 800 by USAF in FY '76. Solid-state guidance, off-boresight acquisition/launch capability. Lead bias function moves missile impact point forward to more vulnerable area on target aircraft.

AIM-9J: modification of AIM-9B/E, with both increased range and improved maneuvering capability for dogfighting. Delivered to USAF by Ford Aerospace in 1977–78, to equip the F-15 and other Sidewinder-compatible aircraft.

AIM-9J-1: new-build version with improved guidance and control, to provide all-aspect performance equal to that of AIM-9L.

AIM-9L: third-generation Sidewinder for USAF and USN, with all-aspect intercept capability. New Mk 36 Mod 6 solid-propellant motor. Double-delta nose fins for improved inner boundary performance and maneuverability. AM-FM conical scan for increased seeker sensitivity and improved tracking stability. Annular blast fragmentation warhead, rate bias, and active optical fuze for increased lethality and low susceptibility to countermeasures. Planned USAF procurement is for more than 5,000 missiles between FY '76 and FY '80. (Data for AIM-9H, L.)

Contractor: Naval Weapons Center.

Power Plant (AIM-9L): Rocketdyne/Bermite Mk 36 Mod 6 solid-propellant motor.

Guidance (AIM-9H): solid-state infrared homing guidance.

Warhead: high-explosive.

Dimensions: length 9 ft 5 in, body diameter 5 in, fin span 2 ft 0¾ in.

Weight: launch weight 190 lb.

Performance: max speed Mach 2.5, range 6.2–11 miles.

AGM-45A Shrike

Twelve versions of this supersonic air-to-surface missile have been produced for USAF and USN, differing primarily in the frequency coverage of the front end detachable seeker sections. Designed to home automatically on enemy radar installations, the AGM-45 entered operational service in Vietnam during 1965. Thereafter, it played an important part in the US air offensive, becoming a standard penetration aid on US tactical aircraft. More than 13,000 were delivered to USAF between 1965 and 1978. Latest models equip "Wild Weasel" F-4Gs.

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, weighing 145 lb.

Dimensions: length 10 ft 0 in, body diameter 8 in, span 3 ft 0 in.

Weight: launch weight 400 lb.

Performance (estimated): range more than 3 miles.

AGM-65 Maverick

The basic **AGM-65A** is a launch-and-leave TV-guided air-to-surface missile. This enables the pilot of the launch aircraft to seek other targets or leave the target area once Maverick has been launched. Production was initiated in 1971, following successful test launches over distances ranging from a few thousand feet to many miles, and from high altitudes down to treetop level. The AGM-65A is carried by the A-7D, A-10, F-4D, F-4E, F-111F, and F-16, normally in three-round underwing clusters, and is intended for use against pinpoint targets such as tanks and columns of vehicles. Orders totaled 19,000 before production was terminated in favor of the **AGM-65B**, with a "scene magnification" TV seeker which enables the pilot to identify and lock on to smaller or more distant targets. Manufacture of 6,000 has been completed.

To overcome limitations of the TV Maverick, which can be used only in daylight clear-weather conditions, a new version is being developed:

AGM-65D: with imaging infrared seeker (IIR). Flight testing is well under way. Approval and funding have been received for engineering development. Also under development is an alternative blast/penetrator warhead in the 300 lb class, for use against larger hardened targets such as command bunkers. (Data for AGM-65A.)

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 antiaircraft guided missiles and guns, the AGM-78 Standard ARM (Anti-Radiation Missile) entered production in 1968, and several advanced models were developed subsequently, some highly classified. The initial **AGM-78A** version used the passive homing target-seeking head of the Shrike missile; subsequent models have improved seeker heads and avionics for better target selection, increased effectiveness against target countermeasures, and still greater attack range. Standard ARM is deployed on USAF's F-105 and F-4G, and also by USN. Equipment carried by the launch aircraft includes a Target Identification and Acquisition System (TIAS), which is able to determine and pass to the missile specific target parameters. Final production version was **AGM-78D.**

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 1½ in, wing span 3 ft 6 in.

Weight: launch weight, basic version 1,356 lb.

Performance: max speed Mach 2, max range 15.5 miles.

Electro-Optical Guided Bomb (EOGB)

USAF's GBU-8, HOBO, is an unpowered 2,000 lb TV-guided air-to-surface weapon, produced in the form of a kit that converts a standard Mk 84 bomb into a highly accurate guided weapon with moderate/long-range capability. The weapon's guidance is automatic once it has been locked on to a target, enabling the pilot to leave the target area after the weapon has been launched. EOGB consists of a forward guidance assembly, the warhead, an interconnect section, and an aft control section, including an autopilot. It was used in Southeast Asia.

Contractor: Rockwell International Corporation.

Guidance: TV automatic tracking.

Warhead: Mk 84 bomb (2,000 lb, unitary).

Dimensions: length 12 ft 5 in, body diameter 1 ft 6 in, wing span 3 ft 8 in.

Weight: 2,240 lb.

Modular Glide Weapon System (GBU-15)

The GBU-15 is a glide bomb in the 2,000 lb class that can be equipped with alternative aerodynamic components, warheads, and guidance units. Initial versions are TV-guided, with data-link to enable the weapon to be controlled from the cockpit of the launch aircraft. The GBU-15 can be assembled in a cruciform configuration for low-altitude attack, or in a planar (flip-out wing) configuration for high-altitude standoff attack, as alternatives to the basic small wing/strake module. Provisions are made for the addition of advanced seekers to provide night and adverse weather capabilities, including an imaging infrared seeker, and a mid-course system that includes distance measuring equipment (DME), for increased accuracy. The direct attack GBU-15 has completed all development and testing, and is expected to precede the planar wing/DME version into service. (Data for Mk 84 version, unless indicated otherwise.)

Contractors: Hughes Aircraft Corporation (planar wing), Rockwell International Corporation (cruciform wing).

Guidance: TV with data-link, imaging infrared, and DME and LORAN options.

Warhead: Mk 84 bomb (2,000 lb, unitary) or CBU-75 (cluster).

Dimensions: length 12 ft 5 in, body diameter 1 ft 6 in, wing span 3 ft 8 in.

Weight: approximately 2,600 lb.

AIM-9 Sidewinders on F-111

AGM-45A Shrike

AGM-65 Maverick

AGM-78 Standard ARM

Electro-Optical Guided Bomb (EOGB)

Modular Glide Weapon System (GBU-15)

Launch Vehicles

Agena

Since 1959, Agenas have served as satellite or booster on more missions than any other spacecraft in the world. A payload section (nosecone) able to accommodate a variety of earth-orbiting and space probes weighing up to several hundred pounds gives the vehicle an inherent versatility. Agena is normally utilized 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

Atlas-Agena

Scout

Titan IIID

to accomplish a rendezvous and docking by spacecraft in orbit and to provide propulsion power in space for another spacecraft. The current **Agena D** version was first tested successfully in June 1962, and is able to accept a variety of payloads, unlike the earlier "A" and "B", which had integrated payloads. The restartable engine permits the satellite to change its orbit in space. 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 is a "stage-and-a-half" vehicle, consisting of side booster and central sustainer sections. The E and F series vehicles are essentially identical, the primary difference being in their method of deployment. They are stored at Norton AFB, Calif., until they enter the refurbishment and launch program. Current launch vehicles are as follows:

Atlas SLV-3A: An upgraded version of the earlier SLV-3 with lengthened propellant tanks. Evolved primarily for use with the Agena upper stage, but able to 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 standardized 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 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 boosters, 1,040 lb from two verniers).

Dimensions: length SLV-3A 78 ft 11 in; SLV-3A/Agena 118 ft; SLV-3D/Centaur 131 ft, max body diameter 10 ft 0 in.

Launch Weight (SLV-3A): 314,000 lb.

Performance (SLV-3A/Agena): capable of putting payload of 8,500 lb into a 115-mile circular orbit, or of launching 2,730 lb into synchronous transfer orbit.

Centaur

First US high-energy upper stage and first to utilize 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, Centaur has demonstrated widely ranging applications and capabilities. The nose section of Atlas 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 provided guidance for its Titan booster. A 10 ft diameter fairing protects payloads for Centaur D-1A, for which launch missions have been assigned into 1981. Titan IIIE production has ended. Centaur's multiburn and extended coast capability were tested after the 1976 launch of a Helios solar probe, and were used operationally during the 1977 Mariner Jupiter/Saturn missions.

Prime Contractor: General Dynamics Corporation, Convair 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 4,100 lb into synchronous transfer orbit, or 1,300 lb to nearest planet.

Scout

Well over 90 launchings have been accomplished by this vehicle, which was designed to make possible space, orbital, and reentry research by NASA and the Department of Defense at comparatively low cost, using "off-the-shelf" major components where available. The basic current 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 maneuvered in yaw and can send a 100 lb payload more than 16,000 miles into space. A fifth-stage velocity package is available, which increases the Scout's hypersonic reentry performance, making possible highly elliptical deep-space orbits, and extending 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: Vought Corporation (subsidiary of LTV 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 (X259) solid-propellant motor; 21,000 lb thrust; fourth stage: UTC FW-4S solid-propellant motor; 6,000 lb thrust; fifth stage velocity package now available.

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 standard US 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. Current 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, including the Transtage upper stage, 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. Current vehicles use radio guidance instead of the Titan IIIC inertial guidance. Production contract for original IIID placed by USAF in 1967; first used in June 1971 to orbit the first Lockheed Big Bird photo-reconnaissance spacecraft.

Titan IIID/IUS. Basically a Titan IIID adapted to accommodate a Space Shuttle Inertial Upper Stage. This configuration is under consideration as a further reliability improvement to replace Titan IIIC.

Titan IIIs have achieved well over 80 successful launchings since 1967, and additional contracts have extended production of various models to 1980.

Prime Contractor: Martin Marietta Corporation.

Power Plant: first and second stages: Aerojet liquid-propellant engines; first stage 526,000 lb thrust; second stage 102,000 lb thrust; Transtage: Aerojet twin-chamber liquid-propellant engine; 16,000 lb thrust; Titan IIIC/Ds also have two UTC five-segment solid-propellant booster rocket motors; each more than 1,150,000 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 Weights: core vehicle: approximately 450,000 lb; Titan IIIC, 1,400,000 lb.

Performance (Titan IIIC, approx): speed at burnout: solid-propellant boosters 4,100 mph, first stage 10,200 mph, second stage 17,100 mph, Transtage 17,500 mph.

Remotely Piloted Vehicles (RPVs)

USAF has retired its highly successful AQM-34 family of surveillance/reconnaissance RPVs, and has abandoned further development of combat RPVs of the BGM-34 type. The 432d Tactical Drone Group, based with its DC-130 and CH-3 aircraft at Davis-Monthan AFB, Ariz., was to be inactivated by April 1979. Details of the AQM/BGM-34 series can be found in the 1978 *Gallery of USAF Weapons*.

A KEEN EYE FOR TROUBLE

Means Real Confidence In Your Communications Equipment

The Remote Performance Monitor from the Aerospace/Optical Division of ITT keeps an eagle eye on remote communication sites. It detects, and analyzes potential problems before they happen, so up time and system confidence are increased. Unnecessary maintenance, travel and costs are virtually eliminated. Monitoring is continuous, but normal operations are undisturbed. Stand-by equipment, environmental conditions, and site security are all under the eagle's eye.

The monitor can watch remote sites separated by hundreds of miles. A display at your maintenance center lets you see numeric performance values, as well as acceptable, marginal, and unacceptable indications, immediately. Routine data is automatically recorded and analyzed for long-term trends, to anticipate problems before they happen. Detailed data can be printed out, to help troubleshoot faults.

The receiver monitor evaluates sensitivity, squelch, gain control, audio, and signal-to-noise ratio. Tests are repeated over short intervals without affecting operation. Information is transmitted periodically, or on demand. Failures or out-of-tolerance conditions are reported immediately.

The transmitter monitor checks forward and reverse power, audio level, and modulation every time the transmitter is used. Conditions are reported as required: routinely, immediately, or on demand.

The Remote Performance Monitor has built-in microprocessors, so you can program it to your specific needs. It is modularly expandable, to fit your size. And it watches more than communications. Safety, site security, environment, all come under the keen eye of the eagle.

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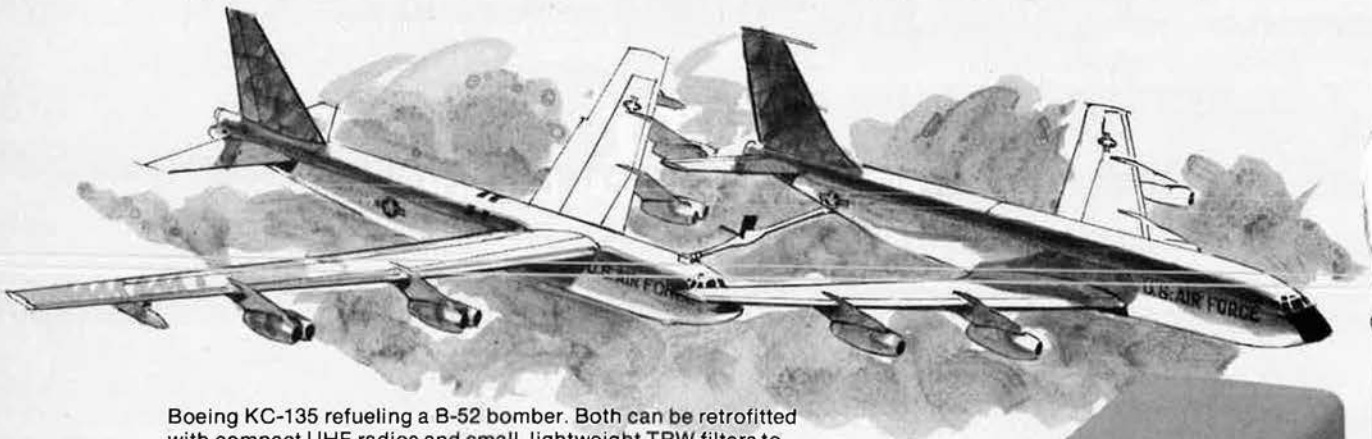
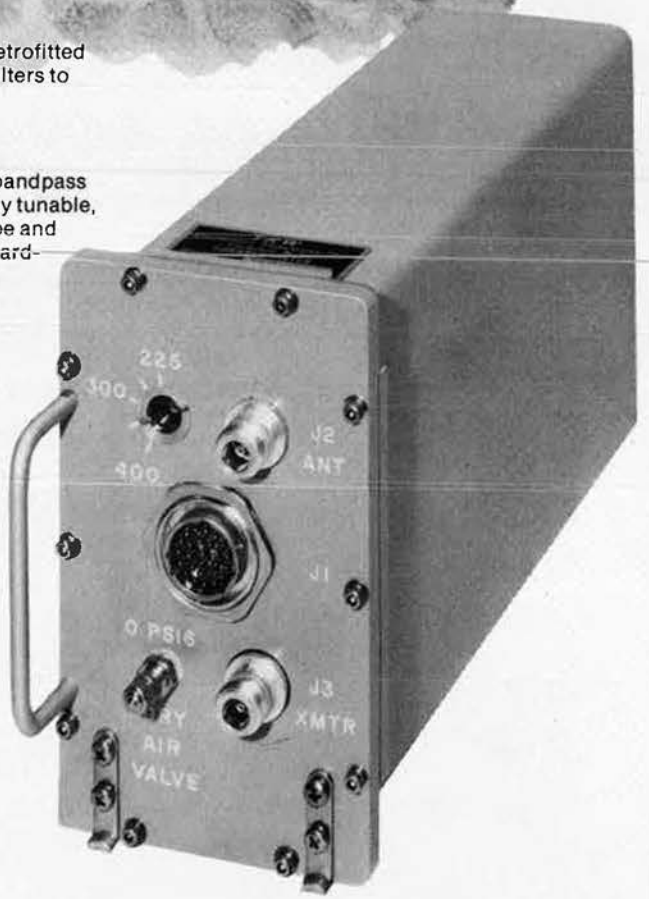
NEW...THE SMALLEST, LIGHTEST AIRBORNE UHF FILTER ON THE MARKET.



Boeing KC-135 refueling a B-52 bomber. Both can be retrofitted with compact UHF radios and small, lightweight TRW filters to eliminate co-location interference.

New TRW single-channel UHF bandpass filter. The unit is an automatically tunable, pressurized, four-pole cavity type and includes an integral 243 MHz guard-channel bypass filter.



If you're flying aircraft equipped with obsolete tube-type radios, you can now retrofit with newer, smaller, equally-powerful units coupled with TRW's newest single-channel UHF bandpass filters. You won't add an extra ounce or cubic inch to your aircraft . . . in fact, you'll save weight. And by using TRW filters, you'll eliminate co-location interference when several transmitters on board the aircraft are operating at once.

The new TRW filter is smaller and lighter than any comparable model now available. It's built for the military frequency range — 225 to 400 MHz — and meets or exceeds MIL-E-5400, with an MTBF of 5000 hours.

For more information, write or call: TRW RF Filter Products, Davis & Copewood Sts., Camden, N.J. 08103. (609) 365-5500. TWX 710-891-7087.

TRW ***RF FILTER PRODUCTS***

ANOTHER PRODUCT OF A COMPANY CALLED TRW

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, organization, equipment, funding, activities, bases, and heroes. This "Almanac" section was compiled by the staff of AIR FORCE Magazine. 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 up to date the comparable data from last year's "Almanac." A word of caution: Personnel figures that appear in this section in different forms will not always agree (nor will they always agree with figures in command and separate operating agency reports or in the "Guide to Bases") because of different cutoff dates, rounding off, differing methods of reporting, or categories of personnel 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

DESIGNATION	FROM	TO
Aeronautical Div., US Signal Corps	Aug. 1, 1907	July 18, 1914
Aviation Section, US Signal Corps	July 18, 1914	May 24, 1918
Army Air Service	May 24, 1918	July 2, 1926
Army Air Corps	July 2, 1926	June 20, 1941
Army Air Forces	June 20, 1941	Sept. 18, 1947
United States Air Force	Sept. 18, 1947	

UNITED STATES AIR FORCE PERSONNEL STRENGTH—1907 THROUGH 1980

YEAR	STRENGTH	YEAR	STRENGTH	YEAR	STRENGTH	YEAR	STRENGTH
1907	3	1926	9,674	1944	2,372,292	1962	883,330
1908	13	1927	10,078	1945	2,282,259	1963	868,644
1909	27	1928	10,549	1946	455,515	1964	855,802
1910	11	1929	12,131	1947	305,827	1965	823,633
1911	23	1930	13,531	1948	387,730	1966	886,350
1912	51	1931	14,780	1949	419,347	1967	897,426
1913	114	1932	15,028	1950	411,277	1968	904,759
1914	122	1933	15,099	1951	788,381	1969	862,062
1915	208	1934	15,861	1952	973,474	1970	791,078
1916	311	1935	16,247	1953	977,593	1971	755,107
1917	1,218	1936	17,233	1954	947,918	1972	725,635
1918	195,023	1937	19,147	1955	959,946	1973	690,999
1919	25,603	1938	21,089	1956	909,958	1974	643,795
1920	9,050	1939	23,455	1957	919,835	1975	612,551
1921	11,649	1940	51,165	1958	871,156	1976	585,207
1922	9,642	1941	152,125	1959	840,028	1977	570,479
1923	9,441	1942	764,415	1960	814,213	1978	569,491
1924	10,547	1943	2,197,114	1961	820,490	1979	562,650
1925	9,670					1980	559,000*

*Projected

USAF AND AIR RESERVE FORCES PERSONNEL BY CATEGORIES

CATEGORY	FY '64	FY '68	FY '74	FY '78	FY '79	FY '80[1]
AIR FORCE MILITARY						
Officers	133,000	140,000	110,000	95,000	96,000	97,000
Airmen	720,000[2]	762,000	529,000	470,000	462,000	458,000
Cadets	3,000	4,000	4,000	4,000	4,000	4,000
TOTAL, AIR FORCE MILITARY	**857,000**	**905,000**	**644,000**	**569,000**	**563,000**	**559,000**
Career Reenlistments	59,300	56,600	46,800	37,300	39,700	423,000
Rate	90%	88%	90%	82%	84%	85%
First-Term Reenlistments	17,400	10,700	19,300	11,900	14,300	17,000
Rate	30%	18%	31%	41%	41%	39%
CIVILIAN PERSONNEL						
Direct Hire (Including Technicians)	290,000	316,000	274,000	237,000	234,000	227,000
Indirect Hire—Foreign Nationals	33,000	26,000	16,000	14,000	14,000	14,000
TOTAL, CIVILIAN PERSONNEL	**322,000**	**342,000**	**289,000**	**251,000**	**248,000**	**241,000**
TOTAL MILITARY AND CIVILIAN[3]	**1,179,000**	**1,247,000**	**932,000**	**821,000**	**811,000**	**800,000**
Technicians (included above as Direct Hire Civilians)						
AFRES Technicians	—	—	6,000	7,000	7,000	7,000
ANG Technicians	15,000	17,000	22,000	22,000	22,000	22,000
AIR RESERVE FORCES						
Air National Guard, Paid	73,000	75,000	94,000	92,000	93,000	93,000
Air Force Reserve, Paid	67,000	46,000	48,000	55,000	58,000	59,000
Air Force Reserve, Nonpaid	97,000	145,000	119,000	45,000	40,000	38,000
TOTAL, READY RESERVE	**237,000**	**266,000**	**261,000**	**192,000**	**191,000**	**190,000**
Standby	130,000	101,000	46,000	43,000	43,000	43,000
TOTAL, AIR RESERVE FORCES[4]	**367,000**	**367,000**	**307,000**	**235,000**	**234,000**	**233,000**

[1]President's Budget Request.
[2]Excludes Aviation Cadets.
[3]FY '64–'78 are actuals; FY '79–'80 are estimates; excludes nonchargeable personnel.
[4]Excludes Retired Air Force Reserve.
NOTE: Totals may not add due to rounding.

USAF PERSONNEL STRENGTH BY COMMANDS AND AGENCIES

(Assigned Strengths as of September 30, 1978)

MAJOR COMMANDS	MILITARY	CIVILIAN	TOTAL
Aerospace Defense Command (ADCOM)	22,869	4,076	26,945
Air Force Communications Service (AFCS)	41,307	7,020	48,327
Air Force Logistics Command (AFLC)	9,505	82,100	91,605
Air Force Systems Command (AFSC)	25,959	26,204	52,163
Air Training Command (ATC)	70,860	15,010	85,870
Alaskan Air Command (AAC)	7,708	1,268	8,976
Military Airlift Command (MAC)	71,004	17,408	88,412
Pacific Air Forces (PACAF)	23,145	9,604	32,749
Strategic Air Command (SAC)	105,470	13,387	118,857
Tactical Air Command (TAC)	87,007	10,352	97,359
United States Air Forces in Europe (USAFE)	50,750	10,272	61,022
USAF Security Service (USAFSS)	11,599	2,054	13,653
TOTALS	**527,183**	**198,755**	**725,938**

SEPARATE OPERATING AGENCIES	MILITARY	CIVILIAN	TOTAL
Air Force Accounting and Finance Center (AFAFC)	260	1,826	2,086
Air Force Audit Agency (AFAA)	423	593	1,016
Air Force Engineering and Services Center (AFESC)	897	9,551	10,448
Air Force Inspection and Safety Center (AFISC)	386	145	567
Air Force Intelligence Service (AFIS)	422	145	531
Air Force Manpower and Personnel Center (AFMPC)	1,667	801	2,468
Air Force Office of Special Investigations (AFOSI)	1,455	329	1,784
AFRES/Air Reserve Personnel Center (ARPC)	583	10,925	11,508
Air Force Test and Evaluation Center (AFTEC)	246	75	321
United States Air Force Academy (USAFA)	6,802	1,792	8,594
Office, Secretary of the AF/Air Staff/ National Guard Bureau (NGB)	1,932	1,544	3,476
Other Hq. USAF	684	268	952
Other	7,593	568	8,161
Transients	18,958	—	18,958
TOTALS	**42,308**	**28,562**	**70,870**
TOTALS, COMMANDS AND AGENCIES	**569,491**	**227,317**	**796,808**

NOTE: Air Force Commissary Service (AFCOMS) and Air Force Service Information and News Center (AFSINC) were established after the effective date of data in this chart.

USAF TOTAL ACTIVE-DUTY STRENGTH BY GRADE

(As of September 30, 1978)

AIRMEN

GRADE	NUMBER
CHIEF MASTER SERGEANT	4,705
SENIOR MASTER SERGEANT	9,392
MASTER SERGEANT	33,300
TECHNICAL SERGEANT	52,271
STAFF SERGEANT	99,821
SERGEANT/SENIOR AIRMAN	106,518
AIRMAN FIRST CLASS	101,203
AIRMAN	31,696
AIRMAN BASIC	30,956
TOTAL	**469,862**

OFFICERS

GRADE	NUMBER
GENERAL	13
LIEUTENANT GENERAL	38
MAJOR GENERAL	127
BRIGADIER GENERAL	178
COLONEL	4,985
LIEUTENANT COLONEL	12,372
MAJOR	18,265
CAPTAIN	40,278
FIRST LIEUTENANT	9,437
SECOND LIEUTENANT	9,547
WARRANT OFFICER	2
TOTAL	**95,242**
CADETS	4,387
AIRMEN	469,862
TOTAL STRENGTH	**569,491**

USAF MILITARY PERSONNEL BY GRADE, RACE, AND SEX

(As of September 30, 1978)

OFFICERS

GRADE	FORCE	BLACK*	OTHER**	WOMEN***
GENERAL	356	8	1	2
COLONEL	4,985	76	41	50
LIEUTENANT COLONEL	12,372	194	124	309
MAJOR	18,265	462	353	719
CAPTAIN	40,278	1,324	468	2,246
FIRST LIEUTENANT	9,437	597	132	1,397
SECOND LIEUTENANT	9,547	800	199	1,285
WARRANT OFFICER	2	0	0	0
TOTALS	**95,242**	**3,461**	**1,318**	**6,008**

AIRMEN

GRADE	FORCE	BLACK*	OTHER**	WOMEN***
CHIEF MASTER SERGEANT	4,705	383	40	11
SENIOR MASTER SERGEANT	9,392	986	79	30
MASTER SERGEANT	33,300	4,207	403	92
TECHNICAL SERGEANT	52,271	7,693	690	252
STAFF SERGEANT	99,821	16,461	1,938	3,445
SERGEANT/SENIOR AIRMAN	106,518	19,426	2,768	12,524
AIRMAN FIRST CLASS	101,203	11,948	3,322	13,149
AIRMAN	31,696	4,448	1,077	6,079
AIRMAN BASIC	30,956	4,481	1,018	5,129
TOTALS	**469,862**	**70,033**	**11,335**	**40,711**
TOTALS, INCLUDING OFFICERS	**565,104**	**73,494**	**12,653**	**46,719**

*Includes 6,663 women.
**Includes 1,102 women.
***Includes women from black and other categories.

AVERAGE AGES OF MILITARY PERSONNEL

(As of September 30, 1978)

Officers	Average 34.05 years of age
Airmen	Average 26.8 years of age

NUMBER OF OFFICERS IN EACH MAJOR CAREER FIELD*

CODE	UTILIZATION FIELD TITLE	ASSIGNED
**00	Commanders and Directors	3,144
02	International-Politico-Military Affairs	177
05	Disaster Preparedness	124
10–14	Pilot	20,029
15 & 22	Navigator	9,550
16	Air Traffic Control	481
17	Air Weapons Director	1,617
18	Missile Operations	3,075
20	Space Systems	492
23	Audio-Visual	100
25	Weather	1,402
26	Scientific	1,269
27	Acquisition Program Management	1,650
28	Development Engineer	4,378
29	Program Management	167
30	Communications-Electronics	3,161
31	Missile Maintenance	523
40	Aircraft Maintenance & Munitions	3,831
51	Computer Technology	2,445
55	Civil Engineering	1,861
57	Cartography/Geodesy	74
60	Transportation	943
62	Supply Service	335
64	Supply Management	1,520
65	Procurement/Manufacturing Management	1,440
66	Logistics Plans & Programs	988
67	Financial	1,255
69	Management Analysis	178
70	Administration	2,379
73	Personnel	2,150
74	Manpower Management	586
75	Education & Training	629
79	Information	538
80	Intelligence	2,487
81	Security Police	1,050
82	Special Investigations & Counter-Intelligence	509
87	Band	32
88	Legal	1,090
89	Chaplain	841
90	Health Services Management	993
91 & 92	Biomedical Sciences	1,634
93–95	Physician	3,117
96	Medical Research	9
97	Nurse	3,798
98	Dental	1,439
99	Veterinary	282

*These figures do not include general officers or UPT/UNT/medical/law students.
**Commanders and director specialties in various career fields, *e.g.*, operations, logistics, programming, etc.

NUMBER OF ENLISTED IN EACH MAJOR CAREER FIELD

CODE	CAREER FIELD TITLE	ASSIGNED
10	First Sergeant	1,547
11	Aircrew Operations	6,592
20	Intelligence	11,032
22	Photomapping	132
23	Audio-Visual	3,612
24	Safety	1,217
25	Weather	3,051
27	Command Control Systems Operations	17,493
29	Communications Operations	10,775
30	Communications-Electronics Systems	27,906
31	Missile Electronic Maintenance	5,617
32	Avionics Systems	28,586
34	Training Devices	2,552
36	Wire Communications Systems Maintenance	4,909
39	Maintenance Management Systems	3,386
40	Intricate Equipment Maintenance	1,119
42	Aircraft Systems Maintenance	39,111
43	Aircraft Maintenance	45,242
44	Missile Maintenance	2,328
46	Munitions & Weapons Maintenance	21,239
47	Vehicle Maintenance	5,043
51	Computer Systems	6,192
54	Mechanical/Electrical	10,944
55	Structural/Pavements	12,792
56	Sanitation	1,505
57	Fire Protection	6,105
59	Marine	121
60	Transportation	14,298
61	Supply Services	1,550
62	Food Services	5,197
63	Fuels	7,200
64	Supply	25,835
65	Procurement	1,381
66	Logistics Plans	607
67	Accounting & Finance, and Auditing	5,470
69	Management Analysis	458
70	Administration	28,916
71	Printing	759
73	Personnel	11,067
74	Morale, Welfare & Recreation	2,054
75	Education & Training	3,304
79	Information	1,154
81	Security Police	35,795
82	Special Investigations & Counter-Intelligence	767
87	Band	1,154
90 & 91	Medical	22,136
92	Aircrew Protection	2,360
98	Dental	3,618

AIR FORCE MILITARY PERSONNEL DISTRIBUTION BY GEOGRAPHIC AREA

(As of September 30, 1978)

TOTAL MILITARY PERSONNEL	**569,712**
US TERRITORY AND SPECIAL LOCATIONS (Includes 1,787 in Panama Canal Zone)	**463,850**
TOTAL IN FOREIGN COUNTRIES	**105,862**
Western and Southern Europe (Major concentrations in Germany—34,460, UK—19,771, Spain—5,271, Italy—4,008, Turkey—3,741)	74,304
East Asia and Pacific (Major concentrations in Japan/Okinawa—14,042, Philippines—8,015, South Korea—7,868)	30,601
Africa, Near East, S. Asia (Major concentrations in Iran—341, of whom 17 remained in March 1979, and Saudi Arabia—125)	572
Western Hemisphere (The majority, 258, in Canada)	329
Eastern Europe	25
Undistributed	31

AIR FORCE FULL-TIME CIVILIAN EMPLOYMENT BY GRADE

(As of January 31, 1979)

GS		WP		WS		WL		WG	
GR	POP	GR	POP	GR	POP	GR	POP	GR	POP
1	94	4	1	1	60	1	1	1	278
2	1,699	8	3	2	50	2	37	2	1,566
3	9,879	9	3	3	173	3	8	3	805
4	16,385	10	4	4	232	4	89	4	2,008
5	19,681	11	4	5	408	5	63	5	4,845
6	7,152	12	8	6	556	6	61	6	4,848
7	10,970	13	1	7	989	7	41	7	5,940
8	2,374	14	5	8	795	8	192	8	8,391
9	15,683	16	5	9	1,415	9	373	9	7,909
10	995	17	2	10	1,588	10	880	10	21,718
11	14,701	18	1	11	748	11	103	11	5,611
12	13,427	21	2	12	410	12	4	12	2,446
13	7,597	24	1	13	325	13	4	13	407
14	2,826			14	226	14	0	14	122
15	889			15	119	15	0	15	2
16	95			16	44				
17	22			17	13				
18	5			18	3				
				19	1				
TOTALS	124,474		39		8,155		1,856		66,896

GR = Grade
GS = General Schedule
POP = Population
WP = Printing and Lithographic Pay Schedule
WS = Supervisory (Foreman) Pay Scale
WL = Leader Pay Schedules
WG = Nonsupervisory Pay Schedules

NOTE: Table includes ANG Technicians.

FEDERAL CIVILIAN PAY SCALE

General Schedule

(Effective October 1, 1978)

GRADE	1	2	3	4	5	6	7	8	9	10
GS-1	$6,561	$6,780	$6,999	$7,218	$7,437	$7,656	$7,875	$8,094	$8,313	$8,532
GS-2	7,422	7,669	7,916	8,163	8,410	8,657	8,904	9,151	9,398	9,645
GS-3	8,366	8,645	8,924	9,203	9,482	9,761	10,040	10,319	10,598	10,877
GS-4	9,391	9,704	10,017	10,330	10,643	10,956	11,269	11,582	11,895	12,208
GS-5	10,507	10,857	11,207	11,557	11,907	12,257	12,607	12,957	13,307	13,657
GS-6	11,712	12,102	12,492	12,882	13,272	13,662	14,052	14,442	14,832	15,222
GS-7	13,014	13,448	13,882	14,316	14,750	15,184	15,618	16,052	16,486	16,920
GS-8	14,414	14,894	15,374	15,854	16,334	16,814	17,294	17,774	18,254	18,734
GS-9	15,920	16,451	16,982	17,513	18,044	18,575	19,106	19,637	20,168	20,699
GS-10	17,532	18,116	18,700	19,284	19,868	20,452	21,036	21,620	22,204	22,788
GS-11	19,263	19,905	20,547	21,189	21,831	22,473	23,115	23,757	24,399	25,041
GS-12	23,087	23,857	24,627	25,397	26,167	26,937	27,707	28,477	29,247	30,017
GS-13	27,453	28,368	29,283	30,198	31,113	32,028	32,943	33,858	34,773	35,688
GS-14	32,442	33,523	34,604	35,685	36,766	37,847	38,928	40,009	41,090	42,171
GS-15	38,160	39,432	40,704	41,976	43,248	44,520	45,792	47,064	48,336*	49,608*
GS-16	44,756	46,248	47,740*	49,232*	50,724*	52,216*	53,708*	55,200*	56,692*	
GS-17	52,429*	54,177*	55,925*	57,673*	59,421*					
GS-18	61,449*									

*Executive Order 12087: GS-15 through GS-18, limited to $47,500.

MONTHLY MILITARY BASIC RATES OF PAY

(Effective October 1, 1978)

YEARS OF SERVICE

PAY GRADE	UNDER 2	2	3	4	6	8	10	12	14	16	18	20	22	26
COMMISSIONED OFFICERS														
O–10	$3,298	$3,414	$3,414	$3,414	$3,414	$3,545	$3,545	$3,816	$3,816	$4,089*	$4,089*	$4,363*	$4,363*	$4,635*
O–9	2,923	3,000	3,063	3,063	3,063	3,141	3,141	3,272	3,272	3,545	3,545	3,816	3,816	4,089*
O–8	2,647	2,727	2,791	2,791	2,791	3,000	3,000	3,141	3,141	3,272	3,414	3,545	3,687	3,687
O–7	2,199	2,349	2,349	2,349	2,454	2,454	2,597	2,597	2,727	3,000	3,206	3,206	3,206	3,206
O–6	1,630	1,791	1,908	1,908	1,908	1,908	1,908	1,908	1,973	2,286	2,403	2,454	2,597	2,817
O–5	1,304	1,531	1,637	1,637	1,637	1,637	1,687	1,777	1,896	2,038	2,155	2,220	2,298	2,298
O–4	1,099	1,338	1,428	1,428	1,454	1,518	1,622	1,713	1,791	1,869	1,922	1,922	1,922	1,922
O–3	1,021	1,142	1,220	1,350	1,415	1,466	1,545	1,622	1,662	1,662	1,662	1,662	1,662	1,662
O–2	890	972	1,168	1,208	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233	1,233
O–1	773	804	972	972	972	972	972	972	972	972	972	972	972	972
COMMISSIONED OFFICERS WITH MORE THAN 4 YEARS OF ACTIVE SERVICE AS ENLISTED MEMBERS														
O–3	—	—	—	1,350	1,415	1,466	1,545	1,622	1,687	1,687	1,687	1,687	1,687	1,687
O–2	—	—	—	1,208	1,233	1,272	1,338	1,389	1,428	1,428	1,428	1,428	1,428	1,428
O–1	—	—	—	972	1,039	1,077	1,116	1,155	1,208	1,208	1,208	1,208	1,208	1,208
WARRANT OFFICERS														
W–4	1,040	1,116	1,116	1,142	1,194	1,246	1,299	1,389	1,454	1,505	1,545	1,596	1,649	1,777
W–3	946	1,026	1,026	1,039	1,051	1,128	1,194	1,233	1,272	1,310	1,350	1,403	1,454	1,505
W–2	828	896	896	922	972	1,026	1,065	1,104	1,142	1,182	1,220	1,259	1,310	1,310
W–1	690	791	791	857	896	934	972	1,013	1,051	1,090	1,128	1,168	1,168	1,168
ENLISTED MEMBERS														
E–9	—	—	—	—	—	—	1,182	1,209	1,236	1,265	1,293	1,318	1,388	1,522
E–8	—	—	—	—	—	992	1,019	1,047	1,074	1,102	1,128	1,155	1,223	1,360
E–7	692	747	775	802	830	856	883	911	952	979	1,006	1,019	1,088	1,223
E–6	598	652	679	708	734	761	789	830	856	883	897	897	897	897
E–5	525	571	599	625	666	693	721	747	761	761	761	761	761	761
E–4	504	533	564	608	632	632	632	632	632	632	632	632	632	632
E–3	485	512	532	553	553	553	553	553	553	553	553	553	553	553
E–2	467	467	467	467	467	467	467	467	467	467	467	467	467	467
E–1	419	419	419	419	419	419	419	419	419	419	419	419	419	419

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 $5,114.70, regardless of cumulative years of service.

* Basic pay is limited to $3,958.20 by Level V of the Executive Schedule.

Basic pay while serving as Chief Master Sergeant of the Air Force is $1,851, regardless of cumulative years of service.

BASIC ALLOWANCE FOR QUARTERS (BAQ)

Pay Grade	Without Dependents		With Dependents
	Full*	Partial**	
C/S and O–10	$357.90	$50.70	$447.60
O–9	357.90	50.70	447.60
O–8	357.90	50.70	447.60
O–7	357.90	50.70	447.60
O–6	321.30	39.60	391.80
O–5	296.10	33.00	356.70
O–4	263.70	26.70	318.30
O–3	231.90	22.20	286.20
O–2	201.30	17.70	254.70
O–1	156.90	13.20	204.60
W–4	254.10	25.20	306.60
W–3	226.50	20.70	279.30
W–2	197.10	15.90	250.50
W–1	177.90	13.80	230.40
CMSAF and E–9	191.70	18.60	269.70
E–8	176.70	15.30	249.30
E–7	150.30	12.00	231.90
E–6	136.50	9.90	213.30
E–5	131.10	8.70	195.90
E–4	115.80	8.10	172.50
E–3	103.50	7.80	150.30
E–2	91.50	7.20	150.30
E–1	86.40	6.90	150.30

* Payment of the full rate of basic allowance for quarters at these rates for members of the Uniformed Services to personnel without dependents is authorized by 37 U.S. Code 403 and Part IV of Executive Order 11157, as amended.

** Payment of the partial rate of basic allowance for quarters at these rates to members of the Uniformed Services without dependents who, under 37 U.S. Code 403(b) or 403(c), are not entitled to the full rate of basic allowance for quarters, is authorized by 37 U.S. Code 1009(d) and Part IV of Executive Order 11157, as amended.

AVIATION CAREER INCENTIVE PAY SCHEDULE

PHASE I

Monthly Rate	Years of Aviation Service as an Officer *(Including flight training)*
$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 as Computed under 37 U.S.C. 205
$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. An officer in pay grade O–8 or above may not be paid at a rate greater than $165 a month. Officers with more than 18 years of commissioned service and less than 6 years of aviation service are entitled to Phase I rates.

BASIC ALLOWANCE FOR SUBSISTENCE (BAS)

Officers (Monthly)	Enlisted (Daily)		
	Separate Rations	Rations in Kind Not Available	Emergency Rations
$62.80	$3.00	$3.38	$4.48

COMPARISON OF DoD BUDGETS BY MILITARY PROGRAMS FOR FY 1978–82

(Billions of Dollars)

Military Program	Total Obligational Authority 1978	1979*	1980*	1981*	1982*
Strategic Forces	$ 9.1	$ 8.6	$ 10.8	$ 11.3	$ 12.1
General-Purpose Forces	41.3	47.5	50.0	55.0	58.5
Intelligence and Communications	7.9	8.1	9.1	10.1	10.8
Airlift and Sealift	1.6	1.8	1.9	2.0	2.1
Guard and Reserve Forces	6.9	7.0	7.1	7.1	7.8
Research and Development[1]	10.0	11.1	11.8	12.8	13.9
Central Supply and Maintenance	12.0	12.5	13.3	14.3	15.1
Training, Medical, and Other General Personnel Activities	23.9	25.8	27.9	29.7	31.7
Administrative and Associated Activities	2.2	2.3	2.6	2.6	2.8
Support of Other Nations	0.3	0.4	0.6	0.3	0.4
TOTAL BUDGET AUTHORITY	**$115.3**	**$125.2**	**$135.0**	**$145.2**	**$155.2**
Prior-year funds and other financial adjustments	+1.2	+0.5	+0.5	+0.5	+0.5
TOTAL OBLIGATIONAL AUTHORITY	**$116.5**	**$125.7**	**$135.5**	**$145.7**	**$155.7**

NOTE: Totals may not add due to rounding.
[1]Excludes R&D in other program areas on systems approved for production.
*Estimate

DoD FINANCIAL SUMMARY BY COMPONENT FOR FY 1978-80

(TOA in Billions of Dollars)

Component	FY '78 Current $	FY '78 FY '80 $	FY '79 Current $	FY '79 FY '80 $	FY '80 Current $	FY '80 FY '80 $*
Army	$ 28.9	$ 32.5	$ 31.6	$ 33.4	$ 34.0	$ 34.0
Navy	39.6	44.8	41.5	44.0	44.0	44.0
Air Force	33.1	37.4	35.4	37.5	39.0	39.0
Defense Agencies/OSD	4.2	4.7	4.6	4.8	5.3	5.3
Defense-wide	10.6	12.4	12.6	13.5	13.2	13.2
TOTALS	**$116.5**	**$131.8**	**$125.7**	**$133.2**	**$135.5**	**$135.5**

NOTE: Totals may not add due to rounding.
*Includes $625 million estimate for contingencies.

EDUCATIONAL LEVELS—USAF LINE OFFICERS

Level	End of December 1978 Number	Percent
Below baccalaureate	1,379	1.7
Baccalaureate, no master's degree	47,886	58.8
Master's degree, no doctorate	30,766	37.8
Doctoral and professional degrees	1,375	1.7
TOTALS	**81,406**	**100.0**

EDUCATIONAL LEVELS—USAF ENLISTED FORCE

Level	End of December 1978 Number	Percent
Below high school (no GED)	6,280	1.3
GED passed (old system)—no diploma or civilian equivalency certificate	6,468	1.4
Recognized high school diploma or certificate	360,725[1]	77.2
Some post-secondary education, less than two years	52,543	11.2
Some post-secondary education, two or more years but below bachelor's	30, 331[2]	6.5
Baccalaureate or higher	10,830	2.3
TOTALS	**467,177[3]**	**99.9**

[1]Includes 18,665 with high school diplomas or equivalency certificate based on GED (new system) and 342,060 with high school completion (diploma or certificate).
[2]Includes 5,211 with associate degrees.
[3]Does not include 504 coded "unknown."

INSTALLATIONS OF THE US AIR FORCE

MAJOR INSTALLATIONS	FY '64	FY '68	FY '75	FY '76	FY '77	FY '78	FY '79
US and Possessions	160	138	113	111	107	107	107
Foreign	56	60	35	29	27	27	27
Worldwide	**216**	**198**	**148**	**140**	**134**	**134**	**134**
OTHER INSTALLATIONS							
US and Possessions	3,650	2,723	2,323	2,372	2,305	2,202	2,175
Foreign	1,168	1,060	720	658	664	661	646
Worldwide	**4,818**	**3,783**	**3,043**	**3,030**	**2,969**	**2,863**	**2,821**
"Other Installations" includes:							
Auxiliary	2,849	1,892	—	—	—	—	—
Ballistic Missile	1,083	1,158	1,157	1,157	1,157	1,157	1,157
Industrial	55	43	—	—	—	—	—
Radar	331	183	—	—	—	—	—
Air National Guard	103	106	125	127	128	127	129
Tenant, Non-Air Force	348	357	—	—	—	—	—
War Only	49	44	—	—	—	—	—
Electronics Station or Site	—	—	599	579	569	545	534
General Support Annex	—	—	1,140	1,146	1,095	1,016	983
Auxiliary Airfield	—	—	22	21	20	18	18

AIR FORCE BUDGET AND FINANCE—FISCAL YEARS 1964-80

(Figures in millions of dollars)

	FY '64	FY '68	FY '74	FY '78	FY '79	FY '80
Gross National Product	$616,200	$829,900	$1,359,200	$2,106,000	$2,343,000	$2,565,000
Federal Budget, Outlays	118,600	178,800	269,600	450,800	493,400	531,600
DoD Budget, Outlays	50,786	78,027	78,445	103,000	111,900	122,700
DoD Percent of: GNP	8.2%	9.4%	5.8%	4.9%	4.8%	4.8%
Federal Budget	42.8%	43.6%	29.1%	22.8%	22.7%	23.1%
Air Force Budget Outlays						
Current Dollars	20,456	25,734	23,928	29,217	31,468	34,229
Constant FY '80 Prices	53,491	58,099	34,726	33,264	33,451	34,229
AF Percent of: GNP	3.3%	3.1%	1.8%	1.4%	1.3%	1.3%
Federal Budget	17.2%	14.4%	8.9%	6.5%	6.4%	6.4%
DoD Budget	40.3%	33.0%	30.5%	28.4%	28.1%	27.9%
Total Obligational Authority						
DoD—Current Dollars	50,647	75,627	85,054	116,494	125,740	135,500
Constant FY '80 Prices	137,159	173,252	123,726	131,774	133,248	135,500
AF—Current Dollars	19,958	24,974	24,779	33,118	35,427	38,382
Constant FY '80 Prices (With anticipated pay supplementals)	53,174	56,971	36,152	37,352	37,476	38,382
Aircraft Procurement (3010)	3,620	5,306	2,837	6,372	7,145	7,931
Missile Procurement (3020)	2,220	1,408	1,419	1,797	1,514	2,289
Other Procurement (3080)	876	2,357	1,652	2,268	2,405	2,671
Procurement Subtotal	6,716	9,071	5,908	10,437	11,064	12,891
Military Construction—AF (3500)	497	481	321	491	558	540
Military Construction—AFRES (3730)	3	4	11	12	13	10
Military Construction—ANG (3830)	17	10	19	42	45	30
Military Construction Subtotal	517	495	351	545	616	580
RDT&E (3600)	3,627	3,412	3,062	4,222	4,598	5,005
TOTAL, INVESTMENT	**10,860**	**12,978**	**9,321**	**15,204**	**16,278**	**18,476**
Military Personnel—AF (3500)	4,423	5,677	7,479	7,547	7,908	7,876
Reserve Personnel—AF (3700)	57	64	126	181	199	215
National Guard Personnel—AF (3850)	60	84	182	237	265	274
Military Personnel Subtotal	4,540	5,825	7,787	7,965	8,372	8,365
Operation & Maintenance—AF (3400)	4,339	5,904	6,882	8,682	9,406	10,092
Operation & Maintenance—AFRES (3740)	—	—	239	384	393	411
Operation & Maintenance—ANG (3840)	220	266	551	848	952	1,039
Stock Fund (4921)	—	—	—	35	27	—
Operation & Maintenance Subtotal	4,559	6,170	7,672	9,949	10,778	11,542
TOTAL, OPERATING	**9,099**	**11,995**	**15,459**	**17,914**	**19,150**	**19,907**
Programs, TOA (Current $)						
I Strategic Forces	6,525	5,176	4,315	4,508	4,961	5,989
II General-Purpose Forces	3,030	7,273	5,611	9,921	10,533	11,133
III Intelligence & Communications	2,979	3,622	3,340	4,117	4,100	4,654
IV Airlift & Sealift Forces	1,010	1,736	756	1,607	1,795	1,814
V Reserve & Guard Forces	502	621	1,223	2,356	2,372	2,394
VI Research & Development	2,063	1,556	2,401	3,471	3,916	4,140
VII Central Supply & Maintenance	1,767	2,375	2,763	3,402	3,848	4,014
VIII Training, Medical & Other General Activities	1,726	2,079	3,441	3,195	3,260	3,384
IX Administration & Associated Activities	342	352	568	512	525	579
X Support of Other Nations	12	182	363	29	116	281

NOTE: Totals may not add due to rounding. FY '79 column reflects revised estimate. FY '80 is President's budget request.

USAF AIRCRAFT PROCUREMENT—FY '68-79

CATEGORY	FY '68	FY '73	FY '74	FY '75	FY '76	FY '77	FY '78	FY '79
Fixed-Wing Aircraft								
Total Budgeted	1,152	161	165	195	181	219	335	392
Accepted/Scheduled Acceptances	935	255	117	94	269	182	378	276
Helicopters								
Total Budgeted	38	6	0	0	0	4	0	0
Accepted/Scheduled Acceptances	36	29	1	5	0	0	0	0

NOTE: FY '68-77 columns are actual. FY '78-79 data are programmed.

USAF SQUADRONS BY TYPE AND NUMBER

MAJOR FORCE SQUADRONS	FY '64	FY '68	FY '74	FY '78	FY '79	FY '80
Bomber	75	40	28	25	25	25
ECM/Reconnaissance	5	3	1	1	1	1
IRBM/ICBM	35	26	26	26	26	26
Tanker	55	41	38	34	34	34
Interceptor	40	28	7	6	6	6
Bomarc	8	6	—	—	—	—
Command, Control & Surveillance	13	13	8	6	6	3
Tactical Bomber	2	1	—	—	—	—
Mace/Matador	8	2	—	—	—	—
Fighter	75	92	74	79	80	82
Reconnaissance	8	21	13	9	7	6
Tactical Air Control System	1	9	11	11	11	11
Special Operations Force	6	22	5	5	5	5
Tactical Airborne Command Control System	—	—	—	5	5	5
Tactical Airlift	26	31	17	15	14	14
Strategic Airlift	35	32	17	17	17	17
Aeromed Evacuation	5	6	3	3	3	3
Special Mission	2	2	2	1	1	1
Mapping	2	2	1	—	—	—
Weather	6	6	3	2	2	2
Air Rescue & Recovery	12	14	12	7	7	7
Intelligence	—	15	9	6	5	5
Other	20	15	2	4	4	4
TOTAL, USAF	**439**	**427**[1]	**277**	**262**	**259**	**257**
Air National Guard	92	78	91	91	91	91
Air Force Reserve	50	37	53[2]	53[2]	53[2]	53[2]
TOTAL, MAJOR FORCE SQUADRONS	**581**	**542**	**421**	**406**	**403**	**401**

NOTE: Data in FY '64–78 columns are actual; FY '79 and FY '80 data are estimated.

[1]Includes 20 Mobilized Units.
[2]Includes Associate Squadrons.

NUMBER OF AIRCRAFT PER ACTIVE-DUTY USAF SQUADRON

Aircraft Type	Number
A-7	24
A-10	24
B-52	14
C-5	17
C-9	11
C-130	16
AC-130	10
KC-135	15
C-141	18
E-3A	10
F-4	24
RF-4	18
F-5	18
F-15	24
F-16	24
F-106	18
F-111	24
FB-111	15

NOTE: In addition, four USAF aircraft types are counted as total Unit Equipment, not by squadrons. These include the HC-130 (24 total), the WC-130 (13 total), and the T-39 (104 total), all of the Military Airlift Command; and the T-38 trainer (948 total, plus those assigned to the Thunderbirds demonstration team).

THE NUMBER OF ACTIVE AIRCRAFT AND FLYING HOURS

TYPE OF AIRCRAFT	FY '64	FY '68	FY '74	FY '77	FY '78	FY '79	FY '80
Bomber, Strategic	1,364	714	500	489	448	417	415
Bomber, Other	145	65	—	—	—	—	—
Tanker	998	667	657	567	525	531	532
Fighter/Interceptor/Attack	3,538	3,985	2,387	2,599	2,652	2,643	2,823
Reconnaissance/Electronic Warfare	595	1,009	610	423	419	389	358
Cargo/Transport	2,327	2,358	1,253	860	845	837	837
Search & Rescue (Fixed Wing)	100	91	56	37	37	33	30
Helicopter (includes Rescue)	401	465	317	254	246	231	214
Special Research	3	5	—	—	—	—	—
Trainer	2,873	2,584	1,996	1,769	1,739	1,735	1,743
Utility/Observation	345	663	154	220	210	215	221
TOTAL, USAF	**12,689**	**12,606**	**7,930**	**7,218**	**7,121**	**7,031**	**7,173**
Air National Guard total	1,806	1,438	1,798	1,560	1,539	1,522	1,570
Air Force Reserve total	719	426	428	478	478	484	468
Free World Military Forces total	—	692	1,976	—	—	—	—
Earmarked (MAP, USN, and Other Non-Air Force)	166	165	—	—	—	—	—
TOTAL ACTIVE AIRCRAFT, USAF, ANG, AFRES	**15,380**	**15,327**	**12,132**	**9,256**	**9,138**	**9,037**	**9,211**
Active aircraft including foreign government owned					(9,301)	(9,184)	(9,341)
FLYING HOURS (000)							
USAF	6,028	7,068	3,272	2,642	2,582	2,680	2,707
Air National Guard	432	465	405	386	382	390	398
Air Force Reserve	202	164	128	139	139	138	136
TOTAL FLYING HOURS	**6,662**	**7,697**	**3,805**	**3,167**	**3,103**	**3,208**	**3,241**

NOTE: Data in FY '64–78 columns are actual; FY '79 and FY '80 data are estimated.

UNITED STATES AIR FORCE MEDAL OF HONOR WINNERS—1918-1979

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	Died, 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
Cheli, 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, Saarbrücken, Germany	KIA, Nov. 9, 1944
Hamilton, Maj. Pierpont M.	Tuxedo Park, N.Y.	Nov. 8, 1942, Port Lyautey, French Morocco	Santa Barbara, Calif. (Ret. Maj. Gen.)
Howard, Lt. Col. 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, Saarbrücken, Germany	KIA, Nov. 9, 1944
Michael, 1st Lt. Edward S.	Chicago, Ill.	Apr. 11, 1944, Brunswick, Germany	Fairfield, Calif. (Ret. Col.)
Morgan, 2d Lt. John C.	Vernon, Tex.	July 28, 1943, Kiel, Germany	Marina Del Rey, Calif. (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, Maj. 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	Long Island City, 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	Baldwinsville, 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, Maj. Jay, Jr.	Carlisle, Pa.	June 16, 1943, Buka, Solomon Is.	Boothbay Harbor, Me. (Ret. Col.)
KOREA			
Davis, Maj. 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
Day, Col. George E.	Sioux City, Iowa	Conspicuous gallantry while POW	Shalimar, Fla. (Ret. Col.)
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	Mar. 10, 1967, Thai Nguyen, No. Vietnam	Fort Worth, Tex. (Ret. Col.)
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, Maj., RAF Woodbridge, UK
Jackson, Lt. Col. Joe M.	Newnan, Ga.	May 12, 1968, Kham Duc, So. Vietnam	Kent, Wash. (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	Vienna, Va.
Sijan, Capt. Lance P.	Milwaukee, Wis.	Conspicuous gallantry while POW	Died while POW, Jan. 1968
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.	Anacortes, Wash.	Nov. 9, 1967, Da Nang area, So. Vietnam	Active duty, Lt. Col., Bogota, Colombia

SOME FAMOUS FIRSTS AMONG US BOMBARDMENT UNITS

June 12, 1918 First bombs dropped by an AEF bomb unit: 8 Breguet 14s of the 96th Aero Sqdn., led by Maj. Harry M. Brown, on Dommary-Baroncourt railyards in France.

Dec. 10, 1941 First heavy bomb mission of WW II: 5 B-17s of the 93d Bomb Sqdn., 19th Bomb Gp., led by Maj. Cecil Combs, attacked Japanese convoy near Vigan, P.I., also sank the first enemy vessel by US aerial combat bombing.

Apr. 18, 1942 First mission against Japan: 16 B-25s of the 17th Bomb Gp. and 89th Recce Sqdn., led by Lt. Col. James H. Doolittle, launched from the carrier *Hornet*.

June 12, 1942 First mission against a European target: 13 B-24s of HALPRO Detachment, led by Col. H. A. Halverson, flying from Egypt against Ploesti oil fields.

Jan. 27, 1943 First mission against the German homeland: 53 B-17s and B-24s of the 1st and 2d Bomb Wgs., flying from the UK, attacked the Wilhelmshaven naval base.

Aug. 6, 1945 First atomic bomb mission: The *Enola Gay*, a 509th Composite Gp. B-29, piloted by Col. Paul W. Tibbets, Jr., flying from Tinian, attacked Hiroshima, Japan.

USAF Leaders Through The Years

SECRETARIES OF THE AIR FORCE

Stuart Symington	Sept. 18, 1947	Apr. 24, 1950
Thomas K. Finletter	Apr. 24, 1950	Jan. 20, 1953
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955
Donald A. Quarles	Aug. 15, 1955	Apr. 30, 1957
James H. Douglas, Jr.	May 1, 1957	Dec. 10, 1959
Dudley C. Sharp	Dec. 11, 1959	Jan. 20, 1961
Eugene M. Zuckert	Jan. 24, 1961	Sept. 30, 1965
Harold Brown	Oct. 1, 1965	Feb. 15, 1969
Robert C. Seamans, Jr.	Feb. 15, 1969	May 14, 1973
John L. McLucas	July 18, 1973	Nov. 23, 1975
James. W. Plummer (acting)	Nov. 24, 1975	Jan. 1, 1976
Thomas C. Reed	Jan. 2, 1976	Apr. 6, 1977
John C. Stetson	Apr. 6, 1977	

USAF CHIEFS OF STAFF

Gen. Carl A. Spaatz	Sept. 26, 1947	Apr. 29, 1948
Gen. Hoyt S. Vandenberg	Apr. 30, 1948	June 29, 1953
Gen. Nathan F. Twining	June 30, 1953	June 30, 1957
Gen. Thomas D. White	July 1, 1957	June 30, 1961
Gen. Curtis E. LeMay	June 30, 1961	Jan. 31, 1965
Gen. John P. McConnell	Feb. 1, 1965	July 31, 1969
Gen. John D. Ryan	Aug. 1, 1969	July 31, 1973
Gen. George S. Brown	Aug. 1, 1973	June 30, 1974
Gen. David C. Jones	July 1, 1974	June 20, 1978
Gen. Lew Allen, Jr.	July 1, 1978	

AEROSPACE DEFENSE COMMAND

Lt. Gen. George E. Stratemeyer	Mar. 21, 1946	Nov. 30, 1948
Maj. Gen. Gordon P. Saville	Dec. 1, 1948	Dec. 31, 1950
Lt. Gen. Ennis C. Whitehead	Jan. 1, 1951	Aug. 25, 1951
Gen. Benjamin W. Chidlaw	Aug. 25, 1951	May 31, 1955
Maj. Gen. Frederic H. Smith, Jr. (acting)	May 31, 1955	July 19, 1955
Gen. Earle E. Partridge	July 20, 1955	Sept. 17, 1956
Lt. Gen. Joseph H. Atkinson	Sept. 17, 1956	Aug. 15, 1961
Lt. Gen. Robert M. Lee	Aug. 15, 1961	July 31, 1963
Lt. Gen. Herbert B. Thatcher	Aug. 1, 1963	July 31, 1967
Lt. Gen. Arthur C. Agan	Aug. 1, 1967	Feb. 28, 1970
Lt. Gen. Thomas K. McGehee	Mar. 1, 1970	July 1, 1973
Gen. Seth J. McKee	July 1, 1973	Oct. 1, 1973
Gen. Lucius D. Clay, Jr.	Oct. 1, 1973	Aug. 31, 1975
Gen. Daniel James, Jr.	Sept. 1, 1975	Dec. 5, 1977
Gen. James E. Hill	Dec. 6, 1977	

Formerly Air Defense Command.
Redesignated Aerospace Defense Command Jan. 1, 1968.

AIR FORCE COMMUNICATIONS SERVICE

Maj. Gen. Harold W. Grant	July 1, 1961	Feb. 15, 1962
Maj. Gen. Kenneth P. Bergquist	Feb. 16, 1962	June 30, 1965
Maj. Gen. J. Francis Taylor, Jr.	July 1, 1965	Oct. 31, 1965
Maj. Gen. Richard P. Klocko	Nov. 1, 1965	July 2, 1967
Maj. Gen. Robert W. Paulson	July 15, 1967	Aug. 1, 1969
Maj. Gen. Paul R. Stoney	Aug. 1, 1969	Oct. 31, 1973
Maj. Gen. Donald L. Werbeck	Nov. 1, 1973	Aug. 24, 1975
Maj. Gen. Rupert H. Burris	Aug. 25, 1975	Oct. 31, 1977
Maj. Gen. Robert E. Sadler	Nov. 1, 1977	

AIR FORCE LOGISTICS COMMAND

Gen. Joseph T. McNarney	Oct. 14, 1947	Aug. 31, 1949
Lt. Gen. Benjamin W. Childaw	Sept. 1, 1949	Aug. 20, 1951
Gen. Edwin W. Rawlings	Aug. 21, 1951	Feb. 28, 1959
Lt. Gen. William F. McKee	Mar. 1, 1959	Mar. 14, 1959
Gen. Samuel E. Anderson	Mar. 15, 1959	July 31, 1961
Gen. William F. McKee	Aug. 1, 1961	June 30, 1962
Gen. Mark E. Bradley, Jr.	July 1, 1962	July 31, 1965
Gen. Kenneth B. Hobson	Aug. 1, 1965	July 31, 1967
Gen. Thomas P. Gerrity	Aug. 1, 1967	Feb. 24, 1968
Lt. Gen. Lewis L. Mundell (acting)	Feb. 24, 1968	Mar. 28, 1968
Gen. Jack G. Merrell	Mar. 29, 1968	Sept. 11, 1972
Gen. Jack J. Catton	Sept. 12, 1972	Aug. 31, 1974
Gen. William V. McBride	Sept. 1, 1974	Aug. 31, 1975
Gen. F. Michael Rogers	Sept. 1, 1975	Jan. 27, 1978
Gen. Bryce Poe II	Jan. 28, 1978	

Formerly Air Materiel Command.
Redesignated as Air Force Logistics Command Apr. 1, 1961.

AIR FORCE SYSTEMS COMMAND

Maj. Gen. David M. Schlatter	Feb. 1, 1950	June 24, 1951
Lt. Gen. Earle E. Partridge	June 24, 1951	June 20, 1953
Lt. Gen. Donald L. Putt	June 30, 1953	Apr. 14, 1954
Lt. Gen. Thomas S. Power	Apr. 15, 1954	June 30, 1957
Maj. Gen. John W. Sessums, Jr.	July 1, 1957	July 31, 1957
Lt. Gen. Samuel E. Anderson	Aug. 1, 1957	Mar. 9, 1959
Maj. Gen. John W. Sessums, Jr.	Mar. 10, 1959	Apr. 24, 1959
Gen. Bernard A. Schriever	Apr. 25, 1959	Aug. 31, 1966
Gen. James Ferguson	Sept. 1, 1966	Aug. 30, 1970
Gen. George S. Brown	Sept. 1, 1970	July 31, 1973
Gen. Samuel C. Phillips	Aug. 1, 1973	Aug. 31, 1975
Gen. William J. Evans	Sept. 1, 1975	July 31, 1977
Gen. Lew Allen, Jr.	Aug. 1, 1977	Mar. 13, 1978
Gen. Alton D. Slay	Mar. 14, 1978	

Formerly Air Research and Development Command.
Redesignated as Air Force Systems Command Apr. 1, 1961.

AIR TRAINING COMMAND

Lt. Gen. John K. Cannon	Apr. 15, 1946	Oct. 15, 1948
Lt. Gen. Robert W. Harper	Oct. 14, 1948	June 30, 1954
Maj. Gen. Glenn O. Barcus	July 1, 1954	July 25, 1954
Lt. Gen. Charles T. Myers	July 26, 1954	July 31, 1958
Lt. Gen. Frederic H. Smith, Jr.	Aug. 1, 1958	July 31, 1959
Lt. Gen. James E. Briggs	Aug. 1, 1959	July 31, 1963
Lt. Gen. Robert W. Burns	Aug. 1, 1963	Aug. 10, 1964
Lt. Gen. William W. Momyer	Aug. 11, 1964	June 30, 1966
Lt. Gen. Sam Maddux, Jr.	July 1, 1966	Aug. 30, 1970
Lt. Gen. George B. Simler	Sept. 1, 1970	Sept. 9, 1972
Lt. Gen. William V. McBride	Sept. 9, 1972	Aug. 31, 1974
Lt. Gen. George H. McKee	Sept. 1, 1974	Aug. 31, 1975
Gen. John W. Roberts	Sept. 1, 1975	Apr. 1, 1979
Gen. Bennie L. Davis	Apr. 1, 1979	

AIR UNIVERSITY

Maj. Gen. Muir S. Fairchild	Mar. 15, 1946	May 17, 1948
Maj. Gen. Robert W. Harper	May 17, 1948	Oct. 15, 1948
Gen. George C. Kenney	Oct. 16, 1948	July 27, 1951
Lt. Gen. Idwal H. Edwards	July 28, 1951	Feb. 28, 1953
Lt. Gen. Laurence S. Kuter	Apr. 15, 1953	May 31, 1955
Lt. Gen. Dean C. Strother	June 1, 1955	June 30, 1958
Lt. Gen. Walter E. Todd	July 15, 1958	July 31, 19[illegible]

Lt. Gen. Troup Miller, Jr.	Aug. 1, 1961	Dec. 31, 1963
Lt. Gen. Ralph P. Swofford, Jr.	Jan. 1, 1964	July 31, 1965
Lt. Gen. John W. Carpenter III	Aug. 1, 1965	July 31, 1968
Lt. Gen. Albert P. Clark	Aug. 1, 1968	July 31, 1970
Lt. Gen. Alvan C. Gillem II	Aug. 1, 1970	Oct. 31, 1973
Lt. Gen. F. Michael Rogers	Nov. 1, 1973	Aug. 31, 1975
Lt. Gen. Raymond B. Furlong	Sept. 1, 1975	

Air University became part of Air Training Command, May 15, 1978.

ALASKAN AIR COMMAND

Brig. Gen. Joseph H. Atkinson	Oct. 1, 1946	Feb. 25, 1949
Brig. Gen. Frank A. Armstrong, Jr.	Feb. 26, 1949	Dec. 27, 1950
Maj. Gen. William D. Old	Dec. 27, 1950	Oct. 14, 1952
Brig. Gen. W. R. Agee	Oct. 27, 1952	Feb. 26, 1953
Maj. Gen. George R. Acheson	Feb. 26, 1953	Feb. 1, 1956
Lt. Gen. Joseph H. Atkinson	Feb. 24, 1956	July 16, 1956
Maj. Gen. Frank A. Armstrong, Jr.	July 17, 1956	Oct. 23, 1956
Maj. Gen. James H. Davies	Oct. 24, 1956	June 27, 1957
Lt. Gen. Frank A. Armstrong, Jr.	June 28, 1957	Aug. 18, 1957
Brig. Gen. Kenneth H. Gibson	Aug. 19, 1957	Aug. 13, 1958
Maj. Gen. C. F. Necrason	Aug. 14, 1958	July 19, 1961
Maj. Gen. Wendell W. Bowman	July 26, 1961	Aug. 8, 1963
Maj. Gen. James C. Jensen	Aug. 15, 1963	Nov. 14, 1966
Maj. Gen. Thomas E. Moore	Nov. 15, 1966	July 24, 1969
Maj. Gen. Joseph A. Cunningham	July 25, 1969	July 31, 1972
Maj. Gen. Donavon F. Smith	Aug. 1, 1972	June 5, 1973
Maj. Gen. Charles W. Carson, Jr.	June 18, 1973	Mar. 2, 1974
Maj. Gen. Jack K. Gamble	Mar. 19, 1974	June 30, 1975
Lt. Gen. James E. Hill	July 1, 1975	Oct. 14, 1976
Lt. Gen. M. L. Boswell	Oct. 15, 1976	June 30, 1978
Lt. Gen. Winfield W. Scott, Jr.	July 1, 1978	

MILITARY AIRLIFT COMMAND

Lt. Gen. Laurence S. Kuter	June 1, 1948	Oct. 28, 1951
Lt. Gen. Joseph Smith	Nov. 15, 1951	June 30, 1958
Lt. Gen. William H. Tunner	July 1, 1958	May 31, 1960
Gen. Joe W. Kelly, Jr.	June 1, 1960	July 18, 1964
Gen. Howell M. Estes, Jr.	July 19, 1964	July 31, 1969
Gen. Jack J. Catton	Aug. 1, 1969	Sept. 12, 1972
Gen. Paul K. Carlton	Sept. 20, 1972	Mar. 31, 1977
Gen. William G. Moore, Jr.	Apr. 1, 1977	

Formerly Military Air Transport Service.
Redesignated as Military Airlift Command Jan. 1, 1966.

PACIFIC AIR FORCES

Lt. Gen. Ennis C. Whitehead	Dec. 30, 1945	Apr. 25, 1949
Lt. Gen. George E. Stratemeyer	Apr. 26, 1949	May 20, 1951
Lt. Gen. Earle E. Partridge (acting)	May 21, 1951	June 9, 1951
Gen. O. P. Weyland	June 10, 1951	Mar. 25, 1954
Gen. Earle E. Partridge	Mar. 26, 1954	May 31, 1955
Gen. Laurence S. Kuter	June 1, 1955	July 31, 1959
Gen. Emmett O'Donnell, Jr.	Aug. 1, 1959	July 31, 1963
Gen. Jacob E. Smart	Aug. 1, 1963	July 31, 1964
Gen. Hunter Harris, Jr.	Aug. 1, 1964	Jan. 31, 1967
Gen. John D. Ryan	Feb. 1, 1967	July 31, 1968
Gen. Joseph J. Nazzaro	Aug. 1, 1968	July 31, 1971
Gen. Lucius D. Clay, Jr.	Aug. 1, 1971	Sept. 30, 1973
Gen. John W. Vogt	Oct. 1, 1973	June 30, 1974
Gen. Louis L. Wilson, Jr.	July 1, 1974	May 31, 1977
Lt. Gen. James A. Hill	June 1, 1977	June 14, 1978
Lt. Gen. James D. Hughes	June 15, 1978	

Formerly Far East Air Forces.
Redesignated as Pacific Air Forces July 1, 1957.

STRATEGIC AIR COMMAND

Gen. George C. Kenney	Mar. 21, 1946	Oct. 15, 1948
Gen. Curtis E. LeMay	Oct. 16, 1948	June 30, 1957
Gen. Thomas S. Power	July 1, 1957	Nov. 30, 1964
Gen. John D. Ryan	Dec. 1, 1964	Jan. 31, 1967
Gen. Joseph J. Nazzaro	Feb. 1, 1967	July 31, 1968
Gen. Bruce K. Holloway	Aug. 1, 1968	Apr. 30, 1972
Gen. John C. Meyer	May 1, 1972	July 31, 1974
Gen. Russell E. Dougherty	Aug. 1, 1974	July 31, 1977
Gen. Richard H. Ellis	Aug. 1, 1977	

TACTICAL AIR COMMAND

Lt. Gen. E. R. Quesada	Mar. 21, 1946	Nov. 23, 1948
Maj. Gen. Robert M. Lee	Dec. 24, 1948	June 20, 1950
Maj. Gen. Glenn O. Barcus	July 17, 1950	Jan. 25, 1951
Gen. John K. Cannon	Jan. 25, 1951	Mar. 31, 1954
Gen. O. P. Weyland	Apr. 1, 1954	July 31, 1959
Gen. Frank F. Everest	Aug. 1, 1959	Sept. 30, 1961
Gen. Walter C. Sweeney, Jr.	Oct. 1, 1961	July 31, 1965
Gen. Gabriel P. Disosway	Aug. 1, 1965	July 31, 1968
Gen. William W. Momyer	Aug. 1, 1968	Sept. 30, 1973
Gen. Robert J. Dixon	Oct. 1, 1973	Apr. 30, 1978
Gen. Wilbur L. Creech	May 1, 1978	

US AIR FORCES IN EUROPE

Brig. Gen. John F. McBain	Aug. 15, 1947	Oct. 20, 1947
Lt. Gen. Curtis E. LeMay	Oct. 20, 1947	Oct. 15, 1948
Lt. Gen. John K. Cannon	Oct. 16, 1948	Jan. 20, 1951
Gen. Lauris Norstad	Jan. 21, 1951	July 26, 1953
Lt. Gen. William H. Tunner	July 27, 1953	June 30, 1957
Gen. Frank F. Everest	July 1, 1957	July 31, 1959
Gen. Frederic H. Smith, Jr.	Aug. 1, 1959	June 30, 1961
Gen. Truman H. Landon	July 1, 1961	July 31, 1963
Gen. Gabriel P. Disosway	Aug. 1, 1963	July 31, 1965
Gen. Bruce K. Holloway	Aug. 1, 1965	July 31, 1966
Gen. Maurice A. Preston	Aug. 1, 1966	July 31, 1968
Gen. Horace M. Wade	Aug. 1, 1968	Jan. 31, 1969
Gen. Joseph R. Holzapple	Feb. 1, 1969	Aug. 31, 1971
Gen. David C. Jones	Sept. 1, 1971	June 30, 1974
Gen. John W. Vogt	July 1, 1974	Aug. 31, 1975
Gen. Richard H. Ellis	Sept. 1, 1975	July 31, 1977
Gen. William J. Evans	Aug. 1, 1977	Aug. 1, 1978
Gen. John W. Pauly	Aug. 1, 1978	

USAF SECURITY SERVICE

Col. Roy H. Lynn	Oct. 26, 1948	July 5, 1949
Col. Travis M. Hetherington	July 6, 1949	Feb. 21, 1951
Maj. Gen. Roy H. Lynn	Feb. 22, 1951	Feb. 13, 1953
Maj. Gen. Harold H. Bassett	Feb. 14, 1953	Jan. 3, 1957
Maj. Gen. Gordon L. Blake	Jan. 4, 1957	Aug. 5, 1959
Maj. Gen. John B. Ackerman	Aug. 6, 1959	Sept. 20, 1959
Maj. Gen. Millard Lewis	Sept. 21, 1959	Aug. 31, 1962
Maj. Gen. Richard P. Klocko	Sept. 1, 1962	Oct. 15, 1965
Maj. Gen. Louis E. Coira	Oct. 16, 1965	July 18, 1969
Maj. Gen. Carl W. Stapleton	July 19, 1969	Feb. 23, 1973
Maj. Gen. Walter T. Galligan	Feb. 24, 1973	May 16, 1974
Maj. Gen. Howard P. Smith	May 17, 1974	July 31, 1975
Maj. Gen. K. D. Burns	Aug. 1, 1975	Jan. 18, 1979
Maj. Gen. Doyle E. Larson	Jan. 19, 1979	

USAF ACADEMY, SUPERINTENDENTS

Lt. Gen. Hubert R. Harmon	July 27, 1954	July 27, 1956
Maj. Gen. James E. Briggs	July 28, 1956	Aug. 16, 1959
Maj. Gen. William S. Stone	Aug. 17, 1959	June 30, 1962
Maj. Gen. Robert H. Warren	July 1, 1962	June 30, 1965
Lt. Gen. Thomas S. Moorman	July 1, 1965	July 31, 1970
Lt. Gen. Albert P. Clark	Aug. 1, 1970	July 31, 1974
Lt. Gen. James R. Allen	Aug. 1, 1974	July 31, 1977
Lt. Gen. Kenneth L. Tallman	Aug. 1, 1977	

CHIEF MASTER SERGEANTS OF THE AIR FORCE

CMSAF Paul W. Airey	Apr. 3, 1967	Aug. 1, 1969
CMSAF Donald L. Harlow	Aug. 1, 1969	Oct. 1, 1971
CMSAF Richard D. Kisling	Oct. 1, 1971	Oct. 1, 1973
CMSAF Thomas N. Barnes	Oct. 1, 1973	Aug. 1, 1977
CMSAF Robert D. Gaylor	Aug. 1, 1977	

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, AAF victory credits in World War II, and USAF victory credits in Korea and Southeast Asia. The World War II list took much time as a result of the great number of victories (16,591 full and partial credits) and the many different procedures used to record them. The final documented list of all World War II combat scores is now available in printed form. It is USAF Historical Study No. 85, titled "USAF Credits for the Destruction of Enemy Aircraft, World War II." Copies at $8.85 each may be ordered from the Albert F. Simpson Historical Research Center, Maxwell AFB, Ala. 36112.

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	Luke, 2d Lt. Frank, Jr. (AEF)	18	Bennett, 1st Lt. Louis B. (RFC)	12
Lambert, Capt. William C. (RFC)	22	Lufbery, Maj. Raoul G. (FFC/LE)	17	Kindley, Capt. Field E. (AEF)	12
Gillette, Capt. Frederick W. (RFC)	20	Kullberg, Lt. Harold A. (RFC)	16	Putnam, 1st Lt. David E. (LE/AEF)	12
Malone, Capt. John J. (RN)	20	Rose, Capt. Oren J. (RFC)	16	Springs, Capt. Elliott W. (AEF)	12
Wilkinson, Maj. Alan M. (RFC)	19	Warman, Lt. C. T. (RFC)	15	Iaccaci, Lt. Thayer A. (RFC)	11
Hale, Capt. Frank L. (RFC)	18	Libby, Capt. Frederick (RFC)	14	Landis, Capt. Reed G. (AEF)	11
Iaccaci, Capt. Paul T. (RFC)	18	Vaughn, 1st Lt. George A. (AEF)	13	Swaab, Capt. Jacques M. (AEF)	10
		Baylies, Lt. Frank L. (FFC/LE)	12		

AEF—American Expeditionary Force
FFC—French Flying Corps
LE—Lafayette Escadrille
RFC—Royal Flying Corps (British)
RN—Royal Navy (British)

LEADING ARMY AIR FORCES ACES OF WORLD WAR II

(Fourteen and a half or more victories)

Bong, Maj. Richard I.	40	Duncan, Col. Glenn E.	19.50	Godfrey, Capt. John T.	16.33
McGuire, Maj. Thomas B., Jr.	38	Carson, Capt. Leonard K.	18.50	Anderson, Capt. Clarence E., Jr.	16.25
Gabreski, Lt. Col. Francis S.	28*	Eagleston, Maj. Glenn T.	18.50*	Dunham, Col. William D.	16
Johnson, Capt. Robert S.	27	Hill, Col. David L.		Harris, Lt. Col. Bill	16
MacDonald, Col. Charles H.	27	(AVG/USAF) (12.25)	18.25**	Welch, Capt. George S.	16
Preddy, Maj. George E.	26.83	Older, Lt. Col. Charles H.		Beerbower, Capt. Donald M.	15.50
Meyer, Lt. Col. John C.	24*	(AVG/USAF) (11.25)	18.25**	Brown, Maj. Samuel J.	15.50
Schilling, Col. David C.	22.50	Beckham, Maj. Walter C.	18	Peterson, Capt. Richard A.	15.50
Johnson, Lt. Col. Gerald R.	22	Green, Maj. Herschel H.	18	Whisner, Capt. William T., Jr.	15.50*
Kearby, Col. Neel E.	22	Herbst, Col. John C.	18	Blakeslee, Col. Donald J. M.	
Robbins, Maj. Jay T.	22	Zemke, Col. Hubert	17.75	(ES/USAF) (3.5)	15**
Christensen, Capt. Fred J.	21.50	England, Maj. John B.	17.50	Bradley, Col. Jack T.	15
Wetmore, Capt. Ray S.	21.25	Beeson, Capt. Duane W.	17.33	Cragg, Maj. Edward	15
Voll, Maj. John J.	21	Thornell, 1st Lt. John F., Jr.	17.25	Foy, Maj. Robert W.	15
Mahurin, Maj. Walker M.	20.75*	Reed, Lt. Col. William N.		Hofer, 2d Lt. Ralph K.	15
Lynch, Lt. Col. Thomas J.	20	(AVG/USAF) (11)	17**	Homer, Capt. Cyril F.	15
Westbrook, Lt. Col. Robert B.	20	Varnell, Capt. James S., Jr.	17	Landers, Lt. Col. John D.	14.50
Gentile, Capt. Donald S.	19.88	Johnson, Maj. Gerald W.	16.50	Powers, Capt. Joe H., Jr.	14.50

* Aces who added to these scores by victories in the Korean War.
Ranks are as of last victory in World War II.

AVG—American Volunteer Group
ES—Eagle Squadron

** The Simpson Center has no way of verifying kills claimed (in parentheses) while flying with AVG or ES.

USAF ACES OF THE KOREAN WAR

McConnell, Capt. Joseph, Jr.	16	Low, 1st Lt. James F.	9	Whisner, Maj. William T., Jr.	5.50*
Jabara, Maj. James	15*	Hagerstrom, Maj. James P.	8.50*	Baldwin, Col. Robert P.	5
Fernandez, Capt. Manuel J.	14.5	Risner, Capt. Robinson	8	Becker, Capt. Richard S.	5
Davis, Maj. George A., Jr.	14*	Ruddell, Lt. Col. George I.	8*	Bettinger, Maj. Stephen L.	5
Baker, Col. Royal N.	13*	Buttlemann, 1st Lt. Henry	7	Creighton, Maj. Richard D.	5*
Blesse, Maj. Frederick C.	10	Jolley, Capt. Clifford D.	7	Curtin, Capt. Clyde A.	5
Fischer, 1st Lt. Harold E.	10	Lilley, Capt. Leonard W.	7	Gibson, Capt. Ralph D.	5
Garrison, Lt. Col. Vermont	10*	Adams, Maj. Donald E.	6.50	Kincheloe, Capt. Iven C., Jr.	5
Johnson, Col. James K.	10*	Gabreski, Col. Francis S.	6.50*	Latshaw, Capt. Robert T., Jr.	5
Moore, Capt. Lonnie R.	10	Jones, Lt. Col. George L.	6.50	Moore, Capt. Robert H.	5
Parr, Capt. Ralph S., Jr.	10	Marshall, Maj. Winton W.	6.50	Overton, Capt. Dolphin D., III	5
Foster, Capt. Cecil G.	9	Kasler, 1st Lt. James H.	6	Thyng, Col. Harrison R.	5*
		Love, Capt. Robert J.	6	Westcott, Maj. William H.	5

* These are in addition to World War II victories.

AAF/USAF ACES OF WORLD WAR II AND LATER WARS

	WW II	KOREA	TOTAL		WW II	KOREA	TOTAL
Gabreski, Col. Francis S.	28	6.50	34.50	Johnson, Col. James K.	1	10	11
Meyer, Col. John C.	24	2	26	Ruddell, Lt. Col. George I.	2.50	8	10.50
Mahurin, Col. Walker M.	20.75	3.50	24.25	Thyng, Col. Harrison R.	5	5	10
Davis, Maj. George A., Jr.	7	14	21	Colman, Capt. Philip E.	5	4	9
Whisner, Maj. William T., Jr.	15.50	5.50	21	Heller, Lt. Col. Edwin L.	5.50	3.50	9
Eagleston, Col. Glenn T.	18.50	2	20.50	Chandler, Maj. Van E.	5	3	8
Garrison, Lt. Col. Vermont	7.33	10	17.33	Hockery, Maj. John J.	7	1	8
Baker, Col. Royal N.	3.50	13	16.50	Creighton, Maj. Richard D.	2	5	7
Jabara, Maj. James	1.50	15	16.50	Emmert, Lt. Col. Benjamin H., Jr.	6	1	7
Olds, Col. Robin	12	4*	16	Bettinger, Maj. Stephen L.	1	5	6
Mitchell, Col. John W.	11	4	15	Visscher, Maj. Herman W.	5	1	6
Brueland, Maj. Lowell K.	12.50	2	14.50	Liles, Capt. Brooks J.	1	4	5
Hagerstrom, Maj. James P.	6	8.50	14.50	Mattson, Capt. Conrad E.	1	4	5
Hovde, Lt. Col. William J.	10.50	1	11.50	Shaeffer, Maj. Willlam F.	2	3	5

* Colonel Olds's 4 additional victories came during the Vietnam War.

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

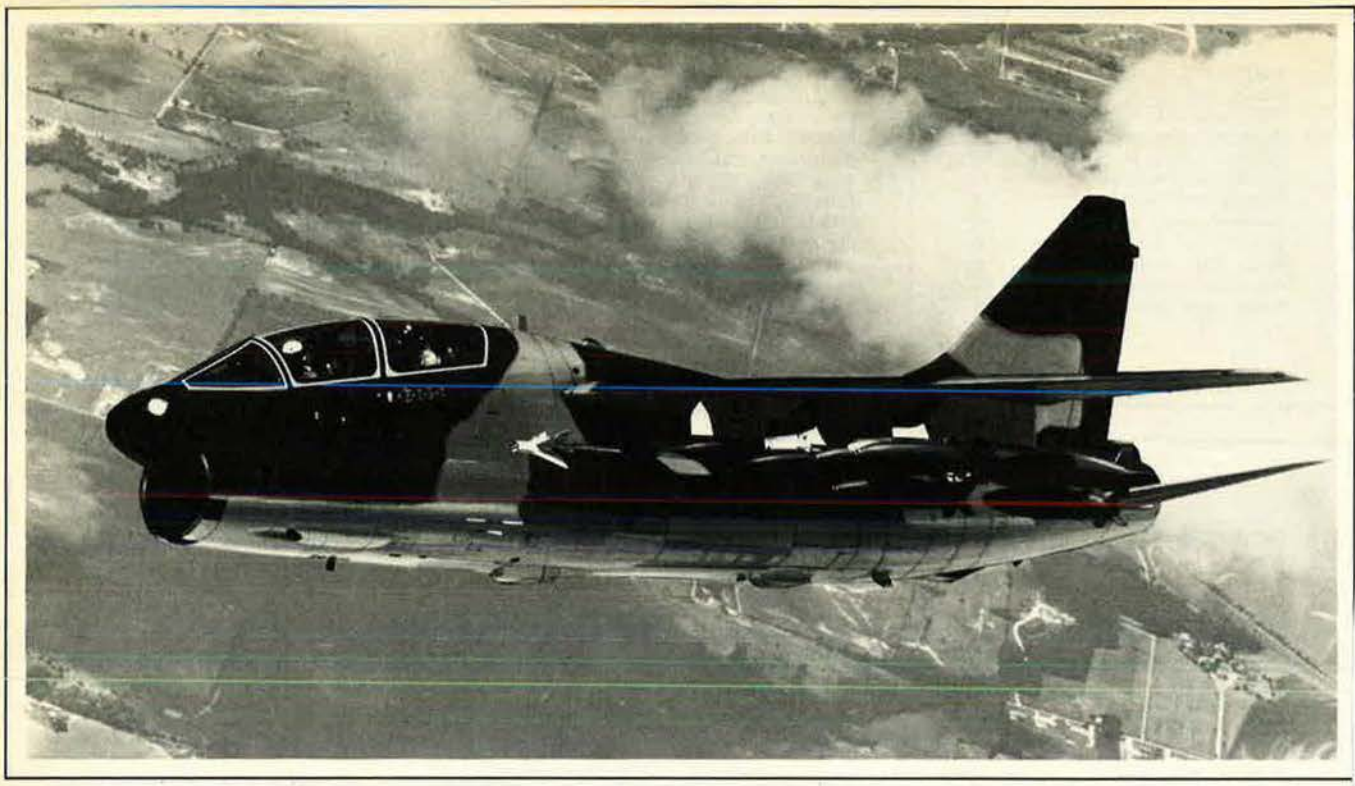
LEADING AIR SERVICE/ AAF/USAF ACES OF ALL WARS

Bong, Maj. Richard I.	40	WW II	Kearby, Col. Neel E.	22	WW II
McGuire, Maj. Thomas B., Jr.	38	WW II	Robbins, Col. Jay T.	22	WW II
Gabreski, Col. Francis S.	34.50	WW II, Korea	Christensen, Capt. Fred J.	21.50	WW II
Johnson, Lt. Col. Robert S.	27	WW II	Wetmore, Capt. Ray S.	21.25	WW II
MacDonald, Col. Charles H.	27	WW II	Davis, Maj. George A., Jr.	21	WW II, Korea
Preddy, Maj. George E.	26.83	WW II	Whisner, Maj. William T., Jr.	21	WW II, Korea
Meyer, Col. John C.	26	WW II, Korea	Eagleston, Col. Glenn T.	20.50	WW II, Korea
Rickenbacker, Capt. Edward V.	26	WW I	Voll, Maj. John J.	20.50	WW II
Mahurin, Col. Walker M.	24.25	WW II, Korea	Lynch, Lt. Col. Thomas J.	20	WW II
Schilling, Col. David C.	22.50	WW II	Westbrook, Lt. Col. Robert B.	20	WW II
Johnson, Lt. Col. Gerald R.	22	WW II	Gentile, Capt. Donald S.	19.83	WW II

SOME FAMOUS FIGHTER FIRSTS

First American to down 5 enemy aircraft in WW I	Capt. Frederick Libby (serving with the RFC)
First American ace of WW I	Capt. Alan M. Wilkinson (RFC)
First American ace to serve with the AEF	Capt. Raoul G. Lufbery (FFC/LE)
First American AEF ace of WW I	Capt. Douglas Campbell
First American ace of WW II	Pilot Officer William R. Dunn (RAF)
First American USAAF ace of WW II	Lt. Boyd D. "Buzz" Wagner
First American to score an aerial victory in Korea	1st Lt. William G. Hudson (June 27, 1950)
First jet-to-jet kill of the Korean War	1st. Lt. Russell J. Brown (Nov. 8, 1950)
First American ace of the Korean War	Capt. James Jabara (May 20, 1951)
First American ace of two wars	Maj. A. J. "Ajax" Baumler (8 in Spain; 5 in WW II)
First USAF ace with victories in WW II and Vietnam	Col. Robin Olds (12 in WW II; 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

(Includes civilian airports and airfields of other military services that provide basing for USAF units and activities.)

Altus AFB, Okla. 73521; 3 mi. NE of Altus. Phone: (405) 482-8100. AUTOVON: 866-1110. MAC base. 443d Military Airlift Wing, initial orientation and transition training for C-141 and C-5 crews. 340th Air Refueling Group (SAC); Detachment 4, 7th Weather Wing; Detachment 3, 1300th Management Engineering Squadron; and Detachment 4, 1365th Audio-Visual Squadron; 2002d Communications Squadron. Base activated Jan. 1943; inactivated May 1945; reactivated Jan. 1953. Area: 5,031 acres. Altitude: 1,376 ft. M-3,247; C-720; TP-$50.7M; O-163; N-637; T/G-4 (3 temporary quarters and 1 guest unit); H (40).

Andersen AFB, Guam 96334; 16.8 mi. N of Agana. Phone: (671) 366-1110. AUTOVON: 322-1110. SAC base. Hq. 3d Air Division, 43d Strategic Wing. Base activated as North Field, 1945. Renamed Oct. 7, 1949, in memory of Brig. Gen. James Roy Andersen, reported missing on a flight from Guam to Hawaii, Feb. 26, 1945. Area: 20,736 acres, including off-base facilities. Altitude: 550 ft. M-3,728; C-1,469; TP-$63M; O-33; N-1,420.

Andrews AFB, Md. 20331; 11 mi. SE of Washington, D. C. Phone: (301) 981-9111 AUTOVON: 858-1110. MAC base. 76th Air Base Group; Hq. Air Force Systems Command; 76th Military Airlift Wing; 89th Military Airlift Group; 113th Tactical Fighter Wing (ANG); 459th Tactical Airlift Wing (AFRES); 2045th Communications Group. Base activated June 1943; named for Lt. Gen. Frank M. Andrews, military air pioneer, killed in an aircraft accident May 3, 1943. Area: 4,216 acres. Altitude: 279 ft. M-6,733; C-3,026; TP-$126M; O-392; N-1,696; T/G-332 (includes 60 temporary living quarters for incoming personnel, 8 officer and 14 enlisted guest houses, 200 VOQ spaces, and 50 TAQ spaces). H (250).

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 ft. M-100; C-3,180; TP-$72.3M; O-24; N-16; D.

Barksdale AFB, La. 71110; in Bossier City. Phone: (318) 456-2252. AUTOVON: 781-1110. SAC base. Hq. 8th Air Force; 2d Bomb Wing. Base is also site of 917th Tactical Fighter Group (AFRES). 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. M-5,897; C-977; TP-$90.3M; O-331; N-703; T/G-29; H (70).

Beale AFB, Calif. 95903; 13 mi. E of Marysville. Phone: (916) 634-3000. AUTOVON: 368-1110. SAC base. 14th Air Division; 9th Strategic Recon Wing; 100th Air Refueling Wing. Beale is the only USAF base having SR-71 and U-2 reconnaissance 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 California prior to Civil War. Area: 22,944 acres. Altitude: 113 ft. M-4,370; C-575; TP-$60.8M; O-395; N-1,342; T/G-45; H (30).

Bellows AFS, Hawaii 96853; approx. 12 mi. NE of Honolulu. Phone: (808) 422-0531. 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. M-63; C-4; TP-(*see Hickam AFB*).

At the end of each entry in this Guide to Bases are data on base population and facilities, designated by the following symbols: M and C—assigned military and civilian personnel, including, where applicable, contractor, BX, and nonappropriated fund employees; TP—total military and civilian annual payroll; O, N, T/G—on-base Officer, NCO, and Transient/Guest housing units; H( ), D—hospital, dispensary medical facilities with number of hospital beds in parentheses. In some instances, information was not available.

Bergstrom AFB, Tex. 78743; 7 mi. SE of downtown Austin. Phone: (512) 385-4100. AUTOVON: 685-1110. TAC base. Hq. 12th Air Force; Hq. 10th Air Force (AFRES); 67th Tactical Reconnaissance Wing, RF-4C recon operations; 602d Tactical Air Control Wing manages 407L tactical air control system; 924th Tactical Airlift Group (AFRES); TAC NCO Academy. Base activated Sept. 22, 1942; named for Capt. John A. Bergstrom, first Austin serviceman killed in WW II. Area: 3,912.8 acres. Altitude: 541 ft. M-4,989; C-753; TP-$68.6M; O-92; N-612; T/G-90; H (30).

Blytheville AFB, Ark. 72315; 4 mi. NW of Blytheville. Phone: (501) 762-7000. AUTOVON: 637-1110. SAC base. 42d Air Division; 97th Bomb Wing. Base activated June 1942; inactivated Feb. 1947; reactivated Aug. 1955. Area: 3,093 acres. Altitude: 254 ft. M-2,808; C-409; TP-$37M; O-203; N-727; H (25).

Bolling AFB, D. C. 20332; 3 mi. S of the US Capitol. Phone: (202) 545-6700. AUTOVON: 227-0101. MAC base. 1100th Air Base Group; Air Force Office of Scientific Research (AFSC); Air Reserve Personnel Center Operating Location; Air Force Chief of Chaplains. Activated Oct. 1917; named for Col. Raynal C. Bolling, Assistant Chief of Air Service, killed during WW I. Area: 604 acres. Altitude: 16 ft. M-1,562; C-1,157; TP-$26.5M; O-296; N-1,100; T/G-168 (includes 69 VAQs, 84 VOQs, and 15 guest quarters).

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; USAF Occupational and Environmental Lab, and USAF Human Resources Lab; tenant units include the USAF Medical Service Center, a security squadron, and a communications squadron. 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. M-1,400; C-900; TP-$39.2M; O-70; N-100; T/G-8; D.

Cannon AFB, N. M. 88101; 7 mi. W of Clovis. Phone: (505) 784-3311. AUTOVON: 681-1110. TAC base. 27th Tactical Fighter Wing. F-111D fighter operations. Activated Aug. 1942; named for Gen. John K. Can-

non, WW II Commander of all Allied Air Forces in Mediterranean. Area: 3,780 acres. Altitude: 4,295 ft. M-4,323; C-402; TP-$49.7M; O-149; N-863; T/G-34; H (30).

Carswell AFB, Tex. 76127; 7 mi. WNW of downtown Fort Worth. Phone: (817) 738-5000. 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: 2,750 acres. Altitude: 650 ft. M-5,192; C-1,136; TP-$68M; O-128; N-679; H (140).

Castle AFB, Calif. 95342; 8 mi. NW of Merced. Phone: (209) 726-2011. AUTOVON: 347-1110. SAC base. 93d Bomb Wing. Conducts training of all SAC B-52G and H model aircraft and KC-135 crews. Also houses 84th Fighter Interceptor Squadron (ADCOM). Activated Sept. 1941; named for Brig. Gen. Frederick W. Castle, WW II B-17 pilot and Medal of Honor winner. Area: 2,700 acres. Altitude: 188 ft. M-5,935; C-423; TP-$74.5M; O-90; N-845; H (30).

Chanute AFB, Ill. 61868; 14 mi. N of Champaign. Phone: (217) 495-1110. AUTOVON: 862-1110. ATC base. Provides technical training in missile and aircraft maintenance, fire fighting, and weather. Base has museum. Chanute Technical Training Display Center. Base activated May 1, 1917; named for Octave Chanute, aeronautical engineer and glider pioneer who died in 1910. Area: 2,100 acres. Altitude: 737 ft. M-6,640; C-1,306; TP-$95.4M; O-140; N-1,518; T/G-8; H (60).

Charleston AFB, S. C. 29404; in North Charleston. Phone: (803) 554-0230. AUTOVON: 583-0111. MAC base. 437th Military Airlift Wing and 315th MAW (AFRES Associate). Also, 1968th Communications Squadron and 792d Radar Squadron (ADCOM). Base activated June 1942; inactivated Feb. 1946. Reactivated Aug. 1953. Area: 3,772 acres. Altitude: 45 ft. M-6,785; C-1,928; TP-$78.5M; O-201; N-754; T/G-487 (includes 117 VOQs and 370 VAQs); D.

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. M-2,402; C-666; TP-$34.6M; O-262; N-558; H (15).

Davis-Monthan AFB, Ariz. 85707; 4 mi. SE of Tucson. Phone: (602) 748-3900. AUTOVON: 361-1110. TAC base. Headquarters Tactical Training, Davis-Monthan; 355th Tactical Fighter Wing; A-10 combat crew training; 390th Strategic Missile Wing (Titan II) (SAC). Also site of AFLC's Military Aircraft Storage and Disposition Center. Base activated in 1927; named for two Tucson aviator accident victims—1st Lt. Samuel H. Davis, killed Dec. 28, 1921; and 2d Lt. Oscar Monthan, killed Mar. 27, 1924. Area: 18,000 acres. Altitude: 2,705 ft. M-6,319; C-1,633; TP-$96.7M; O-215; N-1,040; H (80).

Dobbins AFB, Ga. 30060; 2 mi. S of Marietta; 10 mi. NW of Atlanta. Phone: (404) 424-8811. AUTOVON: 925-1110. Hq. 14th Air Force (AFRES); 94th Tactical Airlift Wing (AFRES); 116th Tactical Fighter Wing (ANG). Base activated in 1943; named for Capt. Charles Dobbins, WW II pilot killed in action. Area: 2,095 acres. Altitude: 1,068 ft. M-853; C-451; TP-$17.1M; O-3; N-6; D.

Dover AFB, Del. 19901; 4 mi. SE of Dover. Phone: (302) 678-7011. AUTOVON: 455-1110. MAC base. 436th Military Airlift Wing and 512th MAW (AFRES Associate). Dover is largest air cargo port on East Coast. Base activated Dec. 1941; inactivated 1946; reactivated Feb. 1951. Area: 3,600 acres. Altitude: 28 ft. M-5,084; C-1,384; TP-$84.4M; O-229; N-1,327; T/G-297; H (30).

Duluth International Airport, Minn. 55814; 5 mi. NW of Duluth. Phone: (218) 727-8211. AUTOVON: 825-0011. ADCOM base. 23d NORAD Region and 23d ADCOM Air Division; SAGE Control Center (NORAD); 4787th Air Base Group; 148th Tactical Recon Group (Minn. ANG). Activated Mar. 1951. Area: 1,139 acres. Altitude: 1,429 ft. M-1,194; C-476; TP-$20.4M; O-70; N-386; T/G-35; D.

Dyess AFB, Tex. 79607; 2 mi. WSW of Abilene. Phone: (915) 696-0212. AUTOVON: 461-1110. SAC base. 12th Air Division and 96th Bomb Wing (SAC). 463d Tactical Airlift Wing (MAC). Base activated April 1942; inactivated Dec. 1945; reactivated Sept. 1955; named for Lt. Col. William E. Dyess, WW II fighter pilot killed in accident, Dec. 1943. Area: 6,076 acres. Altitude: 1,789 ft. M-5,131; C-428; TP-$63.4M; O-177; N-822; T/G-115; H (50 normal/150 emergency).

Edwards AFB, Calif. 93523; 20 mi. E of Rosamond. Phone: (805) 277-1110. AUTOVON: 350-1110. AFSC base. AF Flight Test Center. USAF Test Pilot School trains pilots and flight-test engineers. NASA Dryden Flight Research Center is concerned with the Space Shuttle, lifting bodies, supersonic and transonic flight research. Other tenant units include US Army Aviation Engineering Flight Activity and USAF 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. M-3,784; C-4,405; TP-$141.2M; O-483; N-1,561; T/G-121; H (25).

Eglin AFB, Fla. 32542; 2 mi. SE of Valparaiso; 7 mi. NE 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 and Recovery Wing; 33d Tactical Fighter Wing; Tac Air Warfare Center; 919th Special Operations Group (AFRES); new Air Force Armament Mu um. Base activated in 1935; named for Col. Frederick I. Eglin, WW I flyer killed aircraft accident, Jan. 1, 1937. Ar 464,980 acres. Altitude: 85 ft. M-12,383; 3,945; TP-$234.1M; O-313; N-2,026; T/ 88; H (180).

Eielson AFB, Alaska 99702; 26 mi. SE Fairbanks. Phone: (907) 372-1181. AUT VON: (317) 377-1292. AAC base. Host un 5010th Combat Support Group. Air d fense, search and rescue for AAC; 6th Str tegic Wing (SAC) tanker operation communications for AFCS, and Arctic Su vival School (ATC). Activated Oct. 1944 named for Carl B. Eielson, Arctic aviatio pioneer. Area: approx. 35,000 acres. Alti tude: 534 ft. M-2,539; C-340; TP-$46.6M; O 148; N-1,015; T/G-20; D.

Ellsworth AFB, S. D. 57706; 11 mi. ENE of Rapid City. Phone: (605) 342-2400. AUTOVON: 747-1110. SAC base. 44th Strategic Missile Wing; 28th Bomb Wing; SAC post-attack command and control system squadron. Activated July 1954; named fo Brig. Gen. Richard E. Ellsworth, killed Mar 18, 1953, in crash of RB-36. Area: 5,67 acres. Altitude: 3,600 ft. M-6,230; C-863 TP-$81M; O-414; N-1,482; T/G-141; H (40)

Elmendorf AFB, Alaska 99506; border ing Anchorage. Phone: (907) 752-1110 AUTOVON: (317) 752-1110. AAC base. Hq Alaskan Air Command and 21st Composite Wing; 343d Tactical Fighter Group; 531st Aircraft Control and Warning Group; 21st Air Base Group; 18th Tactical Fighter Squadron; 43d Tactical Fighter Squadron; 616th Military Airlift Group (MAC); 71st Aerospace Rescue and Recovery Squadron (MAC); 17th Tactical Airlift Squadron; 1931st Communications Group (AFCS); and 6981st Security Squadron (USAFSS). Base activated July 1940; named for Capt Hugh M. Elmendorf, killed in air accident Jan. 13, 1933. Area: 13,400 acres. Altitude 118 ft. M-6,035; C-1,741; TP-$88M; O-356 N-1,839; T/G-140; H (140).

England AFB, La. 71301; 5 mi. W of Alexandria. Phone: (318) 448-2100. AUTOVON: 683-1110. TAC base. 23d Tactical Fighter Wing, A-7D fighter operations. 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. M-3,134; C-480; TP-$40.9M; O 109; N-491; T/G-44; H (20).

Fairchild AFB, Wash. 99011; 12 mi WSW of Spokane. Phone: (509) 247-1212 AUTOVON: 352-1110. 47th Air Division 92d Bomb Wing (SAC); 3636th Combat Crew Training Wing (ATC); 141st Air Refueling Wing (ANG); Detachment 24, 41st Rescue and Weather Reconnaissance Wing (MAC); and 2039th Communications Squadron (AFCS). Base activated Jan 1942; named for Gen. Muir S. Fairchild USAF Vice Chief of Staff, at his death in 1950. Area: 5,365 acres. Altitude: 2,462 ft M-4,161; C-869; TP-$57.3M; O-603; N 1,107 (combined enlisted); T-73 (include 37 VOQs, 28 VAQs, 8 DV units, and n guest quarters); H (45).

Francis E. Warren AFB, Wyo. 82001; djacent to Cheyenne. Phone: (307) 775-510. AUTOVON: 481-1110. SAC base. 4th r Division; 90th Strategic Missile Wing. ase activated July 4, 1867; under Army risdiction until 1947 when reassigned to SAF. Home of first Atlas-D ICBM missile ing (1960-65); named for Francis Emory Warren, Wyoming senator and early gover-ior. Base has 7,600 acres, plus 200 Min-uteman III missile sites distributed over nore than 15,000 sq. mi. Altitude: 6,124 ft. M-3,489; C-726; TP-$46.3M; O-190; N-166; T/G-13; H (40).

George AFB, Calif. 92392; 6 mi. NW of Victorville. Phone: (714) 269-1110. AUTO-VON: 353-1110. TAC base. Headquarters Tactical Training, George; 35th Tactical Fighter Wing, F-4 and F-105 transitional and upgrade training, German Air Force training in the F-4. Home of TAC's F-4G and F-105G "Wild Weasel" squadrons. ADCOM F-106 detachment. Base activated in 1941; named for Brig. Gen. Harold H. George, WW I fighter ace killed in Australia in air-craft accident, April 29, 1942. Area: 5,347 acres. Altitude: 2,875 ft. M-5,325; C-666; TP-$66.7M; O-319; N-1,322; T/G-40; H (30).

Goodfellow AFB, Tex. 76903; 2 mi. SE of San Angelo. Phone: (915) 653-3231. AUTO-VON: 477-2011. ATC base. 3480th Techni-cal Training Wing. 3480th Technical Training Group provides cryptologic train-ing for Air Force, Army, Navy, and Marine Corps students. 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. M-1,967; C-312; TP-$24.2M; O-16; N-50; T/G-6; D.

Grand Forks AFB, N. D. 58205; 16 mi. W of Grand Forks. Phone: (701) 594-6011. AUTOVON: 362-1110. SAC base. 319th Bomb Wing; 321st Strategic Missile Wing (Minuteman III). Base activated in 1956. Area: 5,500 acres. Altitude: 911 ft. M-5,448; C-855; TP-$67.2M; O-542; N-1,584; T/G-86; H (30).

Griffiss AFB, N. Y. 13441; 1 mi. NE of Rome, N. Y. Phone: (315) 330-1110. AUTO-VON: 587-1110. SAC base. 416th Bomb Wing. Major tenant is Rome Air Develop-ment Center (RADC), part of AFSC. Base also houses headquarters of AFCS's North-ern Communications Area; 485th Communi-cations & Installation Group; and an ADCOM fighter-interceptor squadron. Base activated Feb. 1, 1942; named for Lt. Col. Townsend E. Griffiss, killed in aircraft acci-dent, Feb. 15, 1942 (the first US airman to lose his life in Europe while in the line of duty during WW II). Area: 3,888 acres. Alti-tude: 504 ft. M-3,903; C-3,268; TP-$102.9M; O-168; N-552; T/G-142; H (70).

Grissom AFB, Ind. 46971; 9 mi. S of Peru. Phone: (317) 689-5211. AUTOVON: 928-1110. SAC base. 305th Air Refueling Wing; 434th Tactical Fighter Wing (AFRES). 931st Air Refueling Group (AFRES). Activat-ed Jan. 1943 for Navy flight training; reacti-vated 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. M-3,565; C-701; TP-$32.5M (SAC only); O-276; N-852 (Senior NCOs 116, Junior NCOs 736); T/G-214; D.

Gunter AFS, Ala. 36114; 4 mi. NE of Montgomery. Phone: (205) 279-1110. AU-TOVON: 921-1110. ATC base. Hq. Air Force Data Automation Agency and site of AF Data Systems Design Center; Air Force Logistics Management Center; USAF Ex-tension 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. M-1,211; C-866; TP-(*see Maxwell AFB);* O-147; N-177; T/G-108.

Hancock Field, N. Y. 13225; 10 mi. NNE of Syracuse. Phone: (315) 458-5500. AU-TOVON: 587-9100. ADCOM base. 21st NORAD Region and 21st ADCOM Air Divi-sion; also houses 174th Tactical Fighter Group (ANG); SAGE region control center (NORAD). Base activated Sept. 1942. Area: 1,125 acres. Altitude: 421 ft. M-894; C-436; TP-$15.2M; O-58; N-170; D.

Hanscom AFB, Mass. 01731; 17 mi. NW of Boston. Phone: (617) 861-4441. AUTO-VON: 478-4441. AFSC base. Hq. Electronic Systems Div. (AFSC); also site of AF Geo-physics Lab, 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. Until re-cently was called Laurence G. Hanscom AFB. Area: 887 acres. Altitude: 133 ft. M-1,865; C-3,149; TP-$103.8M; O-339; N-357; T/G-21; D.

Hickam AFB, Hawaii 96853; 6 mi. W of Honolulu. Phone: (808) 422-0531. AUTO-VON: 430-0111. PACAF base. Hq. Pacific Air Forces; 15th Air Base Wing, support organization for Air Force units in Hawaii and throughout the Pacific; 154th Compos-ite Group (ANG); Hq. Pacific Communica-tions Area (AFCS); 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: 2,731 acres. Altitude: sea level. M-5,000; C-2,000; TP-$134.8M; O-556; N-2,443; D. (These figures include relevant data for Bellows AFS and Wheeler AFB.)

Hill AFB, Utah 84056; 7 mi. S of Ogden. Phone: (801) 777-7221. AUTOVON: 458-1110. AFLC base. Hq. Ogden Air Logistics Center. Furnishing logistics support for Min-uteman and Titan ICBMs; manager for F-4, F-101, and F-16 aircraft. Other missions: MX missile, landing gear, GBU-15 glide bomb, air munitions, training devices, pho-tography. Also home of 388th Tactical Fighter Wing; 508th Tactical Fighter, Group (AFRES); 6545th Test Group (AFSC), which manages Utah Test and Training Range and RPV test programs. 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.; M-4,700; C-14,300; TP-$331M; O-263; N-882; T/G-8; H (35).

Holloman AFB, N. M. 88330; 6 mi. SW of Alamogordo. Phone: (505) 497-6511. AU-TOVON: 867-1110. TAC base. Headquar-ters Tactical Training, Holloman. 49th Tactical Fighter Wing, F-15 fighter oper-ations; 479th Tactical Training Wing (T-38 fighter lead-in training). AFSC conducts test and evaluation of aircraft and missile sys-tems and operates Central Inertial Guid-ance Test Facility; AFSC Test Track Facility and Radar Target Scatter site (RATSCAT). Activated in 1942; named for Col. George V. Holloman, guided-missile pioneer, killed in crash Mar. 19, 1946. Area: 57,530 acres. Altitude: 4,092 ft. M-6,293; C-1,263; TP-$59M; O-192; N-1,360; T/G-212; H (35).

Homestead AFB, Fla. 33039; 5 mi. NNE of Homestead. Phone: (305) 257-8011. AU-TOVON: 791-0111. TAC base. 31st Tactical Fighter Wing, F-4E fighter operations and training. Site of ATC sea-survival school; 915th Tactical Fighter Group (AFRES) and aerospace rescue and recovery squadron. Base activated April 1955. Area: 3,558 acres. Altitude: 7 ft. M-6,437; C-1,418; TP-$90.6M; O-321; N-1,294; T/G-318; H (80).

Hurlburt Field, Fla. 32544 (Eglin AF Aux-iliary Field #9); part of Eglin AFB (AFSC) reservation but TAC-operated base; 8 mi. W of Fort Walton Beach. Phone: (904) 881-5658. AUTOVON: 872-1110. Home of the 1st Special Operations Wing, focal point for all USAF special operations. Base houses USAF Special Operations School; MC-130E (Combat Talon), AC-130H (Spectre gun-ship); UH-1N (Huey gunship) and CH-3E (Sea King) helicopter squadrons; special operations combat control team; combat weather team; air defense squadron det.; TAC Red Horse civil engineering squadron. Base activated in 1943; named for Lt. Don-ald W. Hurlburt, WW II pilot killed Oct. 2, 1943, in crash on Eglin reservation. Alti-tude: 35 ft. M-3,140; C-460; TP-$40.3M; O-100; N-280; T/G-300; H (200) at Eglin main base; clinic located on Hurlburt.

Indian Springs AF Auxiliary Field, Nev. 89018; 45 mi. NW of Las Vegas. Phone: (702) 897-6204. AUTOVON: 682-6204. TAC base. 57th Combat Support Squadron; Det. 1, 57th Tactical Training Wing, provides bombing and gunnery range support for tactical operations from Nellis AFB; man-ages construction of realistic target com-plexes; supports US Department of Energy research activities. Base activated in 1942, named for nearby town. Area: 3,014,422 acres (includes ranges). Altitude: 3,124 ft. M-184; C-30; TP-(*see Nellis AFB*); O-12; N-67; D.

Kelly AFB, Tex. 78241; 5 mi. SW of San Antonio, Phone: (512) 925-1110. AUTO-VON: 945-1110. AFLC base. Hq. San Anto-nio Air Logistics Center; Hq. USAF Security Service; AF Communications Security Cen-ter; AF Electronic Warfare Center; AF Cryp-

tologic Depot; USAF Service Information and News Center; AF Commissary Service; 433d Tactical Airlift Wing (AFRES); 149th Tactical Fighter Group (ANG). Base activated May 7, 1917; named for 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. M-4,381; C-15,379; TP-$350.6M; O-50; N-29; no guest housing; D.

Kingsley Field, Ore. 97601; 5 mi. SE of Klamath Falls. Phone: (503) 882-4411. AUTOVON: 896-1670. ADCOM base. Supports fighter-interceptor detachment. 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 killed in action June 23, 1944. Area: 1,640 acres. Altitude: 4,081 ft. M-351; C-225; TP-$7.6M; O-106; N-177; T/G-76; D.

Keesler AFB, Miss. 39534; located in Biloxi. Phone: (601) 377 1110. AUTOVON: 868-1110. ATC base. Keesler Technical Training Center (communications, electronics, personnel and administrative courses); Keesler USAF Medical Center. Hosts MAC and AFRES weather recon units. TAC airborne command and control squadron, plus AFCS installation group. Base activated June 12, 1941; named for 2d Lt. Samuel R. Keesler, Jr., WW I aerial observer, killed in action Oct. 9, 1918. Area: 3,564 acres. Altitude: 26 ft. M-11,210; C-3,634; TP-$172M; O-428; N-1,531; T/G-288 rooms; H (330).

Kirtland AFB, N. M. 87117; S of Albuquerque. Phone: (505) 264-0011. AUTOVON: 964-0011. MAC base. 1606th Air Base Wing. Major agencies and units include AF Contract Management Division (AFSC); AF Test and Evaluation Center; AF Weapons Laboratory (AFSC); Office of the Chief of Security Police; New Mexico ANG; 1550th Aircrew Training and Test Wing (MAC); Defense Nuclear Agency Field Command; Naval Weapons Evaluation Facility; Sandia Laboratories; Lovelace Biomedical and Environmental Research Institute; Department of Energy's Albuquerque Operations Office; AFSC NCO Academy; AF Directorate of Nuclear Surety; 1960th Communications Squadron; and 3098th Aviation Depot Squadron. These agencies furnish contract management; nuclear and laser research, development, and testing; operational test and evaluation services; advanced helicopter training; and HC-130 search and rescue training. Base activated Jan. 1941; named for Col. Roy S. Kirtland, air pioneer and Commandant of Langley Field in the 1930s, died in 1941. Area: 54,108 acres. Altitude: 5,352 ft. M-5,014; C-11,605; TP-$345M; O-731; N-1,403; T/G-58; D and H (50).

K. I. Sawyer AFB, Mich. 49843; 16 mi. S of Marquette. Phone: (906) 346-6511. AUTOVON: 472-1110. SAC base. 410th Bomb Wing, ADCOM fighter-interceptor squadron. Base activated 1956; named for Kenneth I. Sawyer, who proposed site for a county airport, died in 1944. Area: 6,355 acres. Altitude: 1,220 ft. M-4,220; C-560; TP-$35M; O-315; N-1,378; BOQ-41 units; T/G-40 units; H (15).

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, technical training of basic, advanced security police/law enforcement personnel; patrol dog/handler courses; training of instructors, recruiters, and social actions/drug abuse counselors; USAF marksmanship training; Officer Training School; Defense Language Institute-English Language Center; Wilford Hall USAF Medical Center; named for Brig. Gen. Frank D. Lackland, early Commandant of Kelly Field flying school, who died in 1943. Area: 6,828 acres, including 4,017 acres at Lackland Training Annex. Altitude: 787 ft. M-21,622; C-3,288; TP-$266.8M; O-106; N-619; T/G-340; H (1,000).

Langley AFB, Va. 23665; 3 mi. N of Hampton. Phone: (804) 764-9990. AUTOVON: 432-1110. TAC base. Host unit 1st Tactical Fighter Wing F-15 fighter operations; Hq. Tactical Air Command; 5th Weather Wing (MAC); 2d Aircraft Delivery Group (TAC); 460th Reconnaissance Technical Squadron (TAC); 6th Command and Control Squadron (TAC); US Army TRADOC Flight Detachment; 48th Fighter Interceptor Squadron (ADCOM). Base activated Dec. 30, 1916; is the oldest continuously active AFB in the US; named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. NASA Langley Research Center is located across base. Area: 3,500 acres. Altitude: 10 ft. M-8,259; C-2,267; TP-$143.6M; O-384; N-1,287; T/G-228; H (70); D.

Laughlin AFB, Tex. 78840; 6 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: 4,008 acres. Altitude: 1,080 ft. M-2,405; C-557; TP-$34M; O-255; N-350; T/G-4; H (25).

Laurence G. Hanscom AFB, Mass. (*see Hanscom AFB*).

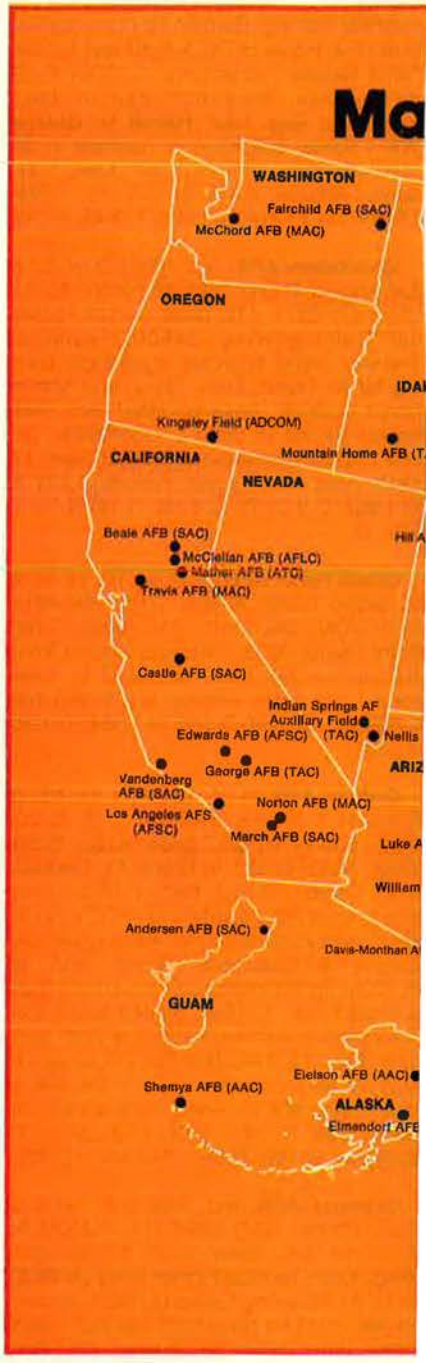
Little Rock AFB, Ark. 72076; 12 mi. NE of Little Rock. Phone: (501) 988-3131. AUTOVON: 731-1110. MAC base. 314th Tactical Airlift Wing; 308th Strategic Missile Wing; combat crew training; SAC Titan ICBM support base; 189th Air Refueling Group (ANG). Base activated in 1955. Area: 6,100 acres. Altitude: 310 ft. M-6,565; C-566; TP-$84.6M; O-313; N-1,222; T/G-140 (VAQs); H (25).

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, 1953; named for Maj. Charles J. Loring, Jr., F-80 pilot killed Nov. 22, 1952, in North Korea; posthumously awarded the Medal of Honor. Area: 8,700 acres. Altitude: 746 ft. M-3,277; C-666; TP-$52M; O-470; N-1,509; T/G-16; H (10).

Los Angeles AFS, Calif. 90045; 12 mi. SW of Los Angeles. Phone: (213) 643-1000. AUTOVON: 833-1110. Hq. AFSC's Space and Missile Systems Organization (SAMSO) manages the development, production, test, and delivery of DoD's space satellite and ballistic missiles. 23 tenant units. Station activated Dec. 14, 1960. M-1,300; C-1,000; TP-$51M.

Lowry AFB, Colo. 80230; 1 mi. SE of Denver. Phone: (303) 388-5411. AUTOVON: 926-1110. ATC base. Technical training center; Air Force Accounting and Finance Center; Air Reserve Personnel Center. Base activated Feb. 26, 1938; named for 1st Lt. Francis B. Lowry, killed in action Sept. 26, 1918. Area: 1,863 acres. Altitude: 5,400 ft. M-7,704; C-4,789; TP-$158.1M; O-79; N-836; T/G-40.

Luke AFB, Ariz. 85309; 20 mi. WNW of



noenix. Phone: (602) 935-7411. AUTO-ON: 853-1110. TAC base. Headquarters ctical Training, Luke; 58th Tactical Train-g Wing; Hq. 26th NORAD Region/Air Divi-on (ADCOM); 302d Special Operations quadron (AFRES). Luke is the largest ghter training base in the free world, con-ucts training USAF aircrews in the F-4C nd F-15; F-15 Ready Team training for aintenance people and aircrews from the ases scheduled to receive the F-15; train-ng West German students in the F-104G; nd foreign training in the F-5 (at nearby Williams AFB). Base activated in 1941; named for 2d Lt. Frank Luke, Jr., balloon-busting ace in WW I and first flyer to receive Medal of Honor, killed in action on the ground behind enemy lines, Sept. 29, 1918. Area: 4,197 acres plus 2,700,000-acre range. Altitude: 1,101 ft. M-6,303; C-1,156; TP-$98M; O-149; N-726; T/G-51; H (105).

MacDill AFB, Fla. 33608; adjacent SSW of Tampa. Phone: (813) 830-1110. AUTOVON: 968-1110. TAC base. Hq. US Readiness Command; 56th Tactical Fighter Wing conducts replacement training in F-4E Phantoms. Base activated April 15, 1941; named for Col. Leslie MacDill, killed in airplane accident Nov. 8, 1938, near Washington, D. C. Area: 6,000 acres. Altitude: 6 ft. M-6,461; C-1,241; TP-$88.4M; O-138; N-667; T/G-350; H (70).

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 (ADCOM); SAGE Region Control Center (NORAD); 17th Defense Evaluation Squadron. Base named for Col. Einar A. Malmstrom, WW II fighter commander. Base activated Dec. 15, 1942. Site of SAC's first Minuteman wing. Area: 3,573 acres, plus about 23,000 sq. mi. of the missile complex. Altitude: 3,525 ft. M-5,607; C-565; TP-$60.9M; O-320; N-1,086; T/G-40; H (15).

March AFB, Calif. 92518; 9 mi. SE of Riverside. Phone: (714) 655-1110. AUTOVON: 947-1110. SAC base. Hq. 15th AF; 22d Bomb Wing; 452d Air Refueling Wing (AFRES); 303d ARRS (AFRES). Base activated March 1, 1918; named for 2d Lt. Peyton C. March, Jr., who died in Texas of crash injuries Feb. 18, 1918. Area: 6,900 acres. Altitude: 1,538 ft. M-4,668; C-1,051; TP-$76.4M; O-103; N-599; T/G-112; H (125).

tive Air Force Installations in the US

Mather AFB, Calif. 95655; 12 mi. ENE of Sacramento. Phone: (916) 364-1110. AUTOVON: 828-1110. ATC base. DoD executive manager for navigator training (USAF, Navy, Coast Guard, Marine basic navigation training)—only navigator training base; also trains USAF electronic warfare officers and navigator-bombardiers. 320th Bomb Wing (SAC). 940th Air Refueling Group (AFRES). Base activated 1918; named for 2d Lt. Carl Mather, killed in US Jan. 30, 1918, in midair collision. Area: 5,800 acres. Altitude: 96 ft. M-4,900; C-1,885; TP-$92M; O-451; N-820; T/G-40; H (75).

Maxwell AFB, Ala. 36112; 1 mi. WNW of Montgomery. Phone: (205) 293-1110. AUTOVON: 875-1110. ATC base. Hq. Air University, professional education center for USAF; site of Air War College, Air Command and Staff College, Squadron Officer School, Leadership and Management Development Center, Academic Instructor and Foreign Officer School, Hq. Air Force ROTC: Hq. Civil Air Patrol-USAF; Community College of the Air Force; 908th Tac Airlift Group (AFRES). (Senior NCO Academy and Extension Course Institute are at Gunter AFS.) Base activated 1918; named for 2d Lt. William C. Maxwell, killed in air accident Aug. 12, 1920, Luzon, P. I. Area: 3,161 acres. Altitude: 169 ft. M-3,073; C-1,571; TP-$150M; O-305; N-219; T/G-34; H (85).

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 (ADCOM); 318th Fighter Interceptor Squadron (ADCOM); SAGE Region Control Center (NORAD); 446th Military Airlift Wing (AFRES Associate). Base activated June 7, 1940; named for Col. William C. McChord, 1937 crash victim. Area: 4,615 acres. Altitude: 550 ft. M-5,354; C-1,400; TP-$83.8M; O-187; N-806; T/G-284 (transient); D.

McClellan AFB, Calif. 95652; 9 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 USAF weapon systems as F-111, FB-111, A-10, F-100, F-104, F-105, T-39, and various surveillance and warning systems, radar sites, missile-tracking stations, airborne and ground-based power generators, and electric motors. Houses 2049th Communications Group (AFCS); 41st Rescue a Weather Reconnaissance Wing (MA 1155th Technical Operations Squad (AFSC); 2951st Combat Logistics Supp Squadron; Hq. 4th Air Force (AFRES); D fense Logistics Agency (DLA); US Co Guard Station, Sacramento (DoT). Base a tivated July 1936; named for Maj. Hezeki McClellan, pioneer in Arctic aeronauti experiments, killed in crash May 25, 19 Area: 2,583 acres. Altitude: 76 ft. M-2,26 C-13,077; TP-$314.5M; O-487; N-2,690; G-18; D.

McConnell AFB, Kan. 67221; 5 mi. SE o Wichita. Phone: (316) 681-6100. AUTO VON: 962-1110. SAC base. 381st Strategi Missile Wing; 384th Air Refueling Wing; F 105 TAC Fighter Training Group (ANG) Base activated June 5, 1951; named fo Capt. Fred J. McConnell, WW II bombe pilot who died in a crash of private plane Oct. 25, 1945; and for his brother, 2d Lt. Thomas L. McConnell, also a WW II bombe pilot killed July 10, 1943, during attack on Bougainville in the Pacific. Area: 2,508 acres. Altitude: 1,371 ft. M-3,837; C-483, TP-$41.3M; O-144; N-445; T/G-166; H (25).

McGuire AFB, N. J. 08641; 18 mi. SE o Trenton. Phone: (609) 724-1110. AUTO VON: 440-0111. MAC base. 438th Military Airlift Wing. Hq. 21st Air Force; N. J. ANG and N. J. Civil Air Patrol; 170th Aerial Refueling Group (ANG), 108th Tactical Fighter Wing (ANG), 514th MAW (AFRES Associate); and the MAC NCO Academy East. Base adjoins Army's Fort 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, in the Philippines. Area: 3,552 acres. Altitude: 133 ft. M-4,988; C-1,941; TP-$102M; O-442; N-1,312; T/G-620 (includes 186 VOQ units. 244 VAQ units, 160 transient family units, and 30 transient lodging quarters); D.

Minot AFB, N. D. 58701; 13 mi. N of Minot. Phone: (701) 727-4761. AUTOVON: 344-1110. SAC base. 57th Air Division; 91st Strategic Missile Wing; 5th Bomb Wing fighter-interceptor unit (ADCOM). Base activated Feb. 1957. Area: 5,050 acres, plus additional 19,324 acres for missile sites. Altitude: 1,650 ft. M-6,207; C-605; TP-$80.2M O-543; N-1,927; T/G-104; D, also 40-bed military hospital in city of Minot.

Moody AFB, Ga. 31601; 10 mi. NNE o Valdosta. Phone: (912) 333-4211. AUTO VON: 460-1110. TAC base. 347th Tactical Fighter Wing, F-4E fighter operations. Base activated June 1941; named for George P. Moody, killed May 5, 1941, while testing Beech AT-10. Area: 6,015 acres. Altitude 233 ft. M-2,850; C-524; TP-$39.1M; O-61 N-245; T/G-25; H (34).

Mountain Home AFB, Idaho 83648; 5 mi. SE of Boise. Phone: (208) 828-2111 AUTOVON: 857-1110. TAC base. 366th Tactical Fighter Wing, F-111 fighter operations. Base activated April 1942. Area: 6,639 acres. Altitude: 3,000 ft. M-4,600; C-620; TP-$52M; O-246; N-1,292; T/G-15; H (20).

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.

Almaden AFS, California 95042
Baudette AFS, Minnesota 56623
Blaine AFS, Washington 98230
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 04422
Charleston AFS, Maine 04426
Cold Bay AFS, APO Seattle 98711
Cudjoe Key AFS, Florida 33042
Dauphin Island AFS, Alabama 36528
Empire AFS, Michigan 49630
Finland AFS, Minnesota 55603
Finley AFS, North Dakota 58230
Fort Fisher AFS, North Carolina 28449
Fort Lee AFS, Virginia 23801
Fort Yukon AFS, APO Seattle 98710
Fortuna AFS, North Dakota 59275
Gentile AFS, Ohio 45401
Gibbsboro AFS, New Jersey 08026
Havre AFS, Montana 59501
Indian Mountain AFS, APO Seattle 98748
Jacksonville AFS, Florida 32212
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 14098
Makah AFS, Washington 98357
Martinsburg AFS, West Virginia 25401
Mica Peak AFS, Washington 99023
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 29404
No. Truro AFS, Massachusetts 02652
Oklahoma City AFS, Oklahoma 73145
Opheim AFS, Montana 59250
Pillar Point AFS, California 94019
Point Arena AFS, California 95468
Port Austin AFS, Michigan 48467
Richmond AFS, Florida 33156
San Antonio AFS, Texas 78209
San Pedro Hill AFS, California 90274
Sault Sainte Marie AFS, Michigan 49783
Savannah AFS, Georgia 31402
Sparrevohn AFS, APO Seattle 98746
St. Albans AFS, Vermont 05478
St. Louis AFS, Missouri 63118
Sunnyvale AFS, California 94088
Tatalina AFS, APO Seattle 98747
Tin City AFS, APO Seattle 98715
Tonopah AFS, Nevada 89049
Watertown AFS, New York 13601

Myrtle Beach AFB, S. C. 29577; adjacent S of Myrtle Beach. Phone: (803) 238-7211. AUTOVON: 748-1110. TAC base. 354th Tactical Fighter Wing, A-10 fighter operations. Army air base, 1941-47; USAF base since 1956. Area: 3,793 acres. Altitude: 24 ft. M-3,172; C-700; TP-$38.6M; O-232; N-668; H (41).

Nellis AFB, Nev. 89191; 8 mi. NE of Las Vegas. Phone: (702) 643-1800. AUTOVON: 682-1800. TAC base. 57th Tactical Training Wing, host unit, F-4D, F-4E, F-5E, F-15, A-10 fighter operations; USAF Tactical Fighter Weapons Center; 474th Tactical Fighter Wing; USAF Thunderbirds Air Demonstration Squadron; 4440th TFTG (Red Flag); TFWC Range Group; conducts initial and advanced tactical fighter training and realistic combat training for DoD; provides test and evaluation of air tactics and new equipment. Base activated July 1941; named for 1st Lt. William H. Nellis, WW II fighter pilot, killed Dec. 27, 1944, in Europe. Area: 3,024,070 acres (includes bombing and gunnery ranges). Altitude: 1,868 ft. M-8,288; C-1,068; T/G-100; TP-$100M; H (40).

Niagara Falls International Airport, N. Y. 14304; 6 mi. E of Niagara Falls. Phone: (716) 297-4100. AUTOVON: 489-3011. 914th Tactical Airlift Group (AFRES); 107th Fighter Interceptor Group (ANG). Base activated Jan. 1952. Area: 979 acres. Altitude: 590 ft. M-851; C-215; TP-$8.2M; O-114; N-174.

Norton AFB, Calif. 92409; 59 mi. E of Los Angeles, within corporate limits of San Bernardino. Phone: (714) 382-1110. AUTOVON: 876-1110. MAC base. 63d Military Airlift Wing; Hq. Air Force Inspection and Safety Center, Air Force Audit Agency, and Aerospace Audio-Visual Service (MAC). Also ICBM Program Office (SAMSO), 445th Military Airlift Wing (AFRES Associate), MAC NCO Academy West and 22d Air Force Leadership School. Base activated Mar. 2, 1942; named for Capt. Leland F. Norton, WW II bomber pilot, killed in aircraft accident in France, May 1944. Area: 2,407 acres. Altitude: 1,156 ft. M-5,467; C-2,753; TP-$114.7M; O-56; N-208; T/G-339 (includes 289 transient, 40 TQ, and 10 guest); USAF Clinic (no hospital).

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 Central; 3d Weather Wing; 6944th Security Wing; and 3902d Air Base Wing. Base activated 1888 as Army's Fort Crook; landing field named in 1924 for 1st Lt. Jarvis J. Offutt, WW I pilot who died in a crash Aug. 13, 1918. Area: 1,907 acres. Altitude: 1,049 ft. M-11,968; C-2,377; TP-$211.1M; O-597; N-2,083; T/G-60; H (70).

O'Hare International Airport, Ill. 60666; 22 mi. NW of Chicago Loop. Phone: (312) 694-3031. AUTOVON: 930-1110. 928th Tactical Airlift Group (AFRES); 126th Air Refueling Wing (ANG); Defense Contract Administration Services Region. Base activated in April 1946. Named for Lt. Cmdr. Edward H. "Butch" O'Hare, USN, Medal of Honor winner, killed Nov. 26, 1943, during battle for the Gilbert Islands. Area: 391 acres. Altitude: 643 ft. M-753; C-254; TP-$36.3M.

Patrick AFB, Fla. 32925; 2 mi. S of Cocoa Beach. Phone: (305) 494-1110. AUTOVON: 854-1110. AFSC base. Operated by the 6550th Air Base Wing in support of DoD, NASA, and other agency missile and space programs. Major tenants are Defense Race Relations Institute; AF Technical Applications Center; Deputy for Eastern Test Range; 549th Tactical Air Support Group; and 2d Combat Communications Group (AFCS). Activated in 1940, base is air-head 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/Air Corps, 1921-27. Area: 2,332 acres. Altitude: 9 ft. M-3,869; C-5,457; TP-$92M; O-247; N-1,426; H (20).

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; 157th Air Refueling Group (ANG). Base activated 1956; named for Capt. Harl Pease, Jr., World War 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. M-3,622; C-540; TP-$44M; O-139; N-1,043; T/G-134; H (70).

Peterson AFB, Colo. 80914; 7 mi. E of Colorado Springs. Phone: (303) 591-7321. AUTOVON: 692-7011. Home of 46th Aerospace Defense Wing, which supports Hq. North American Air Defense Command/Aerospace Defense Command and the NORAD/ADCOM Combat Operations Center in the Cheyenne Mountain complex. Base activated in 1941; named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942, in aircraft crash at the field. Area: 1,150 acres. Altitude: 6,200 ft. M-4,556; C-1,510; TP-$93M; O-106; N-384; T/G-40; D.

Plattsburgh AFB, N. Y. 12903; adjacent to Plattsburgh, N. Y. Phone: (518) 563-4500. AUTOVON: 689-1110. SAC base. 380th Bomb Wing, medium bomber and tanker operations with FB-111 and KC-135 Stratotanker. 4007th Combat Crew Training Squadron trains all FB-111 combat crews for SAC. Second oldest active military installation in the US, established 1814; AFB since 1955. Area: 3,305 acres. Altitude: 235 ft. M-4,279; C-435; TP-$54.2M; O-372; N-1,249; H (20).

Pope AFB, N. C. 28308; 12 mi. NNW of Fayetteville. Phone: (919) 394-0001. AUTOVON: 486-1110. MAC base. USAF Airlift Center. 317th Tactical Airlift Wing. 1st Aeromedical Evacuation Squadron; Detachment 1, 507th Tactical Air Control Wing (TAC); 21st Tactical Air Support Squadron (TAC); 1943d Communications Squadron; 53d Mobile Aerial Port Squadron (AFRES). Base adjoins Army's Fort Bragg and provides tactical airlift support for airborne forces and other personnel, equipment, and supplies. Activated spring 1919; named for 1st Lt. Harley H. Pope, WW I flyer, killed Jan. 7, 1919, in a local crash. Area: 1,750 acres. Altitude: 218 ft. M-3,817; C-336; TP-$45.7M; O-89; N-370; T/G-116; D.

Randolph AFB, Tex. 78148; 20 mi. ENE of San Antonio. Phone: (512) 652-1110. AUTOVON: 487-1110. ATC base. Hq. Air Training Command; 12th Flying Training Wing; T-37 and T-38 pilot instructor training; Air Force Manpower and Personnel Center; Hq. USAF Recruiting Service. Base activated June 1930; named for Capt. William M. Randolph, killed Feb. 17, 1928, in crash. Area: 2,901 acres. Altitude: 761 ft. M-4,851; C-2,895; TP-$124.5M; O-203; N-816; T/G-13.

Reese AFB, Tex. 79489; 6 mi. W of Lubbock. Phone: (806) 885-4511. AUTOVON: 838-4511. 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. M-2,468; C-632; TP-$39.9M; O-116; N-300; T/G-12; H (10).

Richards-Gebaur AFB, Mo. 64030; 17 mi. S of Kansas City. Phone: (816) 348-2000. AUTOVON: 465-1110. MAC base. 1607th Air Base Wing; 1879th Communications Squadron (AFCS); Detachment 12, 7th Weather Wing (MAC); 442d Tactical Airlift Wing (AFRES). Base activated Mar. 1944, named for 1st Lt. John F. Richards and Lt. Col. Arthur W. Gebaur, Jr. Richards was killed Sept. 26, 1918, in France, while on an artillery-spotting mission; Gebaur, Aug. 29, 1952, over North Korea. Area: 2,418 acres. Altitude: 1,090 ft. M-167; C-773.

Rickenbacker AFB, Ohio 43217; 13 mi. SSW 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); 160th Air Refueling Group (ANG). Base activated June 1942. Formerly Lockbourne AFB. Renamed on May 18, 1974, in honor of Capt. Edward V. Rickenbacker, America's leading WW I ace and Medal of Honor winner, who died July 23, 1973. Area: 4,100 acres. Altitude: 744 ft. M-2,047; C-1,002; TP-$37.6M; O-169; N-696; T/G-15; Clinic.

Robins AFB, Ga. 31098; at Warner Robins, 18 mi. SSE of Macon. Phone: (912) 926-1110. AUTOVON: 468-1110. AFLC base. Hq. Warner Robins Air Logistics Center (AFLC); Hq. Air Force Reserve (AFRES). 2853d Air Base Group. 19th Bomb Wing (SAC); 5th Combat Communications Group (AFCS); 3503d Recruiting Group; 1926th Communications and Installations Group. Base activated March 1942; named for Brig. Gen. Augustine Warner Robins, an early Chief of the Materiel Division of the Air Corps, died June 16, 1940. Area: 7,629 acres. Altitude: 294 ft. M-4,330; C-15,443; TP-$322.6M; O-352; N-1,044; T/G-40; H (40).

Scott AFB, Ill. 62225; 6 mi. ENE of Belleville. Phone: (618) 256-1110. AUTOVON: 638-1110. MAC base. 375th Aeromedical Airlift Wing; Headquarters for Military Airlift

Command, Air Force Communications Service, Aerospace Rescue and Recovery Service, and Air Weather Service. Also, Defense Commercial Communications Office, Environmental Technical Applications Center, 1st Aeromedical Staging Flight, 7th Weather Wing, 932d Aeromedical Airlift Group (AFRES), and 375th Air Base Group. Base activated June 14, 1917; named for Cpl. Frank S. Scott, first enlisted man to die in an air accident, killed Sept. 28, 1912, at College Park, Md. Area: 3,000 acres. Altitude: 453 ft. M-6,580; C-4,298; TP-$227M; O-407; N-1,469 plus 120 spaces for privately owned trailers; T/G-206; H (195) plus 100-bed aeromedical staging facility.

Seymour Johnson AFB, N. C. 27531; adjacent to Goldsboro. Phone: (919) 736-0000. AUTOVON: 488-1110. TAC base. 4th Tactical Fighter Wing, F-4E fighter operations with dual-based commitment to NATO; 68th Bomb Wing (SAC). Base first activated June 12, 1941; named for Navy Lt. Seymour A. Johnson, killed in plane crash, 1941. Area: 4,093 acres. Altitude: 109 ft. M-5,567; C-931; TP-$72.1M; O-332; N-1,368; H (30).

Shaw AFB, S. C. 28152; 10 mi. WNW of Sumter. Phone: (803) 668-8110. AUTOVON: 965-1110. TAC base. Hq. 9th Air Force (TAC); 363d Tac Recon Wing, RF-4C recon operations and training; 507th Tac Air Control Wing, manages 407L/485L tactical air control systems. Base activated Aug. 30, 1941; named for 2d Lt. Ervin D. Shaw, one of the first Americans to see air action in WW I; killed in action July 9, 1918, while on a reconnaissance mission. Area: 3,269 acres and supports another 10,429 acres. Altitude: 244 ft. M-6,287; C-549; TP-$76.83M; O-389; N-1,316; T/G-16; H (45).

Shemya AFB, Alaska (APO Seattle 98736); located at western tip of the Aleutian Islands chain, midway between Anchorage, Alaska, and Tokyo, Japan. Phone: (907) 572-3000. AUTOVON: (317) 572-3000. 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 same as elsewhere in the US. Area: about 4½ mi. long by 2½ mi. wide. Altitude: 270 ft. M-627; C-150; TP-(*see Elmendorf AFB*); T/G-70; D.

Sheppard AFB, Tex. 76311; 4 mi. N of Wichita Falls. Phone: (817) 851-2511. AUTOVON: 736-1001. ATC base. Sheppard Technical Training Center provides resident courses in aircraft maintenance, civil engineering, communications, missile, comptroller, transportation, and instructor training. The 3785th Field Training Group provides specialized and advance training at 70 field training detachments and 20 operating locations worldwide. School of Health Care Sciences provides resident training in the areas of medicine, dentistry, nursing, biomedical sciences, and health services administration. The 80th Flying Training Wing furnishes undergraduate pilot training for the German Air Force and for other foreign students under the Security Assistance Program as well as fixed-wing transition training for USAF helicopter pilots. Base activated June 14, 1941; named for Morris E. Sheppard, US senator from Texas, died in 1941. Area: 5,000 acres. Altitude: 1,015 ft. M-8,300; C-3,700; TP-$134M; O-233; N-1,054; T/G-55; H (200).

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; 3d Combat Communications Group (AFCS); 552d Airborne Warning and Control Wing (TAC); 507th Tactical Fighter Group (AFRES). 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: 4,359 acres. Altitude: 1,291 ft. M-4,700; C-16,500; TP-$365M; O-110; N-422; H (30).

Travis AFB, Calif. 94535; at Fairfield, 50 mi. NE of San Francisco. Phone: (707) 438-4011. AUTOVON: 837-1110. MAC base. 60th Military Airlift Wing; Hq. 22d Air Force; 349th Military Airlift Wing (AFRES Associate); 307th Air Refueling Group (SAC). Base activated May 25, 1943; named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950, in a B-29 accident. Area: 5,026 acres. Altitude: 62 ft. M-9,100; C-2,615; TP-$181.6M; O-344; N-1,823; T/G-350 (includes 112 family transient, 130 VOQs, and 108 VAQs); H (473).

Tyndall AFB, Fla. 32401; 7 mi. SE of Panama City. Phone: (904) 283-1113. AUTOVON: 970-1110. ADCOM base. Air Defense Weapons Center; 678th Air Defense Group; conducts combat crew training for F-106 pilots; AF Engineering and Services 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. M-4,314; C-1,335; TP-$60.0M; O-142; N-/A-929; H (80).

US Air Force Academy, Colo. 80840; 10 mi. N of Colorado Springs. Phone: (303) 472-1818. AUTOVON: 259-3110. Separate Operating Agency. Activated April 1, 1954, at Lowry AFB, Colo. Moved to permanent location Aug. 1958. Tenant units: 1876th Communications Squadron, Frank J. Seiler Research Lab (AFSC), DoD Medical Exam Review Board, Detachment 470 of the AF Audit Agency, 557th Flying Training Squadron (ATC). Area: 18,000 acres. Altitude: 7,280 ft. M-2,435; C-1,882; TP-$95.6M; O-348; N-916; T/G-33; H (85).

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 US went down in the Atlantic near Iceland. Area: 1,603 acres. Altitude: 1,307 ft. M-1,157; C-123; TP-$32.4M; O-146; N-84; T/G-1; D.

Vandenberg AFB, Calif. 93437; 8 NNW of Lompoc. Phone: (805) 866-16 AUTOVON: 276-1110. SAC base. Site of Strategic Aerospace Division (SAC); Spa and Missile Test Center (AFSC); 659 Aerospace Test Wing. Conducts miss crew training and provides facilities a support for operational ICBM tests; search and development testing of Force space and ballistic missile program and unmanned polar-orbiting space ope ations of USAF, NASA contractors, foreig allies, *et al.* Originally Army's Camp Cooke activated Oct. 1941, base was taken ove by USAF June 7, 1957; renamed for Gen Hoyt S. Vandenberg, USAF's second Chie of Staff, died April 2, 1954. Officers an airmen trained in computer-controlled simu lators move on to alert duty with operationa ICBM wings. 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 1,418 launches have taken place from Vandenberg since Dec. 1958. Area: 98,400 acres. Altitude: 400 ft. M-4,681; C-5,596; TP-$147.2M; O-416; N-1,674; T/G-20; H (45).

Warren AFB, Wyo. (*see Francis E. Warren AFB*).

Westover AFB, Mass. 01022; 5 mi. NE of Chicopee Falls. Phone: (413) 557-1110. AUTOVON: 589-1110. 439th Tac Airlift Wing (AFRES). Base activated Oct. 1939; named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed in 1938 in aircraft accident. Area: 2,500 acres. Altitude: 244 ft. M-1,837; C-382; TP-$12.2M; O-174; N-432; D.

Wheeler AFB, Hawaii 96854; 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. Base activated Feb. 1922; named for Maj. Sheldon H. Wheeler, killed July 13, 1921, during aerial exhibition. Area: 1,369 acres. Altitude: 845 ft. M-497; C-137; TP-(*see Hickam AFB*); D.

Whiteman AFB, Mo. 65305; 1.5 mi. S of Knob Noster. Phone: (816) 687-1110. AUTOVON: 975-1110. SAC base. 351st Strategic Missile Wing. Base activated in 1942; named for 2d Lt. George A. Whiteman, shot down while taking off in a fighter from Wheeler Field, Hawaii, on Dec. 7, 1941, the first AAF airman to be shot down in WW II. Area: 3,384 acres, plus area encompassed by missile complex of about 10,000 sq. mi. Altitude: 869 ft. M-3,293; C-508; TP-$39.5M; O-219; N-791; T/G-57 (includes 18 VOQs, 5 guest houses, and 31 VAQs); H (30). (New hospital currently under construction, scheduled to open spring '79. New commissary under construction, scheduled to open September 1979.)

Williams AFB, Ariz. 85224; 16 mi. SE o Mesa, 10 mi. E of Chandler. Phone: (602 988-2611. AUTOVON: 474-1011. ATC

ıse. 82d Flying Training Wing, largest un-ɛrgraduate pilot training base; also pro-ıes F-5 combat crew training for foreign ıdents. Home of AFSC Human Resources ıboratory/Flying Training Division doing ıtensive research on flight simulators. ase activated July 1941; named for 1st Lt. harles D. Williams, killed in crash July 6, 927, during aerial demonstration. Area: ,867 acres. Altitude: 1,385 ft. M-3,086; C-,020; TP-$52.5M; O-310; N-498; T/G-40; H 25).

Wright-Patterson AFB, Ohio 45433; 10 mi. ENE of Dayton. Phone: (513) 257-1110. AUTOVON: 787-1110. 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; Air Force Museum; Air Force Acquisition Logistics Division; AFLC International Logistics Center plus more than 70 other DoD activities and government agencies. Originally separate, Wright Field and Patterson Field were merged and redesignated Wright-Patterson AFB on Jan. 13, 1948; named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918, in the crash of a DH-4. The Wright brothers did much of their early flying on Huffman Prairie, now Areas A and C of present base. Area: 8,147 acres. Altitude: 824 ft. M-7,556; C-16,853; TP-$468M; O-1,090; N-1,245; T/G-40; H (290).

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 1924; assigned to SAC April 1, 1960; named for Maj. Gen. Paul B. Wurtsmith, killed Sept. 16, 1946, in a B-25 crash in North Carolina. Area: 5,200 acres. Altitude: 634 ft. M-3,100; C-500; TP-$39M; O-321; N-1,034; H (20).

Youngstown Municipal Airport, Vienna, Ohio 44473; 14 mi. N of Youngstown. Phone: (216) 856-1645. AUTOVON: 346-9211. 910th Tactical Fighter Group (AFRES). Base activated 1952. Area: 231 acres. Altitude: 1,196 ft. M-753; C-181; TP-$6M; T/G-5.

USAF's PRINCIPAL BASES OVERSEAS

Ankara AS, Turkey
APO New York 09254
TUSLOG Hq., 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

Hahn AB, West Germany
APO New York 09109
Tactical fighter base, USAFE

Hellenikon AB, Greece
APO New York 09223
Support base, USAFE

Howard AFB, Canal Zone
APO New York 09817
Hq. USAF Southern Air Division

Incirlik AB, Turkey
APO New York 09289
Tactical fighter base, USAFE

Izmir AB, Turkey
APO New York 09224
Support base, USAFE

Kadena AB, Okinawa, Japan
APO San Francisco 96239
Air division base, PACAF
Strategic operations,
Strategic Air Command

Keflavik Airport, Iceland
FPO New York 09571
Fighter-interceptor base, ADCOM

Kunsan AB, South Korea
APO San Francisco 96264
Tactical fighter base, PACAF

Lajes Field, Azores
APO New York 09406
Airlift base, MAC

Lindsey AS, West Germany
APO New York 09633
Support base, USAFE

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 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 fighter base, USAFE

RAF Upper Heyford, United Kingdom
APO New York 09194
Tactical fighter 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, MAC

Sembach AB, West Germany
APO New York 09130
Hq. 17th Air Force, USAFE
Support base, USAFE

Sondrestrom AB, Greenland
APO New York 09121
Support base, ADCOM

Spangdahlem AB, West Germany
APO New York 09123
Tactical fighter base, USAFE

Taegu AB, South Korea
APO San Francisco 96213
Combat support base, PACAF

Tempelhof Airport, Berlin
APO New York 09611
Support base, USAFE

Thule AB, Greenland
APO New York 09023
Aerospace defense base, ADCOM

Torrejon AB, Spain
APO New York 09283
Hq. 16th Air Force, USAFE
Tactical fighter base, USAFE

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

Zweibrücken AB, West Germany
APO New York 09860
Tactical fighter/recce base, USAFE

GUIDE TO AIR NATIONAL GUARD BASES

The ANG bases listed below are at civilian airports. For ease of cross-referencing this list and the list of ANG units by major command assignments (*p. 113*), the bases here are arranged alphabetically according to the city where the airport is. (Not all ANG units submitted information for this guide.) Other ANG units are at regular USAF bases, as indicated on p. 151. Note also that several AFRES units are collocated with ANG units on civilian airports, and in a few cases regular USAF units are at civilian airports where ANG bases are found. The key to the abbreviations is on p. 151.

Anchorage, Alaska (Kulis ANG Base at Anchorage IAP) 99502. Phone: (907) 243-1145. AUTOVON: 752-5215. 176th Tactical Airlift Group (ANG). 144th Tactical Airlift Squadron (ANG). Named for Lt. Albert Kulis, killed in training flight in 1954. Area: 101 acres. Altitude: 124 ft. M-658; C-181; TP-$6.65M; H (6); transient billeting on base.

Atlanta, Ga. (Kennesaw Airport, Ga.) 30144; 27 mi. N of Atlanta. Phone: (404) 422-2500. AUTOVON: 925-2474. 129th Tactical Control Squadron and 129th Tactical Control Flight. 10 mi. from Dobbins AFB, Ga. Area: 15 acres. Altitude: 1,060 ft. M-285; C-35; TP-$1.2M.

Atlantic City, N. J. (National Aviation Facilities Experimental Center) 08405; 10 mi. W of Atlantic City. Phone: (609) 645-6000. AUTOVON: 234-1980. 177th Fighter Interceptor Group (ANG). Area: 130 acres. Altitude: 76 ft. M-875; C-300; TP-$7.8M.

Baltimore, Md. (Glenn L. Martin State Airport) 21220; 8 mi. E of Baltimore. 175th Tactical Fighter Group (ANG). Phone: (301) 687-6270. AUTOVON: 235-9210. 135th Tac Airlift Group (ANG). Phone: (301) 686-9100. AUTOVON: 231-1998. Area: 750 acres. Altitude: 89 ft. M-1,500; C-277; TP-9.0M.

Bangor, Me., International Airport, 04401; 4 mi. NW of Bangor. Phone: (207) 947-0571. AUTOVON: 476-6210. 101st Air Refueling Wing (ANG). Area: 1,104 acres. Altitude: 192 ft. M-1,000; C-252; TP-$6.75M; D.

Battle Creek ANG Base, Mich. 49016; located near Battle Creek, adjacent to Kellogg Regional Airport. Phone: (616) 963-1596. AUTOVON: 889-3691. 110th Tactical Air Support Group (ANG). Area: 84 acres. Altitude: 941 ft. M-763; C-137; TP-$5.1M.

Birmingham Municipal Airport, Ala. (Smith ANG Base) 35217. Phone: (205) 591-8160. AUTOVON: 694-2110. 117th Tactical Reconnaissance Wing (ANG). ANG base named for Col. Sumpter Smith, who played an important part in promoting the development of Birmingham's airport. Area: 86 acres. Altitude: 650 ft. M-1,039; C-268; TP-$7.0M.

Boise Air Terminal, Idaho (Gowen Field) 83701; 6 mi. S of Boise. Phone: (208) 385-5011. AUTOVON: 941-5011. 124th Tactical Reconnaissance Group (ANG). Also host to ARNG (Army Field Training Site), and Marine Corps Reserve. Airport named for Lt. Paul R. Gowen, killed in B-10 crash in Panama, July 11, 1938. Area: 2,600 acres (461 acres military). Altitude: 2,858 ft. M-1,464; C-486; TP-$12.23M; T/G-limited facilities available during Army Guard Camps.

Buckley ANG Base, Colo. 80011; 8 mi. E of Denver. Phone: (303) 366-5363. AUTOVON: 877-9110. 140th Tactical Fighter Wing (ANG); also host to Navy Reserve, Marine Reserve, ARNG, and USAF SAMSO units. Base activated April 1, 1942, and used as a gunnery training facility. ANG assumed control from US Navy in 1959. Named for Lt. John H. Buckley, National Guardsman, killed at Argonne, France, Sept. 27, 1918. Area: 3,263 acres. Altitude: 5,663 ft. M-578 active-duty AF, 1,400 ANG; C-778; TP-$14.6M; D.

Burlington, Vt. (Burlington International Airport) 05401; 3 mi. E of Burlington. Phone: (802) 658-0770. AUTOVON: 689-4310. 158th Defense Systems Evaluation Group (ANG). Area: 475 acres. Aititude: 371 ft. M-700; C-225; TP-$5.0M.

Charleston, W. Va. (Kanawha Airport) 25311; 4 mi. NE of Charleston. Phone: (304) 342-6194. AUTOVON: 366-9210. 130th Tactical Airlift Group (ANG). Area: 58 acres. Altitude: 981 ft. M-812; C-188; TP-$5.4M; D, Clinic.

Charlotte, N. C. (Douglas Municipal Airport) 28219. Phone: (704) 399-6363. AUTOVON: 583-9210. 145th Tactical Airlift Group (ANG). Area: 49 acres. Altitude: 749 ft. M-924; C-191; TP-$6.7M; D (4).

Des Moines Municipal Airport, Iowa 50321; in city of Des Moines. Phone: (515) 285-7182. AUTOVON: 939-8210. 132d Tactical Fighter Wing (ANG). Area: 112.1 acres. Altitude: 957 ft. M-798; C-5; TP-$6.6M.

Duluth International Airport, Minn. 55811; 5 mi. NW of Duluth. Phone: (218) 727-6886. AUTOVON: 825-7210. 148th Tactical Reconnaissance Group (ANG). USAF base also located at airport. Area: 152 acres. Altitude: 1,429 ft. M-854; C-235; TP-$6.2M.

Fargo, N. D. (Hector Field) 58105. Phone: (701) 237-6030. AUTOVON: 362-8110. 119th Fighter Interceptor Group (ANG). Area: 133 acres. Altitude: 900 ft. M-1,000; C-285.

Fort Smith Municipal Airport, Ark. 72906. Phone: (501) 646-1601. AUTOVON: 962-8210. 188th Tactical Fighter Group (ANG). Area: 95 acres. Altitude: 468 ft. M-700; C-200; TP-$5.0M.

Fresno Air Terminal, Calif. 93727; 5 mi. NE of Fresno. Phone: (209) 252-4041. AUTOVON: 949-9210. 26th NORAD Region and 26th ADCOM Air Division; 194th Fighter Interceptor Squadron (USAF); 144th Fighter Interceptor Wing (ANG). Area: 140 acres. Altitude: 332 ft. M-930; C-350; TP-$8.37M.

Gen. Billy Mitchell Fld., Wis. 53207; SE of Milwaukee. Phone: (414) 747-4410. AUTOVON: 459-7453. 128th Air Refueling Group (ANG). Also host to the 128th Tactical Control Flight (ANG) and 440th Tactical Airlift Wing (AFRES). Named for Brig. Gen. Billy Mitchell. Area: 58 acres. Altitude: 722 ft. M-930; C-240; TP-$6.3M.

Great Falls International Airport, Mont. 59401; 5 mi. SW of Great Falls. Phone: (406) 727-4650. AUTOVON: 279-2301. 24th NORAD Region and 24th ADCOM Air Division; SAGE Control Center (NORAD); 120th Fighter Interceptor Group (ANG). Area: 138 acres. Altitude: 3,674 ft. M-810; C-315; TP-$10.5M; D.

Gulfport-Biloxi Regional Airport, Miss. 39501; within the city limits of Gulfport. Phone: (601) 863-8624. AUTOVON: 363-8210. Training site, is also host to 173d Civil Engineering Flight, 255th Combat Communications Squadron, and the Army National Guard Transportation Repair Shop. An air-to-ground gunnery range is located 70 mi. due north of site. Area: 214 acres. Altitude: 28 ft. M-317; C-58; TP-$1.6M; D (2).

Harrisburg International Airport, Pa. 17057. Phone: (717) 771-3733. AUTOVON: 936-1760. 193d Tactical Electronic Warfare Group (ANG). Altitude: 310 ft. M-987; C-228.

Hayward ANG Base, Calif. 94545; 2 mi. W of Hayward. Phone: (415) 783-1661. AUTOVON: 462-5673. 129th Aerospace Rescue and Recovery Group (ANG). Also host to 216th Electronic Installation Squadron and to the 234th Combat Communications Squadron. Area: 43.9 acres. Altitude: 49 ft. M-1,056; C-218; TP-$4.9M; D.

Houston, Tex. (Ellington AFB) 77209; 17 mi. SE of Houston. Phone: (713) 481-1400. AUTOVON: 954-2110. 147th Fighter Interceptor Group (ANG). Other tenants: NASA Operations, US Coast Guard, Army National Guard, FAA, Military Sealift Command, ANG Transition Caretaker Force (USAF funded). Named for Lt. Eric L. Ellington, a pilot killed November 1913. Area: 2,300 acres. Altitude: 40 ft. M and C-1,000; TP-$21.6M.

Jackson Municipal Airport, Miss. (Allen C. Thompson Field) 39208; 7 mi. E of Jack-

. Phone: (601) 939-3633. AUTOVON: -9310.172d Tactical Airlift Group (ANG). G area: 22 acres. Altitude: 346 ft. M-782;); TP-$5.8M; D (6).

Jacksonville International Airport, Fla. 229; 15 mi. NW of Jacksonville. Phone:)4) 757-1360. AUTOVON: 434-1544. 5th Fighter Interceptor Group (ANG). ea: 158 acres. Altitude: 30 ft. M-951; C-0; TP-$7.5M; D (5).

Knoxville, Tenn. (McGhee Tyson Airport) 7901; 10 mi. SW of Knoxville. Phone: (615) 73-0111, (615) 983-1500. AUTOVON: 588-210. Host unit is 134th Air Refueling Group ANG). Tenants: 228th Combat Communiations Squadron, 119th and 110th TAC Control Flights, and ANG's I. G. Brown Professional Military Education Center. Area: 99 acres. Altitude: 980 ft. M-1,302; C-314; TP-$10M; D.

Lincoln Municipal Airport, Neb. 68524; 3 mi. NW of Lincoln. Phone: (402) 477-3904. AUTOVON: 939-1700. 155th Tactical Reconnaissance Group (ANG). Also hosts Army National Guard and Army Reserve unit. Area: 162 acres. Altitude: 1,198 ft. M-301; C-247; TP-$6.8M; D.

Louisville, Ky. (Standiford Field) 40213. Phone: (502) 566-9400. AUTOVON: 989-1400. 123d Tactical Reconnaissance Wing ANG). Area: 65 acres. Altitude: 497 ft. M-970; C-244; TP-$6.9M.

Mansfield Lahm Airport, Ohio 44901; 3 mi. N of Mansfield. Phone: (419) 524-4621. AUTOVON: 889-1520. 179th Tactical Airlift Group (ANG). Named for pioneer Brig. Gen. Frank P. Lahm. Area: 210 acres. Altitude: 1,296 ft. M-650; C-165; TP-$5.0M; D.

Martinsburg, W. Va. (East West Va. Regional Airport) 25401; 4 mi. S of Martinsburg. Phone: (304) 263-0801. AUTOVON: 242-9210. 167th Tactical Airlift Group ANG). Area: 900 acres. Altitude: 556 ft. M-775; C-5; TP-$4.6M; D.

McEntire ANG Base, S. C. 29044; 12 mi. E of Columbia. Phone: (803) 776-5121. AUTOVON: 583-8301. 169th Tactical Fighter Group (ANG). Also host to Army Guard aviation unit. Base named for Brig. Gen. B. B. McEntire, Jr. (ANG), killed in an F-104 in 961. Area: 2,322 acres. Altitude: 250 ft. M-; C-339; TP-$4.0M; D.

Memphis International Airport, Tenn. 38118; 10 mi. S of Memphis. Phone: (901) 363-1212. AUTOVON: 966-8111. 164th Tactical Airlift Group (ANG). ANG occupies 31.1 acres. Altitude: 332 ft. M-703; C-27; TP-$4.9M; Clinic.

Meridian, Miss. (Kay Field) 39301, within city limits. Phone: (601) 693-5031. AUTOVON: 363-9210. 186th Tactical Reconnaissance Group (ANG); 238th Combat Communications Flight, and 238th Air Traffic Control Flight. Area: 55 acres. Altitude: 297 ft. M-1,086; C-281; TP-$6.7M; D (2).

Minneapolis-St. Paul International Airport, Minn. 55111; adjacent to Minneapolis and St. Paul. Phone: (612) 725-5620. AUTOVON: 825-5620. 133d Tactical Airlift Wing (ANG), 210th Electronic Installation Squadron, 237th Air Traffic Control Flight, and 133d Field Training Flight. Also 934th Tactical Airlift Group (AFRES). Area: 125.9 acres. Altitude: 840 ft. M-1,141; C-250; TP-$6.4M.

Montgomery, Ala. (Dannelly Field) 36105; 7 mi. SW of Montgomery. Phone: (205) 281-7770. AUTOVON: 485-9210. 187th Tactical Reconnaissance Group (ANG). Hosts 232d Combat Communications Group. Named for Ens. Clarence Dannelly, Navy pilot killed at Pensacola, Fla., during WW II. Area of base: 55 acres. Altitude: 221 ft. M-1,087; C-260; TP-$6.9M; D.

Nashville Metropolitan Airport, Tenn. 37217; 6 mi. SE of Nashville. Phone: (615) 741-4201. AUTOVON: 446-5011. 118th Tactical Airlift Wing (ANG). Area: 66 acres. Altitude: 597 ft. M-873; C-27; TP-$6.7M.

New Orleans Naval Air Station (Alvin Callender Field), La. 70146; 15 mi. S of New Orleans. Phone: (504) 393-3399. AUTOVON: 363-3399. 159th Tactical Fighter Group (ANG), 926th Tactical Fighter Group (AFRES), 87th Fighter Interceptor Squadron (USAF). NAS New Orleans was the first joint Air Reserve Training Facility to be established. Named for Alvin A. Callender, who served with the British Royal Flying Corps during World War I and was shot down over France in 1918. Area: 3,245 acres. Altitude: 3 ft. M-1,156; C-567; TP-$25M; O-82; D.

Oklahoma City, Okla. (Will Rogers World Airport) 73169; 7 mi. SW of Oklahoma City. Phone: (405) 681-7551. AUTOVON: 956-8210. 137th Tactical Airlift Wing (ANG). Area: 7,200 acres. Altitude: 1,290 ft. M-1,186; C-229; TP-$6.2M.

Ontario International Airport, Ontario, Calif. 91761. Phone: (714) 984-2705. AUTOVON: 898-3870. 163d Tactical Air Support Group (ANG). Area: 39 acres. Altitude: 900 ft.

Otis AFB, Mass. 02542; 7 mi. NNE of Falmouth. Phone: (617) 968-1000. AUTOVON: 557-1110. 102d Fighter Interceptor Wing (ANG). 4789th Air Base Group (Residual USAF Caretaker). 6th Missile Warning Squadron (PAVE PAWS). Other tenants include Coast Guard Air Station Cape Cod; Army National Guard Aviation; Camp Edwards ARNG Training Installation; VA National Cemetery. Named for 1st Lt. Frank J. Otis, ANG flight surgeon and pilot killed in 1937 crash. Area: 19,925 acres. Altitude: 132 ft. M (including USCG and ANG) and C (including USCG) combined: 2,700. TP-$34M. 1,193 housing units on base; USCG administers 601 (10 Command, 45 Officer, 546 other ranks); 110 other units undergoing renovation.

Peoria Airport, Ill. 61607; 7 mi. SW of Peoria. Phone: (309) 697-6400. AUTOVON: 724-9210. 182d Tactical Air Support Group (ANG). Area: 27.9 acres. Altitude: 640 ft. M-660; C-128; TP-$3.9M; D.

Phelps Collins ANG Base, Mich. 49707; 7 mi. W of Alpena. Phone: (517) 354-4955. AUTOVON: 722-3760. Training site detachment. Facilities used by ANG and AFRES units for annual field training; also ARNG and Marine Reserve for special training. Named for Capt. W. H. Phelps Collins, American Flying Corps, killed in France, March 1918. Area: 3,190 acres. Altitude: 689 ft. M-39; C-27; TP-$1.3M; seasonal during field training, O-86; N-40; T/G-14; H (10), D.

Phoenix, Ariz. (Sky Harbor IAP) 85034. Phone: (602) 244-9841. AUTOVON: 853-9210. 161st Air Refueling Group (ANG). Area: 51 acres. Altitude: 1,230 ft. M-1,069; C-269; TP-$7.1M.

Pittsburgh (Greater Pittsburgh) International Airport, Pa. 15231; 15 mi. NW of Pittsburgh. Phone: (412) 771-3711. AUTOVON: 936-1760. 171st Air Refueling Wing (ANG) and 112th Tactical Fighter Group (ANG). Also 911th Tactical Airlift Group (AFRES). Area: 90 acres. Altitude: 1,203 ft. M-1,451; C-411; TP-$10.4M.

Portland (International Airport), Portland, Ore. 97218. Phone: (503) 288-5611. AUTOVON: 891-1701. 142d Fighter Interceptor Group (ANG). Also host to 304th Aerospace Rescue and Recovery Squadron (AFRES), 83d Air Police Squadron (AFRES). Area: 400 acres. Altitude: 26 ft. M-2,000; C-500; TP-$13.9M.

Providence, R. I. (T. F. Green Airport) 02886; 10 mi. S of Providence. Phone: (401) 737-2100. AUTOVON: 881-1440. 143d Tactical Airlift Group (ANG). Area: 22 acres. Altitude: 56 ft. M-718; C-189; TP-$7.3M.

Reno, Nev. (May ANG Base) 89502; 5 mi. SE of Reno. Phone: (702) 323-1011. AUTOVON: 830-8310. 152d Tactical Reconnaissance Group (ANG). Named for Maj. Gen. James A. May, state Adjutant General. Area: 66.6 acres. Altitude: 4,411 ft. M-786; C-237; TP-$6M; D.

Richmond, Va. (Byrd International Airport) 23150; 4 mi. SE of downtown Richmond. Phone: (804) 222-8884. AUTOVON: 274-8210. 192d Tactical Fighter Group (ANG), 192d Tactical Clinic (ANG). Airfield named for Adm. Richard E. Byrd, famous Arctic and Antarctic explorer. Area: 137 acres. Altitude: 167 ft. M-1,100; C-250; TP-$2.1M.

Salt Lake City ANG Base, Utah 84116; 3 mi. W of Salt Lake City. Phone: (801) 521-7070. AUTOVON: 790-9210. 151st Air Refueling Group (ANG). Also hosts following ANG units: 109th Tactical Control Flight, 106th Tactical Control Flight, 130th Electronic Installation Squadron, 299th Communication Squadron. Area: 75 acres. Altitude: 4,220 ft. M-1,256; C-290; TP-$7.4M; D.

San Juan, Puerto Rico (Muniz ANG Base at San Juan IAP) 00913. Phone: (809) 791-0340. 156th Tactical Fighter Group (ANG). Base named for Lt. Col. Jose A. Muniz, killed in an aircraft accident July 4, 1960. M-1,200; C-293; TP-$7.8M; D.

Savannah Municipal Airport, Ga. 31402; 4 mi. NW of Savannah. Phone: (912) 964-1941. AUTOVON: 860-8210. 165th Tactical Airlift Group (ANG). Also field train-

ing site. Area: 232 acres. Altitude: 50 ft. M-771; C-228; TP-$7.7M; O-156; N-100; D (3).

Schenectady County Airport, N. Y. 12301; 2 mi. N of Schenectady. Phone: (518) 372-5621. AUTOVON: 974-9210. 109th Tactical Airlift Group (ANG). Area: 106 acres. Altitude: 378 ft. M-691; C-198; TP-$5.6M; D.

Selfridge ANG Base, Mich. 48045; 3 mi. NE of Mount Clemens. Phone: (313) 466-4011. AUTOVON: 273-0111. 127th Tactical Fighter Wing (ANG); 191st Fighter Interceptor Group (ANG); 403d Rescue and Weather Reconnaissance Wing (AFRES); 927th Tactical Airlift Group (AFRES); also hosts Navy Reserve, Marine Air Reserve, Army Reserve, Army units, and US Coast Guard Air Station for Detroit. Base activated July 1917, and transferred to Mich. ANG, July 1971. 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 Fort Myer, Va., when plane piloted by Orville Wright crashed. Area: 3,660 acres. Altitude: 583 ft. M-721; C-2,011; TP-$47.3M; T/G-12; D.

Sioux City Municipal Airport, Iowa 51110; 7 mi. S of Sioux City. Phone: (712) 255-3511. AUTOVON: 939-6210. 185th Tactical Fighter Group (ANG). Area: 2,550 acres. Altitude: 1,098 ft. M-714; C-231; TP-$4.95M; D.

Sioux Falls, S. D. (Joe Foss Field) 57104; N side of Sioux Falls. Phone: (605) 336-0670. AUTOVON: 939-7210. 114th Tactical Fighter Group (ANG). Named for Brig. Gen. Joseph J. Foss, WW II ace, former governor of South Dakota, and National President of AFA; founder of the South Dakota ANG. Area: 148 acres. Altitude: 1,426 ft. M-850; C-210; TP-$5.3M.

Springfield, Ill. (Capital Airport) 62707; NW of Springfield. Phone: (217) 753-8850. AUTOVON: 631-1990. 183d Tactical Fighter Group (ANG). Area: 70 acres. Altitude: 592 ft. M-804; C-233; TP-$6M; D.

Springfield Municipal Airport, Ohio 45501; 5 mi. S of Springfield. Phone: (513) 323-8653. AUTOVON: 889-1600. 178th Tactical Fighter Group (ANG). Area: 115 acres. Altitude: 1,052 ft. M-1,135 ANG authorizations; TP-$7.8M; D (6).

St. Joseph, Mo. (Rosecrans Memorial Airport) 64503; 4 mi. W of St. Joseph. Phone: (816) 364-2941. AUTOVON: 720-9210. 139th Tactical Airlift Group (ANG). Area: 54.3 acres. Altitude: 724 ft. M-675; C-200; TP-$5.5M.

Suffolk County Airport, Westhampton Beach, N. Y. 11978; in corporate limits of Westhampton Beach. Phone: (516) 288-4200. AUTOVON: 938-3720. 106th Aerospace Rescue and Recovery Group (ANG). Area: 55 acres. Altitude: 67 ft. TP-$5.5M.

Syracuse, N. Y. (Hancock Field) 13211; 5 mi. NE of Syracuse. Phone: (315) 458-5500. AUTOVON: 587-9110. 174th Tactical Fighter Group (ANG). Tenants are 108th Tactical Control Squadron (ANG), and base ops for Hancock AFB (NORAD site on remote part of Syracuse Hancock International Airport). Area: 443 acres. Altitude: 421 ft. M-954; C-197; TP-$5.25M; D.

Terre Haute, Ind. (Hulman Field) 47803; 5 mi. E of Terre Haute. Phone: (812) 232-8391. AUTOVON: 634-1581. 181st Tactical Fighter Group (ANG). Area: 60 acres. Altitude: 585 ft. M-900; C-203; TP-$2.4M; D (5).

Toledo Express Airport, Ohio 43558; 14 mi. W of Toledo. Phone: (419) 865-2396. AUTOVON: 889-1710. 180th Tactical Fighter Group (ANG); hosts 555th Air Force Band. Area: 79 acres. Altitude: 684 ft. M-857; C-211; TP-$6.3M; Clinic (4).

Truax Field, Madison, Wis. 53704; 2 mi. N of Madison. Phone: (608) 241-6200. AUTOVON: 472-6000. 128th Tactical Air Support Wing (ANG). Activated June 1942, as AAF base, taken over by Wis. ANG in April 1968. Named for Lt. T. L. Truax, killed in P-40 training accident in 1941. Area: 152 acres. Altitude: 862 ft. M-848; C-153; TP-$5.14M; T/G-7 units; D.

Tucson International Airport, Ariz. 85734; within Tucson city limits. Phone: (602) 748-5140. AUTOVON: 361-5140. 162d Tactical Fighter Group (ANG: A-7D). Area: 49 acres. Altitude: 2,650 ft. M-1,063; C-431; TP-$10.6M.

Volk Field ANG Base, Wis. 54618; mi. NW of Madison. Phone: (608) 427-33 AUTOVON: 884-3480. ANG Permar Training Site, including air-to-air and air ground gunnery ranges, to provide trair for ANG flying units. Named for Lt. Jerc A. Volk, first Wis. ANG pilot killed in Kore War. Base proper: 2,450 acres. Altitu 915 ft. M-40; C-36; TP-$1.2M.

Westfield, Mass. (Barnes Municipal A port) 01085; 3 mi. N of Westfield. Phor (413) 562-3691. AUTOVON: 893-147 104th Tactical Fighter Group (ANG). Are 133 acres. Altitude: 270 ft. M-750; C-20 TP-$7.8M.

White Plains, N. Y. (Westchester Count Airport) 10604; 8 mi. NE of White Plains Phone: (914) 946-9511. AUTOVON: 456 9210. 105th Tactical Air Support Win (ANG). Area: 692 acres; ANG base: 2 acres. Altitude: 439 ft. M-800; C-150; TF $6.5M; D.

Willow Grove Naval Air Station, Pa 19090; 14 mi. N of Philadelphia. Phone (215) 441-1000. AUTOVON: 991-1000 111th Tactical Air Support Group (ANG). Included on base are units of Navy Re serve, Marine Reserve, Army Reserve, and Air Force Reserve (913th Tactical Airlif Group). Area: 1,000 acres. Altitude: 356 ft Navy facilities include BX, enlisted club and officers club for use by all Reservists Transient quarters available to Navy per sonnel only.

Wilmington, Del. (Greater Wilmington Airport) 19720; 5 mi. S of Wilmington Phone: (302) 322-2261. AUTOVON: 455-9000. 166th Tactical Airlift Group (ANG); Army National Guard 198th Aviation Company. Area: 57 acres. Altitude: 80 ft. M-781; C-171; TP-$5.2M; D (2).

Windsor Locks, Conn. (Bradley International Airport) 06096; 15 mi. N of Hartford. Phone: (203) 623-8291. AUTOVON: 636-8310. 103d Tactical Fighter Group (ANG) and Army National Guard Aviation battalion. Named for Lt. Eugene M. Bradley killed in P-40 crash in August 1941. Area 2,000 acres. Altitude: 173 ft. M-900; C-200 TP-$6.4M.

A GUIDE TO USAF'S R&D FACILITIES

Principal AFSC R&D Facilities

From AFSC headquarters at Andrews AFB, Md., Gen. Alton D. Slay, AFSC Commander, directs the operations of the command's divisions, development and test centers, ranges, and laboratories. Those installations, valued at more than $2 billion, are described below.

Special AFSC Organizations

Foreign Technology Division (FTD), Wright-Patterson AFB, Ohio—FTD acquires, evaluates, analyzes, and disseminates information on foreign aerospace technology, in concert with other divisions, laboratories, and centers. Information collected from a wide variety of sources is processed in unique electronic data-handling and laboratory-processing equipment and analyzed by scientific and technical specialists.

Air Force Contract Management Division (AFCMD), Kirtland AFB, N. M.—AFCMD is responsible for DoD contract management activities in twenty major contractor plants assigned to the Air Force under the DoD National Plant Cognizance Program. The AFCMD evaluates contractor performance and manages the administration of contracts executed by Air Force, Army, Navy, Defense Supply Agency, NASA, and other government purchasing agencies.

Aerospace Medical Division (AMD), Brooks AFB, Tex.—AMD is charged with management and conduct of research and development in aerospace medicine which support the Air Force mission. Specialized and postgraduate professional education is also conducted in medicine, dentistry, and aerospace medical subjects. AMD scientists seek to counter potential medical hazards and ensure maximum crew performance in all aerospace environments.

• **Wilford Hall USAF Medical Center (WHMC),** Lackland AFB, Tex.—This 1,000-bed medical center is one of six in the Air Force and one of the largest in the Department of Defense. In addition to its

mary mission of patient care in forty-five ical specialties, it provides more than y-five percent of all postgraduate medi- training in the Air Force. In the nter's mission of clinical research, estigations have resulted in unprece- nted advances in surgical and treat- ent procedures in such areas as dental rk, drug therapy, internal medicine, ychiatric treatment, cancer treatment, perimental surgery, and organ trans- ants. As a worldwide referral center, ilford Hall offers such sophisticated rocedures as open-heart surgery, kidney nd corneal transplants, cancer therapy, nd reconstruction of various parts of the ody. Its care unit for newborn infants has ne of the lowest infant mortality rates in he world. The Air Force's only computer- zed Tomographic Scanner, the latest in diagnostic X-ray equipment, is located ere.

• **6570th Aerospace Medical Research Laboratory (AMRL),** Wright-Patterson AFB, Ohio—AMRL is part of the Aerospace Medical Division. It conducts behavioral and biomedical research to define the limits of human tolerance and the degradation of human performance under the conditions of environmental stress. AMRL also establishes design criteria and new biotechnology techniques to protect and sustain personnel in future aerospace systems. The four areas of laboratory research are: occupational and environmental toxic hazards in Air Force operations; safety and aircrew effectiveness in mechanical force environments; man-machine integration technology; and manned weapon-system effectiveness.

• **USAF School of Aerospace Medicine (USAFSAM),** Brooks AFB, Tex.—The school is part of the Aerospace Medical Division. Its research mission includes both in-house and contractual work dealing with applied aspects of aeromedical research. Investigations in the Divisions of Data Sciences, Clinical Sciences, Environmental Sciences, and Radiobiology encompass laboratory and clinical studies in biological, environmental, and dynamic conditions that may affect the health and efficiency of aircrews. The Epidemiology Division serves as a consultant and reference laboratory to Air Force medical facilities throughout the world. One of its principal responsibilities is to give advice and assistance in the investigation of disease outbreaks at Air Force installations. USAFSAM operates the sole USAF Hyperbaric Oxygen Treatment facility.

• **USAF Occupational and Environmental Health Laboratory (OEHL),** Brooks AFB, Tex.—OEHL provides consultation and specialized laboratory services to support requirements of occupational, radiological, environmental health, and environmental quality programs.

Product Organizations

Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio—Management control point for the development and acquisition of aeronautical systems. ASD has more than 7,000 officers, airmen, and civilians working with AFSC laboratory scientists and engineers.

Typical of the wide range of systems under ASD management are strategic systems modernization programs, the F-15 advanced tactical fighter, the F-16 air combat fighter, the A-10 close support aircraft, remotely piloted vehicles (RPVs), and the Maverick missile.

ASD's many other efforts include developing and acquiring training simulators, reconnaissance/strike and electronic warfare systems, air-to-air and air-to-surface missiles, and airlift and tanker aircraft.

Electronic Systems Division (ESD), Hanscom AFB, Mass.—ESD is responsible for development, acquisition, and delivery of electronic systems and equipment for the command control and communications functions of aerospace forces. These systems take many forms such as a joint US-Canada network of combined civilian-military radar sites that simultaneously controls civil air traffic and ensures air sovereignty; a major updating of the underground North American Air Defense Command (NORAD) combat operations center; long-range radars on both the East and West Coasts to warn of missile and aircraft attack; satellite communications terminals for ground, mobile, and aircraft use; and a new airborne radar and communications post.

Space and Missile Systems Organization (SAMSO), Los Angeles AFS, Calif.—SAMSO manages the research, design, development, and acquisition of DoD space and ballistic missile systems. SAMSO is responsible for:

- Developing the spacecraft, launch vehicles, and ground-support equipment to maintain and improve military space capabilities.
- Launching, orbiting, commanding, and controlling satellites for DoD and other government agencies.
- Conducting research, development, and test of advanced ballistic missile reentry vehicles.
- Identifying and developing space systems concepts and technological alternatives to satisfy critical military needs.
- Operating the Western and Eastern Test Ranges to support space and missile programs for the Air Force, DoD, NASA, and other government agencies.
- Maintaining a worldwide network of satellite tracking stations.

SAMSO activities are managed by the following technical program offices: Defense Meteorological Satellites, Space Navigation Systems, Advanced Space Programs, Space Communications, Space Defense Systems, Defense Support, Intercontinental Ballistic Missiles (including the MX missile), Reentry Systems, and Launch Vehicles (including the Space Shuttle).

SAMSO major field elements include the Air Force Satellite Control Facility and the Space and Missile Test Center described below.

Laboratories

Director of Science & Technology (DL), Andrews AFB, Md.—The Director of Science & Technology provides policy, planning, and technical direction to programs of the command's research and development laboratories, and monitors their operations.

Laboratories under DL and their respective functional areas are:

• **Air Force Weapons Laboratory (AFWL),** Kirtland AFB, N. M.—AFWL conducts research and development programs in weapon effects and safety, laser technology, nuclear survivability/vulnerability, and advanced weapons concepts.

• **Air Force Rocket Propulsion Laboratory (AFRPL),** Edwards AFB, Calif.—AFRPL conducts exploratory and advanced development programs for liquid, solid, and hybrid rockets; advanced rocket propellants; and associated ground-support equipment. AFRPL also conducts system support programs for other units and divisions of AFSC, other branches of the armed services, and NASA.

• **Air Force Human Resources Laboratory (AFHRL),** Brooks AFB, Tex.—AFHRL manages and conducts research and exploratory and advanced development programs for personnel management and training. Three of AFHRL's operational divisions are also located at Brooks AFB: Personnel Research Division, Occupational and Manpower Research Division, and Computational Sciences Division. The other AFHRL divisions are the Advanced Systems Division at Wright-Patterson AFB, Ohio; the Flying Training Division at Williams AFB, Ariz.; and the Technical Training Division at Lowry AFB, Colo.

• **Air Force Geophysics Laboratory (AFGL),** Hanscom AFB, Mass.—AFGL is the center for research and exploratory development involving the terrestrial, atmospheric, and space environments.

• **Air Force Office of Scientific Research (AFOSR),** Bolling AFB, D. C.—AFOSR is the single manager of Air Force basic research. It awards grants and contracts for basic research directly related to Air Force needs. Research is selected to support the search for new knowledge and the expansion of scientific principles. AFOSR is also responsible for the activities of the Frank J. Seiler Research Laboratory and the European Office of Aerospace Research and Development.

• **The Frank J. Seiler Research Laboratory (FJSRL),** USAF Academy, Colo.—This laboratory is engaged in basic research in physical and engineering sciences, usually centering around chemistry, applied mathematics, and aerospace mechanics. The laboratory sponsors related research conducted by the faculty and cadets of the USAF Academy.

• **European Office of Aerospace Research and Development (EOARD),** London, England—This unit links the Air Force and the scientific communities in Europe, Africa, and the Near East. It identifies foreign technology, engineering, and manufacturing advances that can be applied to USAF requirements.

Wright Aeronautical Laboratories

Air Force Wright Aeronautical Laboratories (AFWAL), Wright-Patterson AFB, Ohio—AFWAL includes four major organizations at Wright-Patterson AFB: the Flight Dynamics, Materials, Avionics, and Aero Propulsion Laboratories. AFWAL was established to combine common laboratory overhead, management, and support functions.

- **Air Force Flight Dynamics Laboratory** is concerned with the development of flight-vehicle technology. Specific technical areas include structural design and durability, vehicle dynamics, aeroacoustics, vehicle equipment, mechanical subsystems, environmental control, crew escape and recovery, survivability and vulnerability, flight control, crew station design, flight simulation, performance analysis, aerodynamics, configuration synthesis, and technology integration.

- **Air Force Materials Laboratory** conducts the complete USAF program in materials exploratory development and manufacturing technology. Areas of current emphasis include thermal protection materials; metallic and nonmetallic structural materials; aerospace propulsion materials; fluids, lubricants, and fluid-containment materials; protective coatings; and electronic and electromagnetic materials.

- **Air Force Avionics Laboratory** conducts research and development programs for reconnaissance, weapon delivery, electronic warfare, electronic technology, and avionics systems.

- **Air Force Aero Propulsion Laboratory** conducts Air Force exploratory and advanced development programs in turbine engines, ramjets, fuels, turbine engine lubricants, aircraft fire protection, and flight vehicle power.

Special Organizational Considerations

Several additional AFSC organizations contribute to the command's technological base and, while not directly responsible to the Director of Science and Technology, they do receive his technical direction. Some are discussed below; others have been discussed in the "Special AFSC Organizations" Section.

- **Rome Air Development Center (RADC),** Griffiss AFB, N. Y.—is the principal organization charged with Air Force research and development programs related to C^3I (command control communications and intelligence). RADC mission areas include communications, electromagnetic guidance and control, surveillance of ground and aerospace objects, intelligence data handling, information systems technology, ionospheric propagation, solid state sciences, microwave physics, and electronic reliability, maintainability, and compatibility. Reporting to the Commander, ESD, Hanscom AFB, Mass., RADC is also responsible for assisting in the demonstration and acquisition of selected systems and subsystems within its areas of expertise.

- **Air Force Armament Laboratory (AFATL),** Eglin AFB, Fla.—AFATL is the principal Air Force laboratory doing research on free-fall and guided nonnuclear munitions, and airborne targets and scorers to provide the future technological base for aircraft armaments. These include bombs, dispensers, fuzes, guns, and ammunition. AFATL also provides consulting services in aircraft munition compatibility and analysis, and prediction of weapon effects. AFATL is organizationally assigned to the Armament Development and Test Center at Eglin.

- **Air Force Engineering and Services Center, Research and Development Division (AFESC/RD),** Tyndall AFB, Fla.—is organizationally assigned to Headquarters Air Force Engineering and Services Center. It acts as the Systems Command agent in executing civil engineering, environmental quality, and facilities energy RDT&E. AFESC/RD evaluates methods and techniques to detect, assess, control, and abate Air Force environmental problems. AFESC/RD also conducts civil engineering R&D to improve air base survivability, aircraft contingency launch and recovery surfaces, aircraft and tactical shelters, and air base equipment/facilities.

Test Organizations

Space and Missile Test Center (SAMTEC), Vandenberg AFB, Calif.—SAMTEC provides field test management for all DoD-directed ballistic and space programs, and operates the Eastern and Western Test Ranges. SAMTEC conducts launch operations both at Vandenberg and Cape Canaveral AFS, Fla. Range operations incorporate a vast array of data-gathering sites scattered throughout the world, operating in support of SAMSO test programs and those of the Strategic Air Command, NASA, the US Navy, and various government agencies. Geographic elements of SAMTEC include:

- **Western Test Range**—Stretching halfway around the world from the California coast to the Indian Ocean, the Western Test Range is operated in support of both ballistic and space-test operations. The range also is used for aeronautical tests, employing the same sensors and data-gathering equipment used for ballistic and space-booster flights.

- **Eastern Test Range**—This range extends more than 10,000 miles down the Atlantic into the Indian Ocean, where it joins the Western Test Range to form a worldwide network. Tracking and data-gathering stations are located at Grand Bahama, Grand Turk, Antigua, and Ascension Islands, and Pretoria, South Africa. Detachment 1, SAMTEC, Patrick AFB, Fla., manages Eastern Test Range operations.

- **Air Force Satellite Control Facility (AFSCF),** Sunnyvale AFS, Calif.—AFSCF conducts on-orbit, real-time tests of DoD satellites. It maintains operating locati worldwide.

- **Air Force Flight Test Cer (AFFTC),** Edwards AFB, Calif.— AFFTC conducts and evaluates tests manned and unmanned aircraft and ae space research vehicles to include fly qualities and subsystem performan reliability, maintainability, and functio capability under climatic extremes. T Center also does development testing advanced and special-mission pai chutes; tests and evaluates remote piloted vehicle (RPV) midair recove systems; operates the USAF Test Pil School; and operates ranges, instrumenta tion, and the special technical suppo facilities required to carry out the Cente mission. Edwards AFB, Calif., will serve a the landing site for the first series c Space Shuttle orbital flights scheduled fc late 1979, and as an alternate landing sit for subsequent flights.

Projects currently under evaluation in clude the B-1 strategic bomber; F-5E/F, F- 15, and F-16 fighters; A-10 close ai support aircraft; and the air-launchec cruise missile.

Collocated at the AFFTC are NASA's Dryden Flight Research Center, Air Force Rocket Propulsion Laboratory, the US Army Aviation Engineering Flight Activity and approximately sixty military tenan and civilian contractor agencies.

AFFTC also has management responsi- bility for the Utah Test and Training Range (UTTR). This range complex has 2,900,000 acres of controlled airspace and is located in northwestern Utah. It is used for test and evaluation of air- and surface-launched missiles and remotely piloted vehicles, and for operational train- ing and exercises.

Armament Development and Test Center (ADTC), Eglin AFB, Fla.—The Center's primary mission is to develop, test, and initially acquire all nonnuclear ai armament for the Air Force's tactical anc strategic forces. Development activities are conducted in four phases: basic research and exploratory, advanced, anc engineering development. In the first two phases, exploratory programs advance ai armament-related science and technology in the third phase, ADTC demonstrates the feasibility of new armament concepts and in the final phase, the Cente performs the engineering development o new armament systems for production.

ADTC is involved in the air armamen acquisition process from conceptual plan ning to initial production of military hard ware. Among items developed, tested and initially acquired by ADTC are air launched tactical and air-defense missiles guided weapons, aircraft guns and am munition, targets, and related armamen support equipment. The Center also test and evaluates electromagnetic warfare intrusion interdiction, inertial navigation and other systems. It manages more thar 720 square miles of land test ranges anc facilities, and more than 44,000 square miles of test area in the Gulf of Mexico.

Through its 6585th Test Group at Holloman AFB, N. M., ADTC operates the

)00-foot precision rocket sled track represents the Air Force through the Force Deputy at the Army's White ds Missile Range.

rnold Engineering Development nter (AEDC), Arnold AFS, Tenn.—DC has the largest complex of ad-ced aerospace flight simulation test ilities in the Western world. The Center erates forty test units—including wind nels, altitude test cells, space cham-rs, and aeroballistics ranges—in which flight conditions can be simulated from sea level to altitudes of 1,000 miles, and from subsonic speeds to more than 20,000 mph.

AEDC's mission is to assist in ensuring that aircraft, missiles, spacecraft, jet and rocket propulsion systems, and other aerospace hardware meet specified requirements the first time launched or flown. Problems encountered with operational systems also are investigated.

Tests are conducted for the Air Force, Army, Navy, NASA, other federal agencies, and aerospace industry contractors. The development of essentially every major US aerospace program for the past quarter century has been supported by the AEDC test effort.

To meet flight simulation needs for the 1980s and 1990s, the Air Force is constructing the Aeropropulsion Systems Test Facility at AEDC, a $437 million complex to be completed in late 1982. It is designed to test the large, advanced jet aircraft engine systems required for future aircraft.

GUIDE TO NASA'S RESEARCH CENTERS

The National Aeronautics and Space Administration (NASA) operates 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 such laboratory and flight research as atmospheric reentry, fundamental physics, solar physics and planetary environments, materials, chemistry, life sciences, guidance and control, aircraft supersonic flight, aircraft operational problems, and V/STOL. It manages such spaceflight programs as Pioneer. Named for Dr. Joseph S. Ames (1864–1943), Chairman of the National Advisory Committee for Aeronautics (NACA) from 1927 to 1939.

Hugh L. Dryden Flight Research Center, Edwards AFB, Calif.—Dryden Flight Research Center is concerned with manned flight within and outside the atmosphere, including low-speed, supersonic, hypersonic, and reentry flight, and aircraft operations. Flight testing includes HiMAT (Highly Maneuverable Aircraft Technology), RPRV (Remotely Piloted Research Vehicles), pivot-wing subsonic aircraft, digital fly-by-wire flight control systems, and wake vortex alleviation methods. The approach and landing tests of the Space Shuttle Orbiter were held here. Dryden will serve as a Shuttle landing site for the first four orbital flights and as a contingency landing site afterwards. Named for Dr. Hugh L. Dryden (1898–1965), Director of NACA from 1949–58, and then Deputy Administrator of the new NASA.

Goddard Space Flight Center, Greenbelt, Md.—Goddard Space Flight Center is responsible for a broad variety of unmanned earth-orbiting satellites and sounding-rocket projects. Among its projects are Orbiting Observatories, Explorers, Nimbus, Applications Technology Satellites, and Landsat. Goddard is also the nerve center for the worldwide tracking and communications network for both manned and unmanned satellites, home of the Space Science Data Center, and manager of the Delta launch vehicle. Named for Dr. Robert H. Goddard (1882–1945), "father" of rocketry and the space age.

Jet Propulsion Laboratory, Pasadena, Calif.—Jet Propulsion Laboratory is operated for NASA under contract by the California Institute of Technology. The laboratory's primary role is investigation of the planets. It manages the Voyager and Galileo programs. JPL designed 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 Operations Division at Lompoc, Calif. The two principal Shuttle launching and landing sites are at Kennedy and at Vandenberg AFB in California.

Langley Research Center, Hampton, Va.—Oldest of the NASA centers, Langley provides technology for manned and unmanned exploration of space and for improvement and extension of performance, utility, and safety of transport, military, and general aviation aircraft. Langley devotes more than half its efforts to aeronautics. The Center also managed the Viking project that orbited and landed spacecraft on Mars in 1976, and the Scout launch vehicle program. Named for Samuel P. Langley (1834–1906), astronomer and aerodynamicist who pioneered in the theory and construction of heavier-than-air craft.

George C. Marshall Space Flight Center, Huntsville, Ala.—Marshall serves as one of NASA's primary Centers for the design and development of space transportation systems, orbital systems, scientific payloads, and other means for space exploration. The Center has major responsibilities for Space Shuttle development, testing, and fabrication, including the main engine and solid rocket boosters. Other major projects are: Spacelab, Space Telescope, High Energy Astronomy Observatories, solar electric propulsion, and space processing. It manages the Michoud Assembly Facility. Named for the late General of the Army George C. Marshall, recipient of the Nobel Peace Prize, who died in 1959.

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 sounding 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 energy systems for space and on earth 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 Atlas-Centaur and Titan-Centaur launch vehicles and Agena rocket stage. Named for Dr. George W. Lewis (1882–1948), NACA Director of Aeronautical Research from 1924–47.

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. Named for the late President Johnson, during whose Administration the US manned space program gained its greatest impetus.

National Space Technology Laboratories, Bay St. Louis, Miss.—This complex conducts developmental tests of Space Shuttle main engines and environmental and related research. ■

Airman's Bookshelf

Handbook for SALT Treaties

Soviet Strategy for Nuclear War, by Joseph D. Douglass, Jr., and Amoretta M. Hoeber. Hoover Institution Press, Stanford, Calif., 1979. 120 pages. $5.95.

If United States leaders are to make intelligent assessments about SALT agreements, they first must understand the strategic concepts upon which Soviet nuclear forces are based.

In the early 1970s, at the time of SALT I negotiations, little was available to the American public about Soviet military doctrine and strategy. Although each year Soviet military strategists published literally hundreds of articles and scores of books on these subjects, few were translated into English. One reason was the view that these writings represented Soviet "declaratory" doctrine, which was meant to deceive the West.

By the mid-1970s it became apparent that the Kremlin's military buildup was in accordance with Soviet concepts that had been dismissed as "declaratory" doctrine. A translation of the third, 1968, edition of Marshal V. D. Sokolovskiy's *Military Strategy* appeared in 1975 and was recognized as an authoritative reflection of Soviet views on warfare. Also, a number of major Soviet writings, originally published in the early 1970s, were translated and published by the US Government Printing Office under the auspices of the US Air Force. Western readers began to realize that the Kremlin had written openly about its strategic nuclear plans even before its nuclear forces were deployed.

Recently, translations of other Soviet writings, originally published in the 1960s in *Military Thought,* the restricted journal of the Soviet General Staff, became available to Western readers. Many scholars were surprised to find that articles in this previously classified journal did not differ significantly from what had appeared in the "open" Soviet press.

Joseph Douglass and Amoretta Hoeber, coauthors of *Soviet Strategy for Nuclear War,* have analyzed the *Military Thought* articles of the 1960s, along with Sokolovskiy's *Military Strategy* and other Soviet writings of the 1970s. The result is a book on what the Soviets themselves say about nuclear war.

In general, Americans do not like to think about the unthinkable. United States nuclear forces are designed to support the vague concept of deterrence. In contrast, the authors show that the Soviets are concerned with fighting and winning a nuclear war, should one occur. The immediate Soviet objective in a nuclear exchange would be to destroy an opponent's nuclear capability. However, with careful planning, Soviet theorists believe that a large nation like the USSR cannot be deprived of its "strategic capabilities," even in a nuclear war.

Soviet theorists believe that strategic maneuver has taken on a new meaning in the nuclear-missile era. Today, it is not a matter of maneuvering forces, but "the redirection of nuclear strikes and nuclear groupings for the fast and complete destruction of large enemy groupings and the achievement of strategic results."

They believe that if nuclear weapons are used from the outset, nuclear war probably will be short, with victory going to the side that achieves surprise. Soviet readers are told that their leaders now can detect enemy preparations for an attack and will be able to "frustrate" them, apparently by preemption. Soviet strategists talk of "the creation and constant maintenance of quantitative and qualitative superiority over the enemy," not of "strategic sufficiency."

In these months when SALT II is in the news, articles concentrate on size, composition, and capabilities deployed nuclear forces, but So military doctrine and strategy are part of the negotiations. Furth Soviet doctrine and strategy w formulated in the late 1950s and e 1960s, before the Cuban nucl confrontation, and their essential e ments were not changed by t Cuban crisis, the ouster of Kh shchev in 1964, or the signing SALT I in 1972. Therefore, if arn control agreements or negotiatio are to have any meaning, Sovi military doctrine and strategy must b a primary consideration by Weste negotiators.

Most professions require an exam nation to determine if the individual i capable of performing in that particu lar area. If an examination were give to determine the capability of person to negotiate on SALT, or t advise the American public on it, pa of the required study certainly woul be this work. The public interes would be well served.

—Reviewed by Col. William F. Scott, USAF (Ret.).

America's Jet Industry Succes

The Jet Makers, by Charles D. Bright, The Regents Press of Kansas, Lawrence, Kan., 1978. 228 pages, $14.

In 1945 the jet engine was nev technology and the key to the futur of the aerospace industry—and Amer ica was behind.

The British had helped the US ge established in jets during World Wa II, and the capture of German equip ment and information during the wa added to US jet knowledge. But th US had a long way to go to catc up with Britain, and, ultimately, t become the world leader in jet ai craft production and the aerospac industry.

The author, a navigator in Worl War II and an Air Force fighter pilo in Korea, details that remarkabl achievement of modern industry in concise and useful history of th aerospace industry from 1945 t 1972.

Today, US jet sales lead the worl despite the fact that as late as 196 Britain's Rolls-Royce had supplie sixty percent of the turbines fo airliners built in the West. How wa this success achieved? The author now associate professor of business administration at Southwestern Col lege in Kansas, addresses that ques-

n with an analysis of the US vernment and airline markets, US hievements in research, and the nsolidation of the aerospace indus- during the 1950s and 1960s.

He points out that the jet's greatly creased power-to-weight ratio result- l in such improved distance, time, nd payload performance that new nd rich markets were created for ose who could win them.

It was a combination of factors, ather than any single reason, that nade the US the winner, according to he author. He cites as one powerful ncentive the experience of US air- nen battling German jets in World War II and facing surprisingly effec- ive Russian jets in the Korean War. He also credits the reservoir of technicians trained during World War II and the postwar economic climate that favored the expansion of air travel in the US.

But the author concludes that it was competition within the US and the ability of Americans to compete that pushed the US to the top of the aerospace heap.

He cites the rivalry between the two US aerospace military services and the "life-and-death" competition between US companies for military and civilian contracts. The combination, lacking in other countries or cushioned by government support, in the end proved decisive.

—Reviewed by Bonner Day, Senior Editor.

New Books in Brief

Canadian Pilot's Fitness Manual, by David Steen, in cooperation with the Canadian Airline Pilots Association and the Fitness Institute of Toronto. This new book demonstrates that pilots and other busy professionals are never too old or out of shape to benefit from a fitness program. Included are training tables for every age group, complete illustrated exercise instructions, alternative running and jogging programs, diet and nutrition tables, tension-relieving exercises, aerobics, warm-ups and relaxers, and the pilot's own diet and weight-loss program. Delacorte Press/ Eleanor Friede, Dell Publishing Co., Inc., New York, N. Y., 1979. 203 pages. $10.95.

The Changing World of the American Military, edited by Franklin D. Margiotta. Thirty-three distinguished civilian and military scholars discuss major factors that will shape the American military in the 1980s. They assess current military professionalism, international and domestic influences, military manpower issues, organizational dynamics and change, developments at the Academies, and prescriptions for the future. While views are diverse, there is a unifying theme: The US military faces a troubled future dominated by rapid and dramatic change. Tables, charts, selected bibliography, index. Westview Press, 5500 Central Ave., Boulder, Colo. 80301, 1979. 488 pages. $22 hardcover; $10.75 paperback.

Flight Into Conquest, by Masajiro Kawato. This is the autobiography of the WW II Japanese fighter pilot who shot down "Pappy" Boyington, commanding officer of the Marine Corps "Black Sheep" squadron. In 1976, the author successfully flew nonstop in a light plane from Tokyo to Crescent City, Calif., to commemorate America's bicentennial. Photos. Aviation Book Co., 555 W. Glenoaks Blvd., Glendale, Calif. 91202, 1979. 150 pages. $7.50.

Force Without War: US Armed Forces as a Political Instrument, by Barry Blechman and Stephen S. Kaplan. The US has used military force short of war as an instrument of

"I saw you stack the deck."

– Capt. William Monay
Mindanao, Philippines, April, 1942

The 13,000 American troops who still had a tenuous hold on Corregidor were badly in need of medical supplies.

For months, a nerveless band of winged warriors called "The Bamboo Fleet" had provided shuttle service between Bataan, Corregidor and Mindanao. Capt. Bill Bradford, the most seasoned pilot of the lot, had logged more than 5,000 hours over the islands.

Now, one by one, the Philippine Islands had fallen to the Japanese. No one knew better than Bradford how improbable it had become to land anything on Corregidor's minuscule, shell-pocked airstrip. But somebody had to do it.

The pilots gathered to determine who would fly unarmed over enemy territory in the one bucket-of-bolts they had left, an arthritic 10-year-old Bellanca. A deck of cards would decide who would make the trip. Low man would go. Bradford shuffled, cut and drew the lowest card.

Capt. William Monay watched the proceedings with interest. "I saw you stack the deck," he whispered to Bradford.

Bradford vociferously denied it. "But the others wouldn't have a chance of getting into Corregidor," he said. "I know where to make that last dogleg turn and find it in the dark."

On a wing and a prayer, Bradford reached Corregidor, shaken but intact. As the medical supplies were being unloaded from his battered old plane, Gen. Jonathan Wainwright gratefully shook the courageous captain's hand. "Brad," he said, "I thought you'd get through!"

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Airman's Bookshelf

plomacy many times since WW II. he authors examine circumstances urrounding 215 shows of force and nalyze their effectiveness in obtain- ig US foreign policy objectives. The ook's main conclusion is that "shows f force" have often stabilized a leteriorating situation, relieved do- nestic and international pressure for more drastic action, and gained time for diplomacy. Charts, tables, bibliog- raphy, index. The Brookings Institu- ion, Washington, D. C., 1978. 584 ages. $19.95 cloth; $8.95 paper.

633 Squadron: Operation Rhine Maiden, by Frederick E. Smith. Sec- nd of four in the "633 Squadron" eries, this novel finds the men of the 33d on assignment to destroy pro- luction of the Reich's deadly new ntiaircraft rocket, codenamed "Rhine Maiden." They set out to destroy the ocket factory and then make a daring strike on an underground target in daylight. Bantam Books, New York, N. Y., 1979. 281 pages. $2.25.

Strategic Options for the Early Eighties: What Can Be Done?, by William R. Van Cleave and W. Scott Thompson. A volunteer, independent group of scientists and defense spe- cialists explores "quick-fix" options he US may need to use to offset Soviet strategic superiority in the early 1980s. While the book stresses hat there are no cheap or magic olutions, the US can "mine" the last echnological advantages out of pres- nt systems. One of the many options liscussed is multiple aim point basing lesigned to frustrate a Soviet first strike and quick fixes for US civil lefense. National Strategy Information Center, Inc., New York, N. Y., 1979. 00 pages. $4.

"Upside-Down" Pangborn: King of he Barnstormers, by Carl M. Cleve- and. Clyde Pangborn was half owner nd chief pilot of the Gates Flying Circus that thrilled millions with spec- acular barnstorming stunts in the 920s. The book includes an intro- duction by Lowell Thomas. Photos. Aviation Book Co., Glendale, Calif., 1979. 208 pages. $9.95.

—Reviewed by Robin Whittle

Vietnam Veterans Week, 1979

By the President of the United States of America

A Proclamation

We are a peace-seeking Nation and we are at peace, but we must not forget the lessons war has taught us, nor the brave men and women who have sacrificed so much for us in all our wars.

The decade now drawing to a close began in the midst of a war that was the longest and most expensive in our history, and most costly in human lives and suffering. Because it was a divisive and painful period for all Americans, we are tempted to want to put the Vietnam war out of our minds. But it is important that we remember—honestly, realistically, with humility.

It is important, too, that we remember those who answered their Nation's call in that war with the full measure of their valor and loyalty, that we pay full tribute at last to all Americans who served in our Armed Forces in Southeast Asia. Their courage and sacrifices in that tragic conflict were made doubly difficult by the Nation's lack of agreement as to what constituted the highest duty. Instead of glory, they were too often met with our embarrassment or ignored when they returned.

The honor of those who died there is not tarnished by our uncertainty at the moment of their sacrifice. To them we offer our respect and gratitude. To the loved ones they left behind, we offer our concern and understanding and our help to build new lives. To those who still bear the wounds, both physical and psychic, from all our wars, we acknowledge our continuing responsibility.

Of all the millions of Americans who served in Southeast Asia, the majority have successfully rejoined the mainstream of American life.

To them, and to all who served or suffered in that war, we give our solemn pledge to pursue all honorable means to establish a just and lasting peace in the world, that no future generation need suffer in this way again.

NOW, THEREFORE, I, JIMMY CARTER, President of the United States of America, call upon all Americans to observe May 28 through June 3, 1979, the week of our traditional Memorial Day, as Vietnam Veterans Week. On this occasion, let us as a Nation express our sincere thanks for the service of all Vietnam era veterans.

I urge my fellow citizens and my fellow veterans, and their groups and organizations, to honor the patriotism of these veterans, and to recognize their civilian contributions to their communities in America today.

I call upon the state and local governments to join with me in proclaiming Vietnam Veterans Week, and to publicly recognize with appropriate ceremonies and activities yesterday's service and today's contributions of Vietnam era veterans.

IN WITNESS WHEREOF, I have hereunto set my hand this twentieth day of March, in the year of our Lord nineteen hundred and seventy-nine, and of the Independence of the United States of America the two hundred and third.

Jimmy Carter

The Bulletin Board

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

Incentives Shopping List Grows

While the major new personnel proposals—those dealing with medical care, survivor benefits, retirement, etc.—remain bogged down within the Administration and Congress, USAF's list of other incentives it wants adopted continues to grow. AFA continues to campaign for most of them. This status report shows USAF is pushing for:

- A basic allowance for subsistence (BAS) for all enlisted personnel at all times. Unfortunately, the big outlays required have the service temporarily stymied, but officials vow to continue pushing.
- Full travel entitlements for junior EM families relocating Stateside. This would complement the government's recent okay of these benefits for junior enlisted people overseas. Because of "fiscal restraints," USAF supports the CONUS extension "on a phased basis."
- A cost-of-living allowance (COLA) for single and unaccompanied members overseas. Married members abroad receive a COLA so, USAF holds, the others deserve one, too. The request is before Congress.
- Subsistence and per-diem equity for enlisted members on temporary duty; they want the same deal officers get, a position AFA strongly endorses. Corrective legislation has been introduced.
- A family separation allowance of $30 per month for junior enlisted families, to help reduce the financial hardships they endure. Congress rejected the idea last year, but the services are trying again. H.R. 2506 (Melvin Price, D-Ill.) is the legislative vehicle.
- An increased trailer allowance. Military trailerites get only seventy-four cents a mile to move at PCS time, although it costs twice that amount. And they receive no dislocation allowance. H.R. 3066 (Price) would correct the inequities.
- Authority for allowing bachelor senior NCOs and junior officers to live on or off base and collect BAQ. The option is now limited to O-4s and above.
- Increased per diem. This USAF-sponsored plan, backed by the Defense Department, would increase the maximum per-diem rate from $35 to $50. In "high-cost" areas, the maximum would rise from $50 to $75. The present rates were set in 1976.
- Financial relief for US service people in Japan and Okinawa. Ultra-tough Japanese emission control standards force many US people there to shell out $1,000 to $2,000 for special equipment for their cars. Though efforts to get Japan to ease the standards have failed, Air Force says it "will continue to press for relief."
- Capital gains tax equity. Service families who sell their homes at a profit and are then assigned overseas often can't reinvest in a new dwelling within four years to enjoy a long-term capital gains provision. This USAF plan, contained in H.R. 2667 (Guy Vander Jagt, R-Mich.), would give them a year after their return from overseas to buy another home.
- Authority to pay housing allowances in advance. Many overseas-bound service families promptly go into debt to pay the advance rent and utility deposits foreign landlords charge. This plan would ease the problem, although members' paychecks would be reduced to repay the advances. The plan wouldn't cost anything, so it's expected to win early approval. H.R. 3067 (Price) contains the plan.

Other military personnel legislation recently introduced in Congress includes:

- H.R. 2817 (Patricia Schroeder, D-Colo.) provides that a former spouse married to a service member for ten or more years can collect part of his retired pay. This is a repeat from last year. She has introduced similar bills for the Civil and Foreign Service.
- H.R. 2119 (Carlos J. Moorhead, R-Calif.) eases the conflict-of-interest prohibitions in the Ethics in Government Act.
- H.R. 462 (Marjorie S. Holt, R-Md.) provides recomputation at age sixty of military retired pay of retirees whose pay is computed on pre-January 1, 1972, pay scales.
- S. 465 (Daniel K. Inouye and Spark M. Matsunaga, both D-Hawaii) authorizes widows of veterans who were 100 percent service-disabled at the time of death to shop at commissaries and exchanges.
- H.R. 331 (Hamilton Fish, Jr., R-N. Y.) establishes an order-of-merit system based on competitive examinations to determine appointments to the service academies.

Up-or-Out Eased Again

Air Force has laid on a selective continuation program under which certain non-regular captains who suffer their

The service enlisted chiefs conferred recently with Deputy Secretary of Defense Charles W. Duncan, Jr. From left, Mr. Duncan; Chief Master Sergeant of the Air Force Robert D. Gaylor; Sergeant Major of the Army William Bainbridge; Sergeant Major of the Marine Corps John R. Massaro; and Master Chief Petty Officer of the Navy Robert J. Walker. Air Force officials are in the process of selecting a successor to Chief Gaylor, whose two-year stint as the Air Force's top noncommissioned officer ends August 1.

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second passover to temporary major will be invited to remain in uniform. They will be "continued" for three years and, if their service is "deemed . . . effective," serve to retirement.

In addition, the service will no longer involuntarily separate non-regulars after a first deferment to temporary O-4. Thus, an estimated 375 to 400 officers to be passed over initially by next month's O-4 board won't receive farewell notices.

The changes are the latest in a series of moves to offset heavy officer losses—in rated, scientific-engineering, and other skills—in the past eighteen months. Under the continuation project, the needed skills will be designated prior to each temporary O-4 board. Continued officers will remain eligible for promotion.

Officials estimated that fewer than 100 officers picking up their second deferral at next month's board would be continued, but the numbers are expected to rise in succeeding years. Regular captains are not affected by the change, but they could be included later on. By law, they are separated after two passovers to permanent O-4, so new legislation would probably be required.

Earlier this year, the Air Force increased promotions to temporary captain; in so doing it reduced both passovers and forced exits. The O-3 continuation further eases USAF's up-or-out policy. And the expected s this summer to increase promotion permanent regular major will relax up-or-out rules still further. Th doubtless will not go unnoticed by Senate Armed Services Manpower a Personnel Subcommittee, which h scolded the services for large-sc promotion-failure force-outs. The su committee at press time was still sitti on the DOPMA legislation.

In another move to shore up offic strength in various skills, Air Force ha picked seventy-four more nonactiv duty Reserves for recall, out of 14 applicants. Twenty-five are pilots ar eleven navigators. Another recall boar was to meet in early spring, to conslde 200 additional applicants. Reca boards, which hadn't operated fo years until late 1978, now convene ev ery four to six weeks.

AFA Believes . . .

The Ultimate Victims of Vietnam

AFA believes, along with Rep. David E. Bonior (D-Mich.), that the nation has abrogated its responsibility to the veterans of the Vietnam War. The following excerpts are from his March 21, 1979, testimony before the House Budget Committee.

For over two hundred years, this nation revered its warriors who joined battle against those who sought, through force, to alter our chosen way of life. Today, places like Yorktown, Verdun, and Omaha Beach are objects of pilgrimages for those who never experienced their horror or their glory, yet feel a sense of intangible gratitude to those who did. The veterans of those conflicts, while experiencing a wide disparity in readjustment benefits, all received the most valuable yet most intangible of benefits: the almost unanimous gratitude and adulation of their countrymen.

On August 7, 1964, the House of Representatives, presumably with the overwhelming support of the American people, voted in favor of the Gulf of Tonkin Resolution by a margin of 416 to 0, which gave the President a free hand for military action in Southeast Asia. Both the Congress and the country have since been considerably less enthusiastic in their support for those they committed to the Vietnam War.

While deploring that apathy, I can understand it. Vietnam . . . was a war that lacked clarity of ends or purpose, and in the end it was, characteristically, not lost, but unwon.

According to General Westmoreland, the soldiers of this conflict were equal, or superior, to soldiers of past conflicts. They were generally better educated, better trained, and had a far lower battlefield rate of breakdown or desertion than their counterparts of World War II. . . .

But if the combatant was the same, the combat was not. This was a guerrilla war that the US attempted to fight conventionally, and the paranoia and frustration of that situation was predictable.

Returning servicemen desperately needed the support of their countrymen. . . . Instead, they returned one by one, isolated and confronting a country that "never went to war." Congressman John P. Murtha stated it succinctly: "They found discord and acrimony. They found criticism coming from some of our highest officials. . . . They saw very little sacrifice at home and only the immediate family showing a concern for the individual who was away in the fighting force. . . ."

Whether one agreed with the war or not—and I was one who did not—these people deserve our earnest attention lest they become the ultimate victims of the Vietnam War.

Let's examine some of the statistics on the Vietnam veteran. There were roughly 8,500,000 people who served during the Vietnam era, 2,800,000 of whom actually served in Vietnam. The overwhelming majority of these have successfully adjusted to civilian life, but of those who have not:

- The overall suicide rate of Vietnam era veterans is now about twenty-three percent higher than that of nonvets of the same age. (VA)
- An estimated 500,000 Viet vets are in criminal custody (jail, parole, probation, or pretrial release). Black veterans are twice as likely to be incarcerated as black nonveterans. (ABA)
- Of those married before Vietnam, fully thirty-eight percent were separating or divorcing six months after their return.
- One Vietnam vet in three has recurring nightmares.
- Fifty-five percent of all outpatients in the VA drug-treatment program are Vietnam vets. . . .

We know that, although improvements have been made in Vietnam veterans' unemployment, the problem still exists for a significant portion in terms of both unemployment and underemployment. However, typical of the shabby treatment given to these vets was an attempted change earlier this year in the Department of Labor CETA regulations, which redefined "Vietnam Veterans" as those who served between August 1964 and June 1975 and those who had been discharged within the last forty-eight months. This would have had the effect of eliminating virtually all Vietnam veterans from congressionally mandated preference in CETA hiring.

We have finally formed a group of Vietnam Era Veterans in Congress *[see box]* to work to change these conditions . . .

We authored the resolution which passed the Congress last year to declare the week of May 28, 1979, as "Vietnam Veteran Week." We have reintroduced the Vietnam Veterans Act, which we feel would ideally address the remaining problems of Vietnam veterans. However, we have established as priority for this Congress, the creation of an effective program for psychological readjustment and drug and alcohol abuse treatment and extension of the delimiting date on the GI Bill or at very least a cost-of-living adjustment.

The psychological readjustment and drug and alcohol abus

A recent related move finds USAF ending the service of many veteran non-regular officers from the normal enty years to twenty-two.

Earlier this decade the Air Force, gravily overloaded with officers, urged housands to leave voluntarily, so RIFs ould be avoided. As recently as FY 6, the service had a surplus of 4,500 ficers; that was one reason it decided separate nonregular captains after ne promotion failure instead of two.

All that's changed now, as officials attle to maintain strength.

With future manning projected to be qually tight, officials forecast a relavely stable officer promotion picture or the next five years. Promotion opportunities and waits are expected to remain about the same as now. Unexpected contingencies, however, such as Congress failing to approve DOPMA and not continuing grade-ceiling relief, thus curtailing promotions and even causing demotions, would upset the applecart.

Stripes Make a Difference

Until this year, USAF recruits who enlisted for six years (instead of the normal four) came in as E-1s. Consequently, very few went for six—only 237 during October–December 1978. So Air Force changed gears by offering E-3 stripes to new six-year enlistees. The result was an immediate and spectacular fivefold increase in such enlistments: 1,146 during January 1–March 21, 1979! And these people, by their longer service, help the government reduce training costs.

AFA Board Fetes Roberts

AFA officials and members of the Association's Junior Officer Advisory and Enlisted Councils honored Air Training Command's Gen. John W. Roberts at a testimonial dinner during the Councils' February 15–17 meeting in San Antonio, held in conjunction with the Board of Directors' meeting on February 17.

Association President Gerald V. Hasler presented the ATC Commander a plaque in recognition of his outstanding service. General Roberts retired April 1. His successor is Gen. Bennie L. Davis. Both generals held the post of USAF DCS/Personnel before moving to Training Command.

During the AFA committee meetings, council members mapped out plans for special projects to be pursued this year. They also huddled with the Hq. USAF Director of Personnel Plans, Maj. Gen. Harry A. Morris.

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treatment program proposed by both the Administration and the House Veterans Affairs Health Subcommittee are woefully inadequate. The Veterans Administration itself estimates that there would be 1,500,000 potential Vietnam era users. If we assume that only five percent show up for treatment and that out of these, two-thirds are found to need treatment, we are still left with a patient load of 50,000. Each state would only receive $244,000 under the House bill and only $198,000 under the Administration's proposal. At a cost of $36,000 to $38,000 per psychiatrist, I leave it to you to determine if this figure is sufficient.

In a report to the President's Commission on Mental Health, a special Presidential Working Group recommended contracting out to Community Mental Health Centers for services. We find this absolutely necessary. I do not think that the VA can do the job by itself. On a visit to the VA hospital in Detroit last year, I found that the mental health clinic had 130,000 visits per year with a staff of six psychiatrists. The same holds true for the alcohol and drug abuse treatment programs.

I would further urge the Budget Committee to mandate the commitment of funds to a serious health problem deriving from exposure to Agent Orange, a chemical defoliant used in Vietnam. . . . The VA should be mandated to notify all 2,800,000 Vietnam vets of their possible exposure to this deadly substance, describe symptoms, and offer full testing for all those vets who request it.

The extension of the delimiting date is an expensive item admittedly, but it, too, is a matter of justice. World War II veterans' GI Bill benefits covered full tuition in ninety-five percent of all colleges and universities in addition to providing a substantial monthly stipend. Vietnam veterans' benefits until the early '70s were actually less than those given to Korean vets.

We know that we have unique budget constraints to work within this year and that new money will be difficult. We could, however, work to identify other areas within the veterans budget where savings could be made or programs eliminated. . . .

We are not talking about government largesse; we are talking about the responsibility and integrity of a government toward its people. If we tell them we had endless funds to keep them in the mud, the disease, and the horror of Vietnam, and yet, do not have $17 million to heal the torment that derives from that service (as a majority of the Veterans Affairs Committee did last week) then, dear colleagues, we should not be surprised if few answer the clarion's call to the danger next time. . . .

We have a responsibility to each and every one of those people. . . . We have study after study confirming the need, we have declared that need a priority here in Congress, and if my constituents are any indication, passage of these programs would certainly not be a political liability. Yet, despite the good work of a few concerned members of the House Veterans Affairs Committee, that committee has failed for four Congresses to even consider a Senate-passed psychological counseling bill. Now, it has finally decided to consider a bill, and it amounts to less than $9 apiece for those the VA claims will need it.

We are well aware that we are in tough times fiscally, but there are moral obligations which transcend such times. I am convinced that the willingness to face these obligations, despite fiscal pressures, separates statesmen from politicians.

The words of Abraham Lincoln, "To care for him who shall have borne the battle, and for his widow and orphan" must take on a new meaning in this Congress or our patriotic declarations will ring hollow indeed. If we know who to call upon in time of war, then we should remember who to thank in time of peace. ■

Vietnam Era Veterans in Congress

The following Members of the House of Representatives and the Senate comprised the Vietnam Era Veterans in Congress as of March 26. The group was formed in 1978 by Congressman Bonior, who served in the Air Force during the Vietnam War. All of the group's members were in the armed forces during the war, but not all served in Southeast Asia.

House of Representatives:

David E. Bonior (D-Mich.), Chairman
Les Aspin (D-Wis.)
Donald A. Bailey (D-Pa.)
Michael D. Barnes (D-Md.)
Douglas K. Bereuter (R-Neb.)
John J. Cavanaugh (D-Neb.)
Thomas A. Daschle (D-Conn.)
Christopher J. Dodd (D-Conn.)
Allen E. Ertel (D-Pa.)
Jonas M. Frost (D-Tex.)
Albert A. Gore, Jr. (D-Tenn.)
Tom Harkin (D-Iowa)
James R. Jones (D-Okla.)
John J. LaFalce (D-N. Y.)
John P. Murtha (D-Pa.)
Leon E. Panetta (D-Calif.)
Toby A. Roth (R.-Wis.)

Senate:

John H. Heinz, III (R-Pa.)
Larry Pressler (R-S. D.)

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Tax Benefit Under Attack

Sen. Henry Bellmon (R-Okla.) has introduced S. 715, a bill permitting state and local governments to collect taxes on alcoholic beverages and cigarettes sold on military bases. In explaining the measure, Bellmon questioned the government's logic in attempting to deal with the growing alcohol abuse problem while subsidizing the sale of liquor on federal installations. He also discussed reports that military personnel may be involved in "casual" cigarette smuggling by buying them on base for civilian friends.

No Cash for Retiree Suggestions

Military retirees help in base projects, participate in fund drives, and lend a hand in recruiting. Yet the Defense Department doesn't want them participating in suggestion awards programs. Too much paperwork. Ditto for retired civil servants.

The Pentagon's surprising position surfaced in a response to an AIR FORCE Magazine query asking why Reservists and retirees can't collect for clever ideas that save Uncle Sam money.

An official DoD spokesman replied that while law prohibits both groups from participation in suggestion awards, the Department wants to make Reservists eligible. It supports corrective legislation. But it opposes making retired military and retired civilian employees eligible for suggestion awards (unless submitted before retirement). Why? "Because the cost of processing the volume of suggestions that would be generated . . . would offset the benefits achieved," the spokesman declared.

When persons leave government service, his response continued, the passage of time and changes in technology and policies tend to negate the value of any money-saving ideas they may have. Making them eligible "would stimulate a considerable volume of suggestions with a relatively low payoff to the government."

The Air Force's position? Asked by AIR FORCE Magazine if USAF wants the law changed to let retirees cash in on money-saving ideas, the Military Personnel Center replied: "Based on experience, we would not have the support to change legislation. Moreover, the Office of Personnel Management (formerly the Civil Service Commission) has not supported legislation that would authorize retirees to receive cash awards" for their ide

Registration, Not Draft, Favored

Registration for a draft, but no ac conscription, except perhaps to l up manpower in Army's Rese Forces. This is the apparent cons sus among congressional and milit leaders of what the 96th Congre should do to improve the country's a ity to mobilize.

Both House and Senate Armed S vices personnel subcommittees rece ly conducted hearings on tl sputtering All-Volunteer Force progra and what should be done about Flocks of registration/draft-type bi have been introduced (*see April "Bu letin Board"*).

The four members of the Joint Chiefs of Staff endorsed registration of male youths, although USAF's Gen. Lew Al len said such action is "not essential" for his service. General Allen noted that following last December's recr ing shortfall of 750, Air Force bounce back in January with a mere 120-ma shortage and met its recruit goal February. Its six-year enlistments hav skyrocketed (*see earlier item*).

The military chiefs, except for Ge Bernard Rogers of the Army, oppose reinstatement of the draft at this tim General Rogers called for a draft fo Army's Individual Ready Reserve

Ed Gates . . . Speaking of People

New Slant on Educational Benefits

The Vietnam-era GI Bill is slowly coming to an end, and various quarters naturally are concerned. Prominent lawmakers want to change the rules for different groups, so their eligibility for educational benefits can continue beyond the cutoff.

Under current law, veterans who entered service before January 1, 1977, enjoy GI education and training eligibility for up to ten years after discharge but not later than December 31, 1989.

Currently, annual GI education-training outlays top the $2 billion mark. But as more veterans pass the tenth anniversary of their discharge—that will happen to an estimated 854,000 of them this fiscal year alone—costs will drop and eventually disappear. Unless Congress extends the cutoff dates.

There are numerous examples of congressional desire to do just that and to open up eligibility to groups now barred. Rep. Bob Wilson (D-Calif.) wants to give service people entitled to GI benefits six more years after their exit from service to use them, even if they leave after 1989.

Wilson, introducing legislation to do this, says the current cutoff date hurts the services' retention efforts. Young members facing the career decision fear that using their educational entitlement while still in service may not be feasible, or they want to save it. Therefore, by staying in they would surrender the benefits because the 1989 cutoff precedes the date they would complete twenty years' service for retirement. So, it is claimed, many leave early.

Rep. Robert Traxler (D-Mich.), to cite another attempt to alte the program, wants to give GI Bill entitlement to person serving as service academy cadets on December 31, 1976. law enacted late that year, it will be remembered, eliminated G benefits (and established a contributory education program) fo all persons who enter service after 1976. There was a exception—for "delayed enlistees," youths who signed enlis ment papers in late 1976 but didn't actually don uniforms un 1977. They will receive the GI Bill benefits as would th affected cadets under the Traxler proposal.

Survivors, too, are not being forgotten. Rep. Ray Roberts (D Tex.) wants to allow spouses of vets with service-connecte total disability to receive VA educational aid within a ten-yea period beginning on the date of the couple's marriage.

The Administration is generally opposed to extensions o expansion of the GI education program. Its lone exceptio contained in the Veterans Administration's FY '80 budge would give "educationally disadvantaged" Vietnam-era vete ans—those lacking a high-school diploma—an extra two yea of eligibility.

Despite the pressures to extend the deadline for veteran and survivors generally, insiders doubt that such action w occur. VA sources cite the large cost plus the fact that the G Bill basically is a readjustment program; it is designed to help people transition from military to civilian life, not to lure nonprior service youths into service. As for the cutoff catching some

ch is several hundred thousand nbers short.

arious groups, meanwhile, de- unced all talk of registration, classifi- tion, or a draft. Peacetime nscription means "massive curtail- ent of individual rights and liberties," e American Civil Liberties Union de- ared. Rep. Marjorie Holt (R-Md.) re- onded that with freedom comes sponsibility, and the Selective Ser- ce System provides a method by nich that responsibility can be ercised.

AFA's Board of Directors, mean- hile, meeting in San Antonio (*see revious item*) reaffirmed AFA's policy f support for a revitalized Selective ervice System. Letters were sent to ne Congress emphasizing this stand.

PAs' Numbers May Grow

One of the few pieces of favorable news emerging from the recent debate over the military medical care dilemma is that USAF physician assistants (PAs) are receiving good marks from both patients and USAF's medical leadership. Furthermore, an exhaustive Rand Corp. study views expansion of the PA corps as an important move in plugging care gaps caused by physi- ian shortages. Lt. Gen. Paul W. My- rs, USAF's Surgeon General, lauded he PAs' performance. He's talking of ncreasing their number from the pres- ent 431 (including fifty-four still in train- ing) to 660. "We would be in dire straits without them," General Myers said in referring to the present PAs and the 330 USAF nurse practitioner "extenders."

Unfortunately, a behind-the-scenes flap over commissioning PAs apparent- ly has delayed the move to further ex- pansion. Some Pentagon officials and congressmen object to USAF PAs re- ceiving commissions (so far 310 are commissioned, sixty-seven remain NCOs), while Army and Navy PAs are warrant officers.

Myers and other service officials have been presenting Congress with gloomy reports on physician retention and procurement, soaring medical costs, equipment shortages, outmoded facilities, etc. Several bills increasing medical officer pay have been introduced.

At press time, the Defense Depart- ment was preparing to formally ask Congress to sweeten the services' medical scholarships program and overhaul the medics' complicated pay structure, providing healthy increases in the process.

WASPs' Benefits: Slim Pickings

The Air Force, acting for the entire Defense Department, has ruled that the estimated 900 living WASPs—Women's Airforce Service Pilots—are eligible for certain benefits. But educa- tional benefits are not among them.

The WASPs, though not military, fer- ried military aircraft for more than two years during World War II. They won high praise from many quarters. In No- vember 1977, Congress passed a measure authorizing the Pentagon to determine whether their wartime ser- vice (September 10, 1942, to Decem- ber 20, 1944), and similar service of other nonmilitary groups, qualifies them for veterans' benefits. AFA has testified in support.

This past March, nearly seventeen months later, the favorable ruling sur- faced. Now the ex-WASPs can seek discharges from the Air Force Military Personnel Center (MPCDOA1), Ran- dolph AFB, Tex. 78143. They must fur- nish documentation of their service, which will take an estimated two months.

Then, for those still interested, they formally apply to the Veterans Adminis- tration. But they're not likely to come up with much. VA chief Max Cleland said that they don't qualify for World War II GI education programs because the latter "have expired." A knowledge- able VA source sees burial benefits as the principal one forthcoming. Disability compensation is possible, but appli- cants must establish service connec- tion, and that could be difficult, he said.

Still to come are rulings on whether

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members with unused eligibility, a VA source said "some people will be hurt when any personnel entitlement program ends."

VA chief Max Cleland, meanwhile, has launched a vigorous campaign to get all persons with unused eligibility to begin a training or education program in time to complete it before their GI credits expire.

The government clearly has done its part in spreading the word. And while the various proposed changes would be nice to have, they hardly seem compelling amid the present battle of many new "people" programs for limited funds.

However, there's a related, more pressing matter that needs prompt attention. Securing and retaining enough quality personnel is today's most critical military manpower problem. Up to forty percent of the enlisted members Defense-wide don't even complete one enlistment! Service officials and lawmakers fret over the people shortfalls and advance proposed solutions. The debate over the shortcomings of the All-Volunteer Force and the reinstatement of the draft is raging.

Strangely, next to nothing has been said about linking military service, Reserve and active, directly with the govern- ment's massive college loan-grant project. Restructuring educational subsidies to lure capable young men and women into uniform may prove rewarding. After all, youths for years have declared that the promise of subsidized education is the number-one attraction of military service.

Some authorities blame today's recruiting and retention woes on the replacement, in January 1977, of the GI Bill with the contributory plan cited above. Under it, participants must ante up $50–$75 a month throughout an enlistment, after which Uncle Sam will match the accumulated funds two for one. This provides a modest kitty to defray an individual's college expenses. Pentagon officials say, however, that too many new recruits can't afford to enroll, or feel they can't. Another deficiency: the money contributed is tied up for several years and draws no interest. The contributory scheme has not proven fruitful.

The new thrust we are spotlighting is the brainchild of Northwestern University sociologist Charles C. Moskos, Jr., an expert in behavior patterns of military personnel. He would mesh federal college loan-grant programs to military and other national service.

"It would be morally consistent as well as efficacious," Professor Moskos told a recent AVF-draft hearing conducted by the House Armed Services Military Personnel Subcommittee, "to hold that any able-bodied person who did not perform national service . . . would be ineligible for government student aid."

This, he noted, is a multibillion dollar program. He said "it is surprising, that given the current discussion of providing governmental relief for middle-class families with children in college, no public figure has thought to tie such student aid to any service obligation, whether civilian or military, on the part of the youths who benefit."

He scored another bull's-eye in stating that the country should "begin to consider policies whereby only those who had performed national service would be eligible for subsequent government employment."

And he urged Congress to stop "undercutting" the services' efforts to maintain required manpower levels, pointing out that veterans benefits go to anyone serving as little as half a year. And their service need not even be honorable!

Declared Moskos: "Equity and all-volunteer management would be helped by limiting veterans benefits solely to those who successfully completed their enlistments with an honorable discharge."

Strong stuff. But on target. It shouldn't be brushed aside. ■

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World War II service in the Merchant Marine and other quasimilitary groups is creditable for the elusive VA benefits.

Short Bursts

USAF's position on the **controversial antiabortion clause in the FY'79 military appropriations act** couldn't be clearer. "The restriction [on such funds] constitutes a loss of a medical benefit, will result in out-of-pocket costs for health care, and will have an adverse impact on the morale of members," Hq. USAF stated. The leadership, of course, wants Congress to remove the curb on abortion funds.

Patients in VA hospitals are pleased with the treatment they receive. The hospitals are providing care to 128,000 more patients annually than four years ago, the system's annual medical funding has risen by $2.3 billion, and the hospitals' medical staffing ratio has reached a record 199 per 100 patients, according to VA chief Max Cleland. But critics of VA hospital operations, such as Rep. Ray Roberts (D-Tex.), Chairman of the House Veterans' Affairs Committee, discount Cleland's rosy portrait. Roberts says there is something **"drastically wrong with the VA hospital system."**

A three-mile walk within forty-three and a half minutes is the only physical fitness requirement for USAF males thirty-five and over. The recent announcement evoked snickers from hard-core joggers, who say the test is too easy.

By the end of this year, according to USAF's Director of Engineering and Services Maj. Gen. William D. Gilbert, **Air Force will have made energy conservation changes** to about 94,500 of its 136,000 family housing units. These measures include adding insulation, storm windows, furnace provements, etc. Unfortunately, the ord of modernization of housing uni less scintillating: **only 21,000 un have received major upgrading** such as up-to-date kitchens—dur the past six years. Family housing o cials in the early 1970s talked ab refurbishing some 100,000 units now. But they never got the funds.

Offerings at USAF chapels l year totaled $1.1 million, the servi reports. The money went to ma causes, including support for scouts base, elderly in neighboring towns, a halfway homes for drug addicts.

The Veterans Administration **h doubled the maximum allowabl "setup" charges** that may be include in the loan amount for a VA mobile home loan. The old limits of $200 for a small trailer and $400 for a large one have been hiked to $400 and $800, respectively. The setup fee is supposed to cover the cost of delivering the home to the customer and setting it up properly. ■

Senior Staff Changes

RETIREMENTS; L/G Howard M. **Fish;** L/G John R. **Kelly,** Jr.; M/G Larry M. **Killpack;** M/G William **Lyon;** M/G Edward J. **Nash;** B/G Walter B. **Ratliff;** B/G Erskine **Wigley.**

CHANGES: B/G (M/G selectee) William P. Acker, from Cmdr., USAF Recruiting Service, and DCS/Recruiting, Hq. ATC, Randolph AFB, Tex., to Cmdr., AFMTC, Lackland AFB, Tex., replacing M/G Andrew P. Iosue . . . **B/G (M/G selectee) James I. Baginski,** from DCS/Pers., Hq. MAC, Scott AFB, Ill., to DCS/Ops., Hq. MAC, Scott AFB, Ill., replacing retiring M/G Edward J. Nash . . . **Col. (B/G selectee) Harry H. Bendorf,** from Dep. Dir. for Force Devel., Dir. of Plans, DCS/OP&R, Hq. USAF, Washington, D. C., to Dep. Dir., Force Devel./Strat. Plans, J-5, JCS, Washington, D. C. . . . **M/G Richard Bodycombe,** from Vice Cmdr., AFRES, Robins AFB, Ga., to Ch./Cmdr., AFRES, Hq. USAF, Washington, D. C., replacing retiring M/G William Lyon . . . **L/G Marion L. Boswell,** from C/S, Hq. PACOM, Camp Smith, Hawaii, to Asst. Vice C/S, Hq. USAF, Washington, D. C., replacing retiring L/G Howard M. Fish.

L/G Bennie L. Davis, from DCS/M&P, Hq. USAF, Washington, D. C., to Cmdr., Hq. ATC, Randolph AFB, Tex., replacing retiring Gen. John W. Roberts . . . **B/G Harry Falls, Jr.,** from Dep. Cmdr., 5th ATAF, Vicenza, Italy, to Asst. for Readiness, Hq. USAFE, Ramstein AB, Germany, replacing M/G William R. Usher . . . **B/G Alonzo L. Ferguson,** from Dep. Dir. for Readiness Devel., DCS/OP&R, Hq. USAF, Washington, D. C., to Dep. Dir. of Ops. & Readiness, DCS/OP&R, Hq. USAF, Washington, D. C., replacing retiring B/G Walter B. Ratliff . . . **M/G Martin C. Fulcher,** from DCS/Log., Hq. SAC, Offutt AFB, Neb., to Asst. DCS/L&E, Hq. USAF, Washington, D. C., replacing M/G Billy M. Minter.

M/G James R. Hildreth, from Cmdr., USAFTFWC, TAC, Nellis AFB, Nev., to Cmdr., 13th AF, PACAF, Clark AB, Philippines . . . **M/G Andrew P. Iosue,** from Cmdr., AFMTC, Lackland AFB, Tex., to DCS/M&P, Hq. USAF, Washington, D. C., replacing L/G Bennie L. Davis . . . **B/G (M/G selectee) Robert E. Kelley,** from Cmdr., Tac. Tng-Davis-Monthan, TAC, Davis-Monthan AFB, Ariz., to Cmdr., USAFTFWC, TAC, Nellis AFB, Nev., replacing M/G James R. Hildreth . . . **B/G James E. Light, Jr.,** from Asst. DCS/Log., Hq. SAC, Offutt AFB, Neb., to DCS/Log., Hq. SAC, Offutt AFB, Neb., replacing M/G Martin C. Fulcher . . . **Col. (B/G selectee) Rano E. Lueker,** from Cmdr., 2750th ABW, AFLC, Wright-Patterson AFB, Ohio, to V/C, 21st AF, MAC, McGuire AFB, N. J., replacing retiring B/G Erskine Wigley.

Col. (B/G selectee) William J. Mall, Jr., from Asst. DCS/Pers., Hq. MAC, Scott AFB, Ill., to DCS/Pers., Hq. MAC, Scott AFB, Ill., replacing B/G (M/G selectee) James I. Baginski . . . **B/G Keith D. McCartney,** from Dep. Dir., Pers. Plans, Hq. USAF, Washington, D. C., to Cmdr., USAF Recruiting Service, and DCS/Recruiting, Hq. ATC, Randolph AFB, Tex., replacing B/G (M/G selectee) William P. Acker . . . **M/G Billy M. Minter,** from Asst. DCS/L&E, Hq. USAF, Washington, D. C., to DCS/L&E, Hq. USAF, Washington, D. C., replacing retiring L/G John R. Kelly, Jr. . . . **Col. (B/G selectee) Joseph D. Moore,** from Cmdr., 27th TFW, TAC, Cannon AFB, N. M., to Dep. Cmdr., 5th ATAF, Vicenza, Italy, replacing B/G Harry Falls, Jr. . . . **M/G Harry A. Morris,** from Dir., Pers. Plans, DCS/M&P, Hq. USAF, Washington, D. C., to Asst. DCS/M&P, Hq. USAF, Washington, D. C., replacing retiring M/G Larry M. Killpack.

Col. (B/G selectee) Peter W. Odgers, from Cmdr., 4950th Test Wing, AFSC, Wright-Patterson AFB, Ohio, to DCS/Test & Eval., Hq. AFSC, Andrews AFB, Md. . . . **M/G Jerome F. O'Malley,** from Vice Dir., J-3, JCS, Washington, D. C., to Asst. DCS/OP&R, Hq. USAF, Washington, D. C. . . . **Col. (B/G selectee) Robert H. Reed,** from Cmdr., 354th TFW, TAC, Myrtle Beach AFB, S. C., to Cmdr., Tac. Tng-Davis-Monthan, TAC, Davis-Monthan AFB, Ariz., replacing B/G (M/G selectee) Robert E. Kelley . . . **M/G William R. Usher,** from Asst. for Readiness, Hq. USAFE, Ramstein AB, Germany, to Dir., Pers. Plans, DCS/M&P, Hq. USAF, Washington, D. C., replacing M/G Harry A. Morris. ■

AFA's 1979 National Convention and Aerospace Development Briefings and Displays

September 16-20 ★ Washington, D.C.

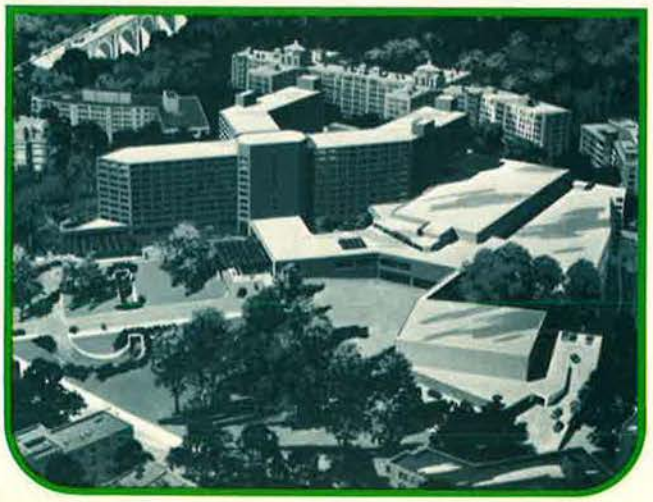
AFA's 1979 National Convention and Aerospace Development Briefings and Displays will be held at the Sheraton-Park Hotel, Washington, D.C., September 16-20. The old main building of the Sheraton-Park will be closed and demolished this summer. In September, we will be using the Motor Inn, Wardman Tower, and one of the three sections of the new Sheraton Washington Hotel (see photo), opening September 8th. Consequently, the number of rooms available in September will be below our normal demand. We have reserved a block of additional rooms at the nearby Shoreham-Americana Hotel.

All reservation requests for rooms and suites at the Sheraton-Park should be sent to: Reservations Office, Sheraton-Park Hotel, 2660 Woodley Rd., N.W., Washington, D.C. 20008. Requests for the Shoreham-Americana Hotel should be sent to: Reservations Office, Shoreham-Americana Hotel, 2500 Calvert St., N.W., Washington, D.C. 20008.

Due to the shortage of available rooms at the Sheraton-Park Hotel this September, we urge you to make your hotel reservations as soon as possible. To assure acceptance of your reservation request at either hotel, please refer to the AFA National Convention.

Arrivals after 6:00 PM require a one-night deposit or major credit card number. Guaranteed reservations must be cancelled by 4:00 PM on date of arrival to avoid being charged for that night.

Convention activities include AFA Business Sessions, luncheons honoring the Secretary of the Air Force and the Air Force Chief of Staff, Aerospace Education Foundation Luncheon, the annual Salute to Congress, AFA Delegates Reception and the Air Force Anniversary Reception, and Banquet. On Sunday evening, September 16th, we will again have a private opening of the National Air and Space Museum, which is featuring "Worlds of Tomorrow" in the Albert Einstein Spacearium, plus new exhibits. Registration information will be presented in forthcoming issues of Air Force.



Top, 1978 Convention ceremonies; middle, Gen. David C. Jones at exhibits; left, the new Sheraton Washington Hotel.

AFA News

By Don Steele, AFA AFFAIRS EDITOR

More than 100 members and guests celebrated the third anniversary of the J. C. Meyer Chapter at a banquet in New Richey, Fla., on February 22. Shown here, after the banquet, are, from left, Lee Terrell, Executive Vice President, Florida AFA; John F. Loosbrock, Publisher and Editor in Chief, AIR FORCE Magazine, the guest speaker; Ralph Reynolds, J. C. Meyer Chapter President; Maj. Gen. J. J. "Pat" O'Hara, USAF (Ret.); and Gabe Cazares, former mayor of Clearwater, Fla.

Lt. Gen. Richard C. Henry, Commander of the Space and Missile Systems Organizati (SAMSO) (right), receives a certificate of appreciation from Colorado State AFA Presi dent Stephen Brantley. General Henry was the guest speaker at an AFA luncheon meeting in Colorado Springs, Colo. His presentation covered SAMSO and its interaction with the Aerospace Defense Command, headquartered in Colorado Springs.

Gen. John W. Roberts, retiring Commander of the Air Training Command, was honored during a recent AFA Board of Directors' testimonial dinner in San Antonio, Tex. Recognition of General Roberts's distinguished accomplishments was made in the form of an engraved plaque commemorating the highlights of his Air Force career. AFA National President Gerald V. Hasler made the presentation.

COMING EVENTS

Washington State AFA Convention, Seattle, May 4-6 . . . **Connecticut State AFA Convention,** Howard Johnson's Red Coach Conference Center, Windsor Locks, May 5 . . . **Illinois State AFA Convention,** Chicago, May 11-12 . . . **Tennessee State AFA Convention,** Airport Hilton Hotel, Nashville, May 11-12 . . . **Utah State AFA Convention,** Snowbird, May 11-13 . . . **California State AFA Convention,** San Bernardino, May 18-20 . . . **New Jersey State AFA Convention,** Golden Eagle, Cape May, May 18-20 . . . **Alaska State AFA Convention,** May 19 . . . **Massachusetts State AFA Convention,** Hanscom AFB, May 19 . . . **Georgia State AFA Convention,** Calloway Gardens, May 25-27 . . . **AFA Golf and Tennis Tournaments,** The Broadmoor, Colorado Springs, Colo., May 25 . . . **Twentieth Annual Dinner Honoring the Air Force Academy's Outstanding Squadron,** The Broadmoor's International Center, Colorado Springs, Colo., May 26 . . . **Wisconsin State AFA Convention,** Milwaukee, June 6 . . . **Michigan State AFA Convention,** June 9 . . . **New Hampshire State AFA Convention,** Pease AFB, June 9-10 . . . **Oklahoma State AFA Convention,** William Center, Tulsa, June 15-17 . . . **Missouri State AFA Convention,** St. Louis, June 16 . . . **Indiana State AFA Convention,** Indianapolis, June 23 . . . **Colorado State AFA Convention,** Stapleton Plaza, Denver, June 29-30 . . . **Pennsylvania State AFA Convention,** Viking Motor Inn, Pittsburgh, June 29-30 . . . **Texas State AFA Convention,** St. Anthony Hotel, San Antonio, June 29-30 . . . **Virginia State AFA Convention,** Arlington, June 30 . . . **New York State AFA Convention,** Dutch Inn, Islip, Long Island, July 13-15 . . . **AFA's 33d Annual National Convention,** Sheraton-Park Hotel, Washington, D. C., September 16-19 . . . **AFA's Aerospace Development Briefings and Displays,** Sheraton-Park Hotel, Washington, D. C., September 18-20.

chapter and state photo gallery

he Lancaster, Calif., Chamber of Commerce and Antelope Valley Chapter of AFA recently honored Edwards AFB ersonnel at a March 3 joint honors and awards banquet. Vincent N. Capasso, Jr., Chapter President (left), and Col. Villiam B. Morris, Commander of the Air Force Rocket Propulsion Laboratory (AFRPL) (right), are shown with four FRPL personnel who received awards at the banquet. Honorees are, from left, 1st Lt. Kenneth A. Bell, SSgt. Sebas-an J. Pellerito, SrA Larry R. Patterson, and Hugh B. Jamison. The four were honored as AFRPL's Outstanding Offi-er, Career NCO, Airman, and Civilian Employee, respectively.

Col. James St. Clair (left) receives the AFA Certificate of Merit from Spirit of St. Louis Chapter President Stu Popp, during a retirement party held in the Colonel's honor. Colonel St. Clair was cited for his great assistance and advice rendered the Spirit of St. Louis Chapter during his tenure as Director of the Defense Mapping Agency Aerospace Center at St. Louis.

'ive C. Felty receives the AFA Presidential Citation ɔm Air Force Association Executive Director James Straubel during a retirement luncheon held in her ıor in Washington, D. C. Miss Felty was cited for r efficient and dedicated cooperation in support of FA activities while serving in the Secretary of the Air rce Office of Information from July 23, 1953, to bruary 2, 1979.

AFA's Arc Light Chapter, teaming with the 54th Weather Reconnaissance Squadron at Andersen AFB, Guam, and other service groups, businesses, and citizens of Guam, once again brought Christmas to the remote islands of Micronesia through "Christmas Drop '78." The program has been in operation since Christmas 1952. This year's Christmas Drop resulted in more than 50,000 pounds of goods being delivered to some fifty Micronesian islands and communities, and included a visit by Santa to the island of Koror.

This Is AFA

The Air Force Association is an independent, nonprofit, aerospace organization serving no personal, political, or commercial interests; established January 26, 1946; incorporated February 4, 1946.

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

OBJECTIVES

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 fr nations, based on respect for the principle of freedom and equ rights for all mankind.

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Albany, N.Y.

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Marathon, Fla.

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San Mateo, Calif.

Edward A. Stearn
San Bernardino, Calif.

Harold C. Stuart
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Zack Taylor
Lompoc, Calif.

James M. Trail
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Newport News, Va.

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James H. Straubel
(ex officio)
Executive Director
Air Force Association
Washington, D.C.

CMSgt. Robert Carter
(ex officio)
Chairman,
Enlisted Council
Lackland AFB, Tex.

Capt. Craig Lindberg
(ex officio)
Chairman, JOAC
USAF Academy, Colo.

VICE PRESIDENTS

Information regarding AFA activity within a particular state may be obtained from the Vice President of the Region in which the state is located.

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Amos L. Chalif
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Chatham, N.J. 07928
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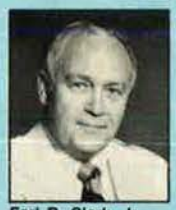
Northeast Region
New York, New Jersey, Pennsylvania



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Montana, Idaho, Washington, Oregon, Alaska

AFA News photo gallery

For the third consecutive year, Pittsburgh Steelers offensive guard Sam Davis participated in No Greater Love Day at the Veterans Hospital in Pittsburgh. Shown escorting the guest of honor are, from left, Pat Logan, AFA's Steel Valley Chapter President; Mr. Davis; Judge Robert Grigsby of the Allegheny County Common Pleas Court; and Val Birosciak, Chapter First Vice President.

Members of AFA's Spudland Chapter recently presented a third consecutive membership award to the 42d Bomb Wing at Loring AFB, Me. The award signifies a successful membership drive in 1978, and was presented at a banquet held to kick off this year's drive. Participants in the award presentation were, from left, Rudy Chaisson, from Canada; William Anderson, Spudland Chapter Vice President; Col. Marion F. Tidwell, 42d Bomb Wing Commander; Alban Cyr, Chapter President; and Lt. Col. Robert Dempsey, who served as the Loring project officer for the 1979 drive.

E. Grundstrom, President of AFA's Lake Superior Chapter, presents a gift from the Chapter to Maj. Gen. Jerome O'Malley during a recent Chapter dinner. General O'Malley, vice director for operations of the Office of the Joint Chiefs of Staff, was featured speaker for the meeting. Also pictured are Col. (Brig. Gen. selectee) Robert D. Beckel, 47th Bombardment Wing Commander (left) at K. I. Sawyer AFB, Mich., and Brig. Gen. William E. Masterson, 40th Air Division Commander at Wurtsmith AFB, Mich.

NEW FOR MEMBERS UNDER 30 — MAJOR BENEFIT INCREASES!

Now . . . The Sixth Major Benefit Increase

$85,000 STANDARD PLA

Other Important Benefits

COVERAGE YOU CAN KEEP. Provided you apply for coverage under age 60 (see "ELIGIBILITY") your insurance may be retained at the same low group rates to age 75.

FULL TIME, WORLD WIDE PROTECTION. The policy contains no war clause, hazardous duty restriction, combat zone waiting period or geographical limitation.

DISABILITY WAIVER OF PREMIUM. If you become totally disabled at any time prior to age 60 for at least a 9-month period, your coverage will be continued in force without further payment of premiums as long as you remain disabled.

FULL CHOICE OF SETTLEMENT OPTIONS. All standard forms of settlement options, as well as special options agreed to by the insured and United of Omaha, are available to insured members.

CONVENIENT PAYMENT PLANS. Premium payments may be made by monthly government allotment (payable to Air Force Association), or direct to AFA in quarterly, annual or semi-annual installments.

DIVIDEND POLICY. AFA's primary policy is to provide maximum coverage at the lowest possible cost. Consistent with this policy, AFA has provided year-end dividends (16.67% for 1977) to insured members in thirteen of the past sixteen years, and has now increased basic coverage on six separate occassions.

Additional Information

Effective Date of Your Coverage. All certificates are dated and take effect on the last day of the month in which your application for coverage is approved, and coverage runs concurrently with AFA membership. AFA Military Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustees of the Air Force Association Group Insurance Trust.

EXCEPTIONS: There are a few logical exceptions to this coverage. They are:

Group Life Insurance: Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane will not be effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

Eligibility

All active duty personnel of the Armed Forces of the United States and members of the Ready Reserve* and National Guard* (under age 60), Armed Forces Academy cadets*, and college or university ROTC cadets* are eligible to apply for this coverage provided they are now, or become, members of the Air Force Association.

*Because of restrictions on the issuance of group insurance coverage, applications for coverage under the group program cannot be accepted from cadets or Reserve or Guard personnel residing in Florida, New York, Ohio or Texas. Members in these states may request special application forms from AFA for individual policies which provide coverage quite similar to the group program.

Please Retain This Medical Bureau Prenotification For Your Records

Information regarding your insurability will be treated as confidential. United Benefit Life Insurance Company may, however, make a brief report thereon to the Medical Information Bureau, a nonprofit membership organization of life insurance companies, which operates an information exchange on behalf of its members. If you apply to another bureau member company for life or health insurance coverage, or a claim for benefits is submitted to such a company, the Bureau, upon request, will supply such company with the information in its file.

Upon receipt of a request from you, the Bureau will arrange disclosure of any information it may have in your file. (Medical information will be disclosed only to your attending physician.) If you question the accuracy of information in the Bureau's file, you may contact the Bureau and seek a correction in accordance with the procedures set forth in the federal Fair Credit Reporting Act. The address of the Bureau's information office is P.O. Box 105, Essex Station, Boston, Mass. 02112. Phone (617) 426-3660.

United Benefit Life Insurance Company may also release information in its file to other life insurance companies to whom you may apply for life or health insurance, or to whom a claim for benefits may be submitted.

CURRENT BENEFIT TABLES

AFA STANDARD PLAN

PREMIUM: $10 per month

Insured's Attained Age	Basic Benefit*	Extra Accidental Death Benefit*	Total Benefit
20-29	$85,000	$12,500	$97,500
30-34	65,000	12,500	77,500
35-39	50,000	12,500	62,500
40-44	35,000	12,500	47,500
45-49	20,000	12,500	32,500
50-54	12,500	12,500	25,000
55-59	10,000	12,500	22,500
60-64	7,500	12,500	20,000
65-69	4,000	12,500	16,500
70-74	2,500	12,500	15,000

Aviation Death Benefit:*

Non-war related	$25,000
War related	$15,000

AFA HIGH OPTION PLAN

PREMIUM: $15 per month

Insured's Attained Age	Basic Benefit*	Extra Accidental Death Benefit*	Total Benefit
20-29	$127,500	$12,500	$140,000
30-34	97,500	12,500	110,000
35-39	75,000	12,500	87,500
40-44	52,500	12,500	65,000
45-49	30,000	12,500	42,500
50-54	18,750	12,500	31,250
55-59	15,000	12,500	27,500
60-64	11,250	12,500	23,750
65-69	6,000	12,500	18,500
70-74	3,750	12,500	16,250

Aviation Death Benefit:*

Non-war related	$37,500
War related	$22,500

*The Extra Accidental Death Benefit is payable in the event an accidental death occurs within 13 weeks of the accident, except as noted under **Aviation Death Benefit** (below).

***AVIATION DEATH BENEFIT:** The coverage provided under the Aviation Death Benefit is paid for death which is caused by an aviation accident in which the insured is serving as pilot or crew member of the aircraft involved. Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage. Furthermore the non-war related benefit will be paid in all cases where the death does not result from war or an act of war, whether declared or undeclared.

OPTIONAL FAMILY COVERAGE

(may be added to either Standard or High Option Plan)
PREMIUM: $2.50 per month

Insured's Attained Age	Life Insurance Coverage for Spouse	Life Insurance Coverage for each Child*
20-39	$10,000	$2,000
40-44	7,500	2,000
45-49	5,000	2,000
50-54	4,000	2,000
55-59	3,000	2,000
60-64	2,500	2,000
65-69	1,500	2,000
70-74	750	2,000

*Between the ages of six months and 21 years, each child is provided $2,000 coverage. Children under 6 months are provided with $250 coverage once they are 15 days old and discharged from hospital.

Association Military Group life Insurance

$27,500 HIGH OPTION PLAN

APPLICATION FOR AFA MILITARY GROUP LIFE INSURANCE

United of Omaha

Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office Omaha Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

Date of birth Mo. Day Yr.	Height Weight	Social Security Number

Please indicate category of eligibility and branch of service.

- ☐ Extended Active Duty
- ☐ Ready Reserve or National Guard
- ☐ Air Force Academy
- ☐ ROTC Cadet _____ Name of college or university
- ☐ Air Force
- ☐ Other _____ (Branch of service)
- ☐ _____ Academy

Name and relationship of primary beneficiary

Name and relationship of contingent beneficiary

This insurance is available only to AFA members

- ☐ I enclose $13 for annual AFA membership dues (includes subscription ($9) to AIR FORCE Magazine).
- ☐ I am an AFA member.

Please indicate below the Mode of Payment and the Plan you elect.

HIGH OPTION PLAN		Mode of Payment	STANDARD PLAN	
Members Only	Members and Dependents		Members Only	Members and Dependents
☐ $ 15.00	☐ $ 17.50	**Monthly** government allotment. I enclose 2 months' premium to cover the period necessary for my allotment (payable to Air Force Association) to be established.	☐ $ 10.00	☐ $ 12.50
☐ $ 45.00	☐ $ 52.50	**Quarterly.** I enclose amount checked.	☐ $ 30.00	☐ $ 37.50
☐ $ 90.00	☐ $105.00	**Semiannually.** I enclose amount checked.	☐ $ 60.00	☐ $ 75.00
☐ $180.00	☐ $210.00	**Annually.** I enclose amount checked.	☐ $120.00	☐ $150.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth Mo Day Yr	Height	Weight

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, asylum or similar institution in the past 5 years? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes ☐ No ☐

IF YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National Bank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid.

I hereby authorize any licensed physician, medical practitioner, hospital, clinic or other medical or medically related facility, insurance company, the Medical Information Bureau or other organization, institution or person, that has any records or knowledge of me or my health, to give to the United Benefit Life Insurance Company any such information. A photographic copy of this authorization shall be as valid as the original. I hereby acknowledge that I have a copy of the Medical Information Bureau's prenotification information.

Date _____ 19 ___ _____
Member's Signature

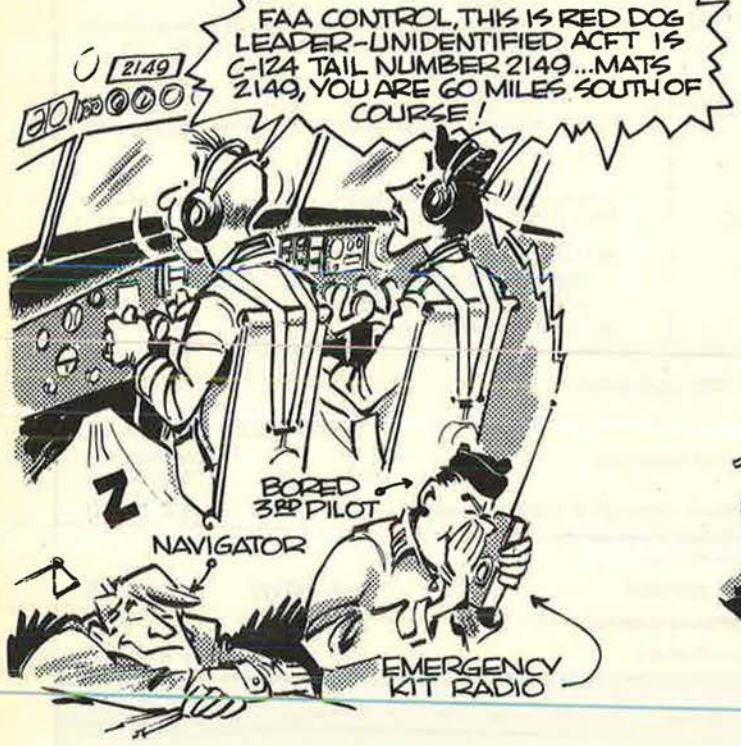
5/79
Form 3676GL App

Application must be accompanied by check or money order. Send remittance to: Insurance Division, AFA, 1750 Pennsylvania Avenue, NW, Washington, D.C. 20006

Bob Stevens'

"There I was..."

WE JOIN THE CREW OF A C-124 ("OLD SHAKY") NEARING THE CONUS AFTER A LONG OVER-WATER HAUL-



ONE OF THE THINGS THAT COULD NUMB AN OLD MATS (MILITARY AIR TRANSPORT) TROOP WITH TERROR WAS TO "GET VIOLATED" BY PENETRATING THE ADIZ (AIR DEFENSE IDENTIFICATION ZONE) AT THE WRONG SPOT. FIGHTERS POLICED THIS LINE and WOULD TURN YOU IN AT THE DROP OF A NAUTICAL MILE-

AS THE NAVIGATOR CHURNS AROUND UNDER THE SIGN OF THE TWINS (PANIC & CONFUSION) THE '24 RACKS AROUND TO A NEW COURSE-

LATER-

CONTRIBUTOR'S NAME LOST IN MY NEAT FILES-SORRY-

Bob Stevens

Who has kept this special mission system flying high for 10 years?

This complex airborne special mission system has performed successfully for the past ten years for the Federal Republic of Germany. The system's success is due primarily to the working relationship and atmosphere of cooperation established between the customer and E-Systems. Working closely with the user, our Greenville Division designed, fabricated, installed and tested the entire system. The division performed the major airframe modifications to the fleet of Breguet 1150 *Atlantic* (M) aircraft, used to carry the airborne components of the system.

The complete system also includes two ground-based data reduction centers. Since the system began flying at the beginning of this decade, E-Systems has been providing total systems support, including depot operation, field service teams, periodic systems update, engineering studies, and training. For more information about our electronic systems, aircraft modification, systems design and integration, and complete systems support capabilities, contact: E-Systems, Inc., P.O. Box 226030, Dallas, Texas 75266.

E-Systems is the answer.

E-SYSTEMS

Remember when he was President?

If you do, then you probably remember when the F-106 was the "hottest new interceptor" in the U.S. defense arsenal. The aircraft for Air Defense. Well, much has changed since then, but one thing hasn't —we still have to depend on the F-106 for continental defense. But can we?

Right now we are trying to protect the United States of the 1980's with aircraft of the 1950's. Quite frankly, they are not the best choice. The aircraft are old, slower than newer models, radar-limited, armament-limited and expensive to maintain. They haven't the range required for adequate protection against the foreign bomber threat.

Then what's the answer to strategic defense? The McDonnell Douglas F-15 Eagle. America's air superiority ace. It can outfly and outfight anything else in the air. The F-15 is an all-weather aircraft ideally suited to strategic defense.

Advanced radar provides superior tracking and coverage of huge blocks of airspace. Versatile armament gives pilots the all-weather capability they need to get the job done. The F-15 Eagle. It's the best interceptor in the sky. It's in the inventory today doing the important tactical air superiority job.

Now the Air Force needs more F-15s for the vital task of strategic defense. And it needs them soon.

logical choice

The F-15 Eagle

MCDONNELL DOUGLAS