MAY 1982 / $3

AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

AIR FORCE ALMANAC

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1982

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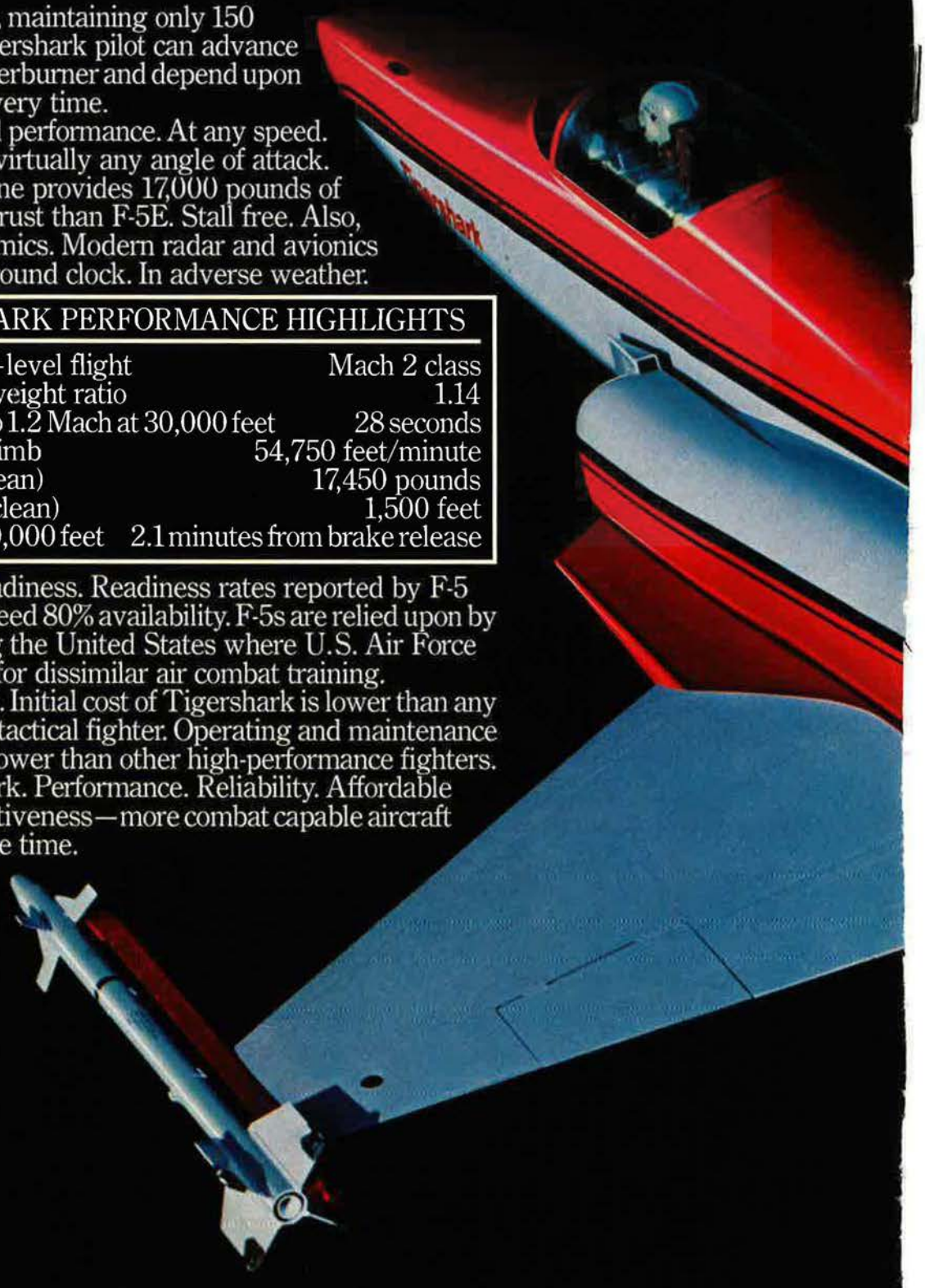

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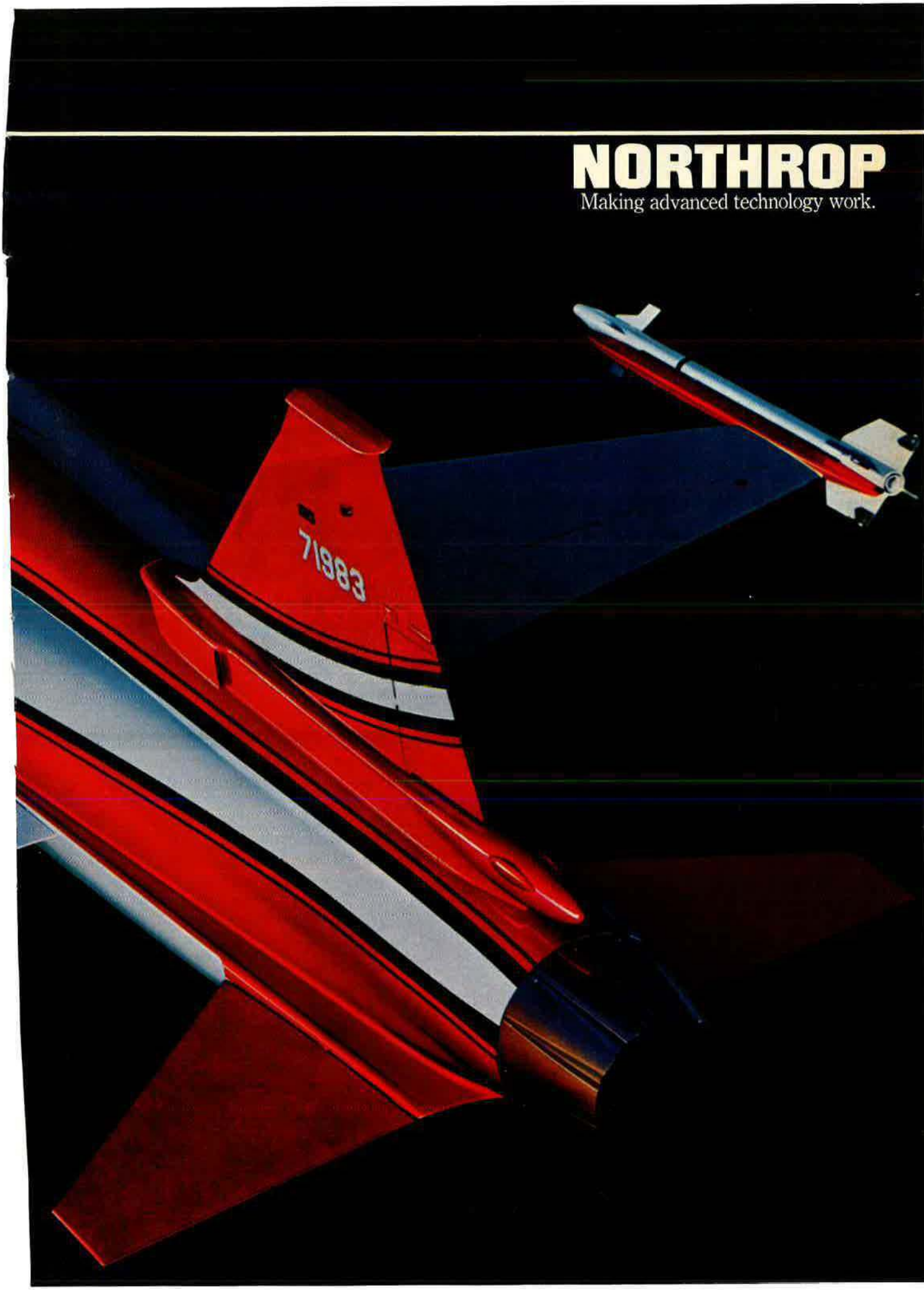

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PUBLISHED BY THE AIR FORCE ASSOCIATION

AIR FORCE Magazine (ISSN 0730-6784) is published monthly by the Air Force Association, Suite 400, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006. **Phone:** (202) 637-3300. Second-class postage paid at Washington, D.C., and additional mailing offices. **Membership Rate:** $15 per year (includes $9 for one-year subscription); $36 for three-year membership (includes $24 for subscription). **Life Membership:** $200. **Subscription rate:** $15 per year; $25 per year additional for postage to foreign addresses (except Canada and Mexico, which are $8 per year additional). Regular issues $1 each. Special issues (Soviet Aerospace Almanac, USAF Almanac issue, Anniversary issue, and "Military Balance" issue) $3 each. **Change of address** requires four weeks' notice. Please include mailing label. Publisher assumes no responsibility for unsolicited material.

BPA Circulation audited by Business Publication Audit

This Month

MAY 1982 • VOLUME 65, NUMBER 5

ANNUAL AIR FORCE ALMANAC ISSUE

Reports from the Major Commands

Reports from the SOAs, the DRUs, and Air National Guard

An Air Force Almanac

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.

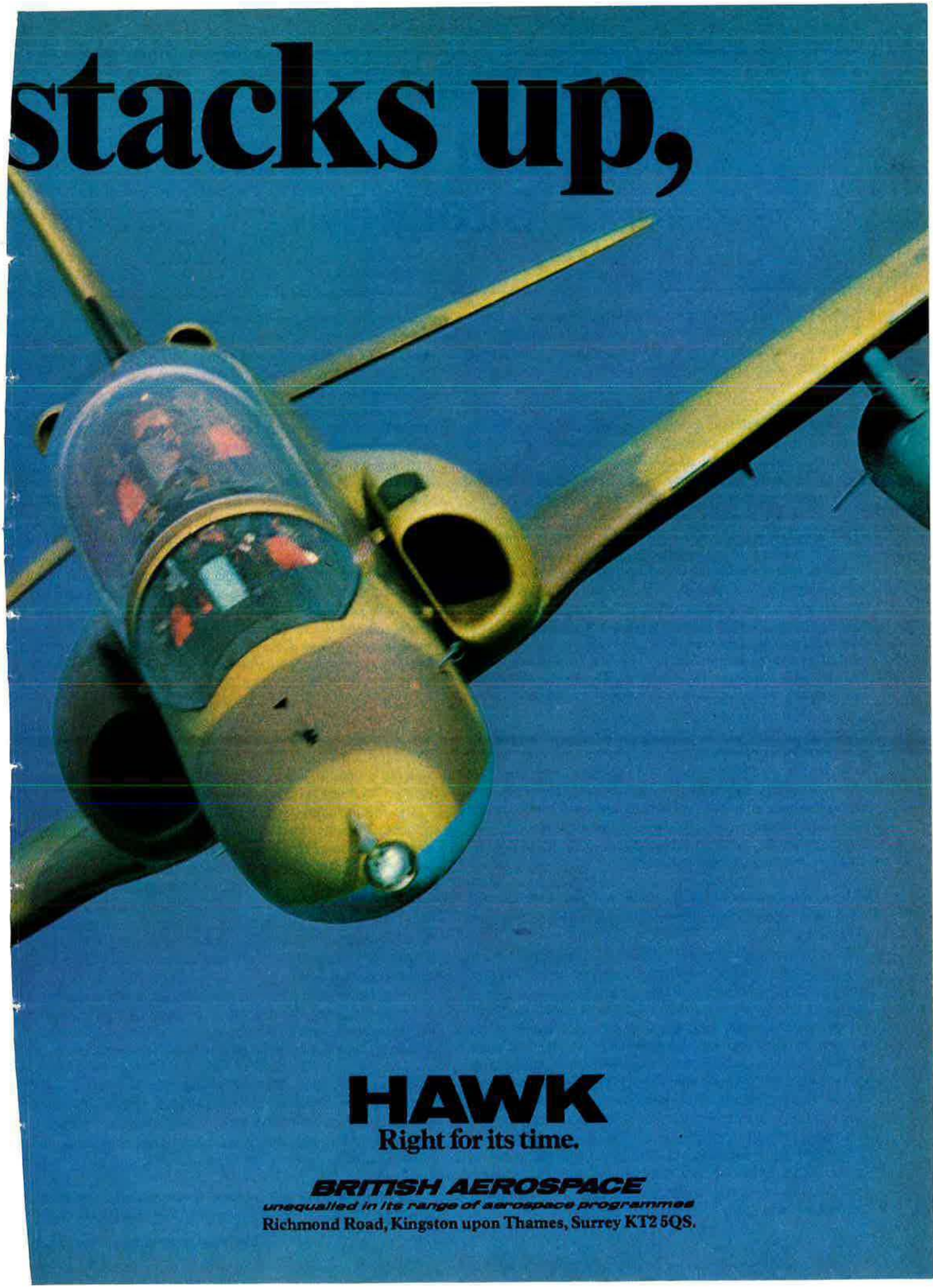
Departments

How Hawk more or less, against the competition.

PARAMETER*	THE COMPETITION	THE HAWK	THE MARGIN
Lo-Lo sortie radius, km.	430	430	equal
Hi-Lo-Hi sortie radius, km.	775	1024	32% more
High level sortie max endurance, hrs.	3½	4¼	21% more
Ferry sortie, km.	2900	3440	19% more
Demonstrated maximum Mach No.	0·96	1·2	25% more
Clean aircraft static thrust to weight ratio.	0·54	0·485	10% less
Best steady turn load factor 'g' at sea level.	6·0	6·1	1% more
Corresponding turn rate, deg/sec.	14	16	14% more
Demonstrated weapon load, kg.	2500	3080	23% more
"On aircraft" maintenance, mmh/fh.	7·0	5·6	20% less
In Africa, SE Asia and Europe, Hawk has been chosen every time it has been evaluated in open competition.			

*Manufacturers' published data

stacks up,



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AN EDITORIAL

First, Get the Facts Straight

KATHARINE Graham of the Washington Post Co. is Chairman and President of the American Newspaper Publishers Association (ANPA). In ANPA's publication, *presstime*, April 1982, she commented on "newspapers' credibility gap." She said, "There also continue to be too many lapses in basic journalism standards, ranging from rare but highly publicized cases of outright fiction, to the occasional conflict of interest, to the many small errors that creep into stories written under deadline pressure each day. All take a cumulative toll on press credibility." She described the most valuable asset of newspapers as "people's belief in what they read in newspapers," which requires newspapers to deal "directly and openly" with questions about newspaper ethics or practices, to retain reader trust and support.

Magazines strive for the same standards of accuracy and ethics urged by Mrs. Graham. It hurts when a Focke-Wulf 190 is erroneously identified as an FW-109. Though we work hard to be accurate, we sometimes fall short, and are glad to run corrections when readers tell us of errors.

This topic is especially pertinent to a recent phenomenon called "military reform." The reform impetus comes in different forms from different people. Hon. G. William Whitehurst (D-Va.), a member of the House Armed Services Committee, spoke for congressional interest in reform: "We are worried that our military can no longer win, and we have doubts as to whether the American people will continue to support high and increasing budgets for a nonwinning military." These are heavy charges, which Mr. Whitehurst and others in Congress believe can be reversed, "only if some fundamental changes are made in how the defenders of our country utilize people, strategy and tactics, and hardware."

AFA members and this magazine's staff can agree that our military forces must be able to win. As taxpayers, we also doubt that fellow-citizens will long support nonwinning military forces.

The fifty-four members of House and Senate who call themselves reformists are from both parties, range across the map geographically and ideologically, and in age and service in Congress. They are not a single-issue, monolithic group; rather, they are people who share the concerns voiced by Mr. Whitehurst. They really have five areas of interest with some sharing all five and others, only one or two: defense decision-makers have not learned from history; they are overly preoccupied with technology, while reformers want lower-cost, simpler weapon systems; economic realities will curtail military spending, forcing lower-cost weapons alternatives; the All-Volunteer Force's success is questionable, and some form of conscription is needed; and the national security planning and decision-making apparatus is in disarray and needs to be reformulated.

Everyone dealing with national security, including AFA members with their community and national voice, must be aware of these concerns, and able to address them in prudent and responsible fashion. It's imperative that everyone approach these issues with facts, not emotions, to ensure that reform discussions will actually enhance national security. There is common ground between the reformers and our current leaders. The reformists say that more realistic training is needed; the Air Force has worked that way for a long time (examples: TAC's Red Flag, and SAC's continued realistic exercises). Reformists call for better unit cohesion; Army Chief of Staff Gen. E. C. (Shy) Meyer has so believed for decades, and is doing something about it.

The positive process goes awry, however, when someone advocating reform and a newspaper or magazine misuses or abuses the facts. A current example of playing loose with the facts was provided by the Chicago *Tribune*'s account of defense analyst Pierre Sprey's briefing called, "The case for more effective, less expensive weapons systems." The *Tribune* reported on one presentation of the briefing. In a March 15 article, the *Tribune* called Sprey "a chief designer of the A-10 tactical attack plane as well as the F-16 fighter jet, and a former assistant defense secretary." In fact, he was never an assistant defense secretary, although he did work as a special assistant in the office of an assistant defense secretary; he was not a chief designer of the A-10 and F-16, although he worked on those programs while at the Pentagon.

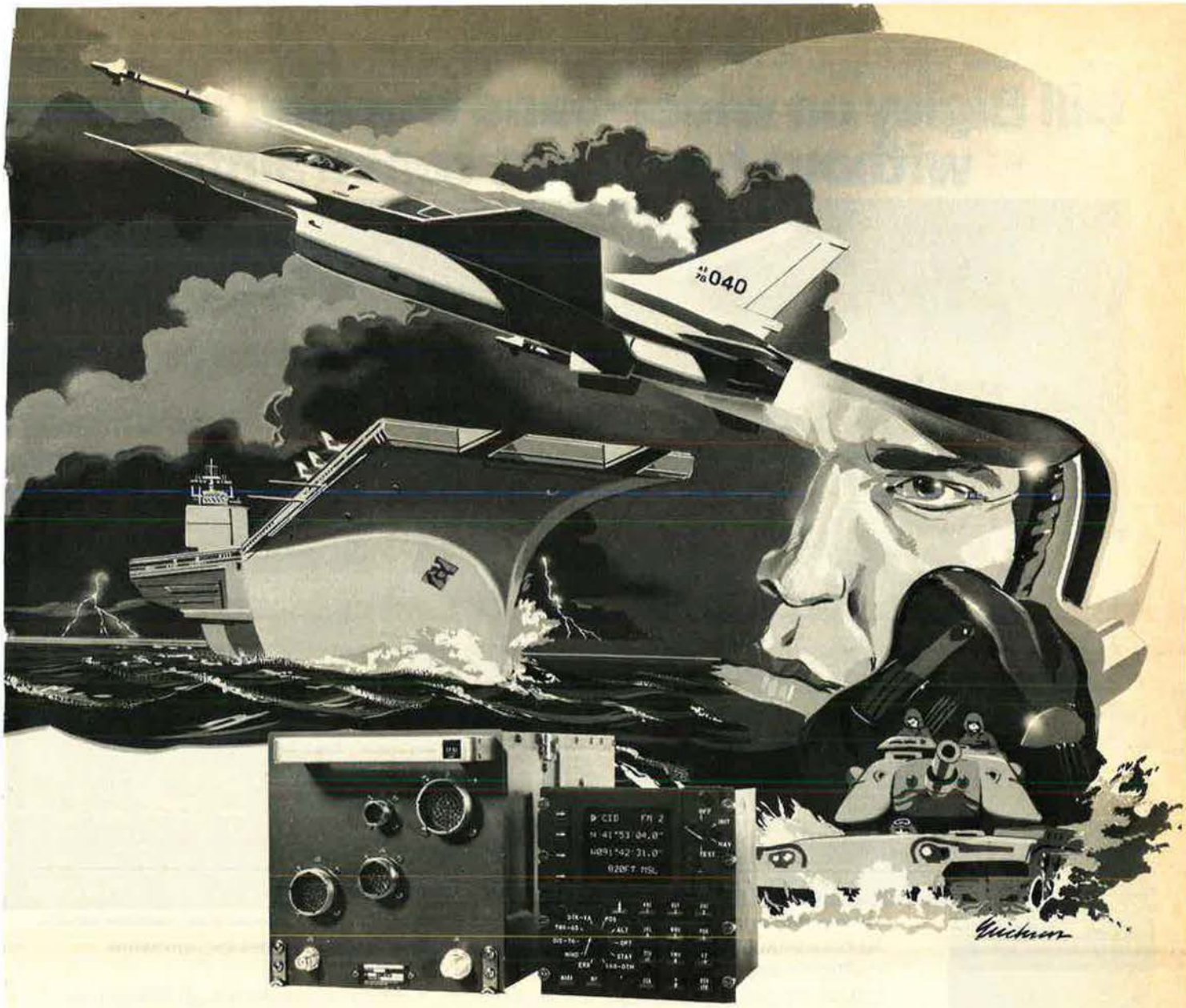
The *Tribune* said, "In 1951 the US *produced* [italics added] about 6,500 fighter planes vs. 300 a year now." In fact, Sprey said the US *procured* about 6,000 fighters in 1951. Not only are the numbers different; the terms "produced" and "procured" have different meanings. The article said Sprey "was breaking years of silence" to give the briefing. In fact, he has been presenting his analyses publicly for at least ten years. Whether one agrees with Mr. Sprey's analyses or not, this slipshod representation of his briefing prevents a bona fide debate on its merits.

These rather wide discrepancies may seem momentarily to reinforce Mr. Sprey's case. But they do not help. What's needed are facts, agreement on the use of precise terms, and straight reporting. Only then can the debate be joined on the merits of reform.

The lesson is clear: "Reform" will be much with us this year and in the years to come. AFA, the Air Force, and senators and congressmen on both sides of the reform issue can find common ground for analyzing valid defense needs against national requirements. But positive results will come only if facts are used.

These issues are too serious to be clouded by inaccuracies.

—F. CLIFTON BERRY, JR., EDITOR IN CHIEF



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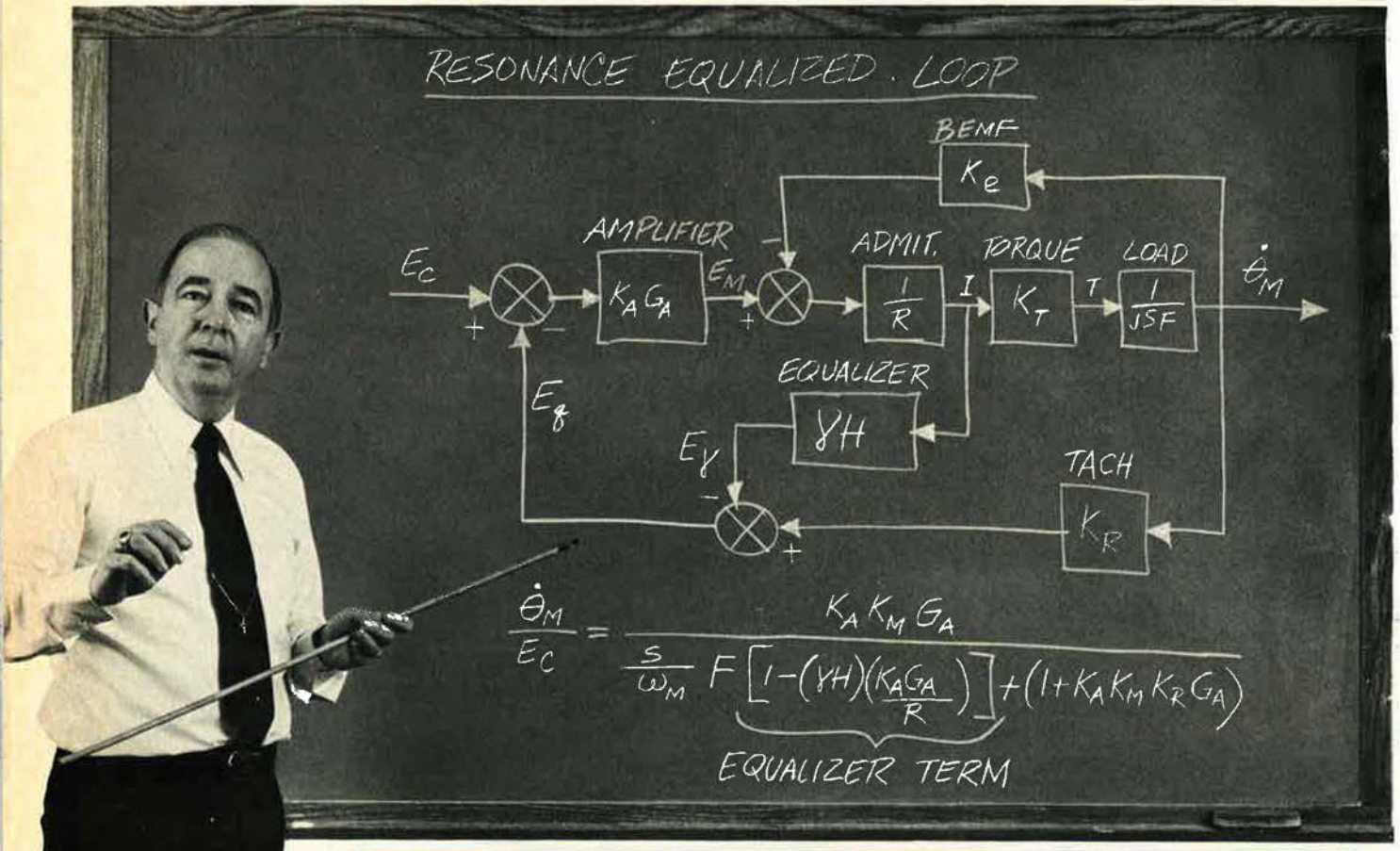

To counteract the high-performance, multiple-target threat of today and the future, we need faster, more accurate, wider-bandwidth feedback control systems . . . microprocessor-based systems with the advanced capabilities vital for hierarchical control of large-scale defense systems.

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"Those two milestones have let us effectively apply the techniques needed for building large-scale control systems that can counteract advanced multiple-target threats."

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AIRMAIL

Soviet Aerospace Almanac

The Eighth Annual Soviet Almanac issue is superb! It shows clearly why we need the air forces requested in the President's FY '83 budget request. The March 1982 issue is a must for members of Congress as they consider the Air Force appropriation request.

In the "Gallery of Soviet Aerospace Weapons" *(p. 95),* I'm gratified to note that the Soviets did not produce the Hind B helicopter in quantity. This should spare a number of A-10 pilots the ignominy of being shot from "B Hind."

Maj. Frederick K. Marlow, USAF
Alexandria, Va.

The articles appearing in your March 1982 issue about the Soviet military leadership have some lessons for the American defense establishment.

Many of the Soviet leaders are well over seventy years of age and have had more than forty years of military experience. In our quest for change and movement, we have many experienced military leaders retired in Florida, Texas, and California who should still be contributing their knowledge and expertise to the defense establishment.

It seems to me that we have many senior military leaders we should still be calling on for recommendations, advice, and counsel. This applies to many skilled senior-grade military experts who have retired or have left the service.

I trust that someone will make an effort to enlist the minds that are available to help our defense effort.

Dr. James S. Winston
Pennington, N. J.

I would like to thank you for the magnificent artwork featured on the cover of your March 1982 issue. William S. Phillips has even outdone the masterpiece he created for last year's March issue. I think the two paintings are awe-inspiring, especially since they give us a close-up, beautiful color view of the threat hardware that we can only glimpse in black-and-white propaganda photos.

These covers, coupled with the super information found in the Soviet Aerospace Almanac issues, make them copies of AIR FORCE Magazine to be treasured as references. They truly merit the cost of a year's membership. . . .

I have always appreciated the attention that AFA has paid to the Soviet armed forces, keeping the Air Force community informed on what the competition is doing. In this area we must be most diligent; ignorance of the enemy is a sure way to court disaster.

Keep up the outstanding work!

Capt. Gary C. Morgan, USAF
Nellis AFB, Nev.

Thunderbirds Alternative?

In response to Gen. T. R. Milton's commentary regarding the USAF Thunderbirds in the March issue *("The Men With the Right Stuff," p. 123),* I would like to present a different point of view.

No reasonably intelligent person would argue that the Thunderbirds should be disbanded because of the recent accident in Nevada. The issue now at hand is not whether the Air Force should have an aerial demonstration team—it is a question of format. Should we continue to fulfill the Thunderbird mission through group precision aerobatics, or opt for a safer method?

I, and many of the people I have spoken to, believe that the goals of the Thunderbird program could be achieved through two-man demonstrations of aerial combat maneuvers utilizing F-15 and F-16 aircraft. Such a program would allow the development of several different teams that could tour the United States simultaneously, thereby increasing exposure to the public while reducing the risk of fatal mishaps. As far as the quality of the show is concerned, no one who has seen the type of demonstration that I am suggesting could argue that it would be less impressive than the current program.

In my opinion, such a change would be well received by the public, and although initially expensive, would be well worth the cost. I sincerely hope that those whose decision it is will consider this and any other options before continuing with the current program.

Denis J. Grenier
Midwest City, Okla.

The Lockheed Rocket

On p. 44 of the February '82 issue, the cutline accompanying the photo of the T-33 states that it was "used as a basic trainer from 1950–65." I was in UPT Class 66-F at Craig AFB, Ala., and in March 1966 we were still flying the venerable "Lockheed Rocket."

Granted, we were the only training wing flying the old girl, but fly her we did. We felt we had two big advantages over the "go fast" boys in the T-38s: longer range and an engine virtually immune to ice. And if you could fly instruments in a T-33, you could fly instruments in anything.

Maj. Donald M. Bogue, USAF
APO New York 09194

Who's Who?

I've always had the urge to break a hoax that surfaced during the Great Struggle. Now you've given me the chance.

In your February 1982 issue on p. 74, you have a picture of alleged cadets listening to an instructor telling them all about it.

The question that occurred to me was why would a bunch of real aviators in complete flight gear (including the two-ton parachutes) gather around a half-assembled airplane? If they were really real, they would have known that that airplane wouldn't be ready for flight during their lifetimes. Besides, it only has two seats.

As I pondered this deep question, the dawn broke. This gang didn't have a real flyer in the group. Just a few weeks prior, in fact, they were mostly raw civilians scattered all over the land. I know, because I recognized most of them.

They are members of Class 43-A who arrived at Kelly Field in April 1942, where they were classified. A few days later, the system (even with-

out computers) put the Ns to Zs in 42-K, and the As to Ms in 43-A, with a scattering in 42-X—don't ask me why.

The 43-A lads, with a month on their hands before starting pre-flight, were trucked to Randolph Field, put in tents, and commenced their education in KP, sanitary lectures—and also masqueraded as pilots.

I wish to expose Roland French, now a retired Eastern Airlines captain, in the front cockpit; L. D. Hasler behind him; Bob Culbertson in the rear cockpit; P. H. Grove behind him; standing behind the instructor is R. C. Coleman (not saying anything for a change); and, peeking into the right side of the picture, J. W. Goodwin. I can't figure out the gent on the wing

L. F. Burke
Newport Beach, Calif.

• *In the April 1982 issue we published a letter from Lt. Col. William F. Wilkerson, USAF (Ret.)* (p. 10), *in which Colonel Wilkerson also identified the people in the photo in question—in complete disagreement with Mr. Burke's description of the photo (Mr. Burke's letter arrived some time after Colonel Wilkerson's letter). In a hastily convened editorial staff meeting to debate the conflicting claims of our two correspondents, we voted resolutely and without vacillation to declare ourselves neutral on this issue. We do, however, invite Colonel Wilkerson, Mr. Burke, or any other readers to write us if they think they can clear up the question of "who's who."*—THE EDITORS

Promotion Policy

Contrary to Sergeant South *("Airmail," p. 9, February '82 issue),* I strongly disagree with Major Burnett *("Airmail," p. 5, November '81 issue).* Major Burnett advocated slowing the average rate of officer promotions and doing away with mandatory retirement. Sergeant South then applauded his letter and recommended it as "required reading."

In my opinion, slowing officer promotions would do exactly the opposite of what the Air Force needs. If anything, the current promotion timing is too slow—especially to major. Eight years is too long to spend as a captain; we should consider ways to decrease the promotion point, not increase it. I'm convinced that one of the reasons we lost a lot of good captains in 1978–80 was the long wait to major.

As far as mandatory retirement is concerned, my understanding is that these provisions set limits on how long officers can serve without further advancement. They have gradually come about through lessons learned in previous conflicts. It seems to me that without these provisions, the upper grades could become saturated with officers who had reached their "levels of incompetence," thereby stagnating the promotion prospects for younger officers. On seeing this, the best of these young officers would get out. In short, long before the Peter Principle got its name, the military found a way to cope with it.

I also disagree with the assumption that increasing technology has resulted in a shift of requirements from youth to experience and lengthy service. We need *both.* Today's youth is tomorrow's experience. This is probably even more important in technical fields where new officers provide a constant input of the latest in technological know-how from the colleges.

The world—and the Air Force—doesn't hold still. We need people like Major Burnett and Sergeant South to train us and give us the benefit of their experience—and then step aside for those who are coming up. In time, we too will have to train our replacements and then step aside ourselves.

Our personnel system isn't perfect by a long shot, but, overall, I think it's one of the best around.

Capt. Timothy T. Timmons, USAF
Burke, Va.

• *Captain Timmons served as the Chairman of the Executive Committee of AFA's 1981 Junior Officer Advisory Council.*—THE EDITORS

In a November '81 "Airmail" letter *(p. 5),* I suggested that "Promotion policies should be geared to emphasize career progression in terms of recommended training and broadening experiences rather than promotion potential." I'd like to suggest a management initiative that could defuse the performance rating issue and reduce the management overhead for career progression decisions.

The basic objective of performance evaluation is to provide information necessary to guide personnel actions that will yield improvements in force quality. The possible actions resulting from performance evaluations could be classified: (1) discharge, (2) cross-train, (3) retain in the same "job" pending additional experience, (4) train for increased responsibility, and (5) move immediately to a more responsible job.

Basically, effectiveness ratings are recommendations by supervisors. Completion of present rating forms, plus subsequent processing and review cycles, require many hours annually for each individual. The opportunity costs are high. Supervisory time could be spent more effectively in providing individual counseling and training necessary to improved performance.

What could be wrong with a performance evaluation system that asked supervisors to recommend specifically one of the five possible actions listed above? A "check" of the third category would require no explanation or justification, but should permit a specific recommendation for a lateral reassignment. In reality, this category would be appropriate for the majority of ratings.

Recommendations for cross-training or advanced training would clearly show job mismatches, and require a further recommendation of specific training appropriate for the individual. Recommendations for discharge or immediate advancement would require immediate action. An appropriate response would be a local board of review, at which the supervisor should be required to justify these infrequent recommendations. An evaluation by the review board should then replace, rather than supplement, the supervisor's performance evaluation.

The approach outlined above, coupled with a policy of matching actual promotions with reassignment needs (positional vacancies tied to predefined grade structure requirements), could eliminate inflation of ratings and the need for central promotion boards.

There is much virtue in simplicity.

Maj. Paul T. Burnett, USAF
Alamogordo, N. M.

Cockpit Status Quo?

I must take issue with the narrative accompanying the F-15 cockpit photo on p. 89 of the January '82 issue. You state that "far greater range of information is provided to the pilot without increasing panel size or number of instruments to monitor."

Compared to what? Look at any F-105 or F-106 cockpit (which predate the F-15 by nearly twenty years), and you will recognize that their panel size is equal or smaller and that their information requirements are met in a roughly equivalent manner. In fact, the F-105 carried a greater variety of

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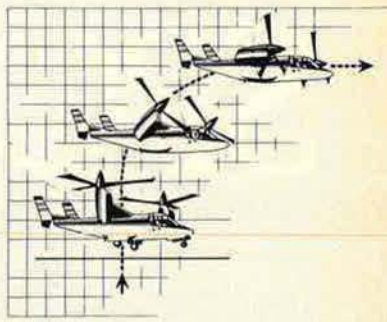

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DEFENSE COMMUNICATIONS DIVISION ITT
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ordnance, including nuclear weapons. Both aircraft had the same basic altitude-director-indicator and horizontal situation display. In addition, the older aircraft had vertical tapes.

The F-106 even had data link and a nice big electronic map that the European Eagle drivers would find of tremendous value for maintaining lane caps, avoiding friendly SAM belts, and preserving situational awareness. A situation display is planned for F-15 retrofit that could accommodate a future-generation information system (JTIDS), but that display will be a shared system, designed after the fact, and less than optimally located. If you want to know what a much more optimized defensive counterair cockpit display suite should look like, go to Sweden and see the interceptor version of the Viggen (Saab JA37), which is already operational.

No, I'm afraid you blew it when you inferred that the F-15 represented any great advance in cockpit design. There are some small improvements, but nothing novel and none as a result of any concentrated R&D thrust. There are a few good people at Wright-Patterson trying to work the problem, but their programs are low-key and disjointed, usually under the auspices of some other avionics or biomedical name. USAF has not had a coherent control/display research effort since the demise of the JANIR program in the 1960s.

The only novel cockpit control/display designs of major significance that the US has produced in the last decade are those embodied in the F-18. The military R&D community can take no credit for that, as Gene Adam of McAir had it nearly all designed prior to the government decision to fund the F-18. . . .

USAF can point with pride to many areas of recent achievement and technological superiority, but cockpit design is not one of them. In the case of our new fighters, the airframes, engines, radars, and flight control systems are a quantum leap ahead of the previous generations.

However, the F-15, F-16, and A-10 very definitely represent a status quo in the man-machine interface aspects of instrumentation and display development.

Dan Eliason
Shalimar, Fla.

Suggestion Box

My compliments to Maj. James M. Bruner *("Airmail," p. 8, January '82 issue)* for putting it on the line about the way suggestions are treated by the Air Force suggestion committees, uniform boards, etc.

AIRMAIL

I, too, have seen suggestions turned down for idiotic reasons only to be adopted years later for the same reasons the original suggester suggested. But never have I seen a letter to the original suggester saying we're sorry, you were right, and we finally saw the light! It seems they prefer to give the credit to one of their own for the great "new" idea.

Case in point: Shoulder marks for NCOs. Turned down because shoulder marks were designed to identify commissioned officers. Letting NCOs wear the marks would only confuse. That was two years ago. Now it seems they have decided to "confuse" by letting senior NCOs wear shoulder marks instead of chevrons!

Case in point: Adopt the British armed forces and US Marine Corps "woolly pully" sweater in Air Force blue. Turned down. Reason—the style of the sweater you suggested does not lend itself to the desired image we are trying to project. Three years later the uniform board adopts the "woolly pully" sweater. They are so popular with the troops that the clothing sales stores can hardly keep them in stock.

Maj. William D. Hobbs, USAFR
Columbia, Mo.

December Issue

Your December '81 issue was a real joy to me because of several articles, as well as letters, in your "Airmail" section.

I noted a letter from Lt. Col. James C. Elliott *(p. 10)* singing the praises of Maj. Gen. Winston P. Wilson, former Chief of the National Guard Bureau. I agree totally with Colonel Elliott.

I believe that General Wilson (or "Wimpy," as he was known) was the first Air Force officer ever to become Chief of the National Guard, a real tribute to his ability.

The Air National Guard has always been a leader in national defense, usually against great odds imposed by the Pentagon. Having served from buck private on up in the Air Guard of four states, I speak from experience. And certainly General Wilson did as much or more than any one man in bringing the Air Guard up to its present level of high competence—so much so that his system has now been copied almost to a "T" by the Air Reserve. And this occurred after strong efforts to eliminate the Guard entirely by forcing it into the Reserves. Thank God it never happened.

General Wilson made great contributions, and one thing we should all be grateful for was his ability to obtain the funding to build first-rate facilities for the Air Guard, get (nearly) first-line equipment, and really integrate the ANG into the Air Force as a first-line, fully equipped, and capable partner in this very unsettled world.

It was my very great pleasure to serve under Wimpy, a true "citizen soldier. . . ."

Brig. Gen. C. R. Bullock,
USAF (Ret.)
Phoenix, Ariz.

Proud to Fly Alongside

I have just read the article on bombardiers in a recent copy of AIR FORCE Magazine, and found it quite nostalgic *("The Bombardier and His Bombsight," p. 106, September '81 issue).*

I, too, served as a bombardier, but truthfully as a bomb aimer, RAF style, with 1 Group RAF during WW II. . . .

Whilst agreeing that I am probably a relic of a past glory, I must tell you that *I was always proud to fly alongside the mighty Eighth.* In fact, the long arm of coincidence is a strange thing, because my company, British Aerospace, has signed a contract to supply Rapier missiles for US airfield protection in Europe. So, I suppose I can say that I am still "in readiness" alongside the successors of the Army Air Corps.

One other connection is that my niece, Pamela, is married to SSgt. Andy Letso II, and they are now back in the USA, having served a third term over here with USAF. . . .

Our lost comrades of all those years ago, most of whom only have graves in the skies of Europe, salute you.

W. C. S. Long
British Aerospace Dynamics Group
Stevenage, Herts.
England

No More Navigators?

In order to increase the morale of navigators in USAF, I propose that we change the name from navigator to "flight officer." This designation would be similar to that of our US Naval aviator counterparts—the Naval Flight Officers (NFOs).

The USAF navigator of today has become a specialist in many areas besides navigation. Therefore, the title of navigator is a misnomer.

The title of flight officer would include the following specialties: (1) Electronic Warfare Officer, (2) Weapon Systems Operator, (3) Navigator-Bombardier, and (4) Navigator.

Changing the name would increase morale amongst today's navigators because the title would emphasize an important aspect of our background—officer!

1st Lt. Kenneth W. O'Reilly, USAF
Altus AFB, Okla.

Bob Hope

I am working on a master's thesis dealing with the life and career of one of America's finest entertainers, humorists, and humanitarians—Bob Hope.

My work will cover Mr. Hope's many years in entertainment—from vaudeville, to radio, and down through motion pictures and television. A large portion of my work will deal with his USO work over the years, from the 1940s up to his last tour in 1972.

I am trying to locate any material on Mr. Hope's USO tours—photos, records, tapes, notes, etc. Please contact me with any information at the address below.

David Gregg Elford
1804 Todd Rd.
Vancouver, Wash. 98661

Spaatz Biography

I have been commissioned by the Air Force Historical Foundation and the Aerospace Education Foundation to write a biography of Gen. Carl A. Spaatz, commander of US strategic bombing forces in Europe and the Pacific, and USAF's first Chief of Staff.

I invite any documentation or memorabilia on General Spaatz that would illuminate little-known dimensions of his career and character. I would also like to receive previously unpublished photographs relevant to General Spaatz's career. I will give credit for their origins in the resulting book, and will return them to the sender after they have been copied.

I may be contacted at the address below.

Lt. Col. David R. Mets, USAF (Ret.)
334 Olde Post Rd.
Niceville, Fla. 32578

AIRMAIL

Vietnam Art Work

I am attempting to record part of the human side of the Vietnam War. I would appreciate any information on the personalized art work done on the various vehicles used there from jeeps to jets.

Besides a description or photo, please include any information you can on the reason the design was chosen, as well as the more familiar "when, where, and who." All responses will be acknowledged. (Material will be returned if so requested.)

Daniel B. Potochniak
1610 Celebrity Circle West
Hanover Park, Ill. 60103

Vietnam Pilots

I am interested in contacting former Air Force and Navy pilots who flew missions over North Vietnam and Laos in 1964–65 for information for a forthcoming book.

Of particular interest are Operations Flaming Dart, Rolling Thunder, and Iron Hand, as well as combat search and rescue operations. Please contact me at the address below.

John Morrocco
5707 N. 26th St.
Arlington, Va. 22207

Project Thunderstorm

I am a member of the American Aviation Historical Society, and am currently working on a project to document the history of the Thunderstorm

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AIRMAIL

Project that was conducted by USAAF's All-Weather Flying Center, the US Weather Bureau, and the University of Chicago during 1946 and 1947.

I am most interested in hearing from former USAAF pilots and ground personnel who were associated with the project. Please contact me at the address below.

Matthew E. Rodina, Jr.
6739 E. 28th St.
Tulsa, Okla. 74129

17th Bomb Wing Black Knights

A book is being prepared on the Douglas B-26 Invader in USAF service, and a section is being devoted to the 17th Bomb Wing (L)—its aircraft and operations in Korea.

I would like to hear from any former members of the 17th who feel that they can assist me in documenting the activities of the Wing at Pusan (K-9). So if you are a former "Thunderbird," "Bengal Tiger," or "Bucking Mule"—let me hear from you.

John Horne
15/20-22 Speed St.
Liverpool
N.S.W. 2170
Australia

361st Fighter Group

I am in the process of researching the 361st Fighter Group of the Eighth Air Force, 1942–45. I would like to correspond with any former crew chiefs, armorers, mechanics, and maintenance officers of the 374th, 375th, and 376th Squadrons, and the 361st Group Scouting Force.

I would also be interested in hearing from any pilots and command or administrative personnel. I can be reached at the address below.

P.S.: I would also like to locate Col. Allison Brooks, first CO of the 1st Group Scouting Force of the Eighth Air Force.

Everett R. Atkins, Jr.
1304 Cochise Dr.
Arlington, Tex. 76012

Fighter-Bombers in Battle of Britain

I am researching material for a book on *Erprobungsgruppe 210*—the German fighter-bomber unit in the Battle of Britain. Part of the book will deal with British, French, and American research into the use of fighters

carrying bombs, up to the Battle of Britain period in 1940.

Perhaps readers can help me with information on these four points: (1) Which American fighters were used in fighter-bomber tests? (2) What bomb loads were carried? (3) Were bombs carried on the wings, under the fuselage, or in both positions? (4) Were any firm decisions made by the military authorities regarding the fighter-bomber concept up to the period in question?

Please contact me at the address below.

John J. Vasco
23 Hillside Rd.
Mossley Hill
Liverpool, Merseyside
L18 2ED England

Attacks on Rabaul

I am researching the attacks on Rabaul by the Fifth Air Force in October and November 1943, and would appreciate hearing from anyone who flew in the attacks, serviced the aircraft, or participated in the staff work for them. I would like to tell the story of the crews who flew and fought in that climate against an enemy who was far from beaten at the time.

All material received will be treated with the greatest care and returned to the sender.

A. H. D. McAulay
160 Copland Dr.
Evatt
Canberra ACT 2617
Australia

P-61 *Our Panther*

I'm looking for photos of a P-61 of the 548th Night Fighter Squadron, based on Ie Shima in 1945. The aircraft was called *Our Panther,* and the pilot was Lt. Fred Kuykendall.

All material received will be copied and promptly returned.

Tom Eisenhour
2012 Kinney Ave.
Austin, Tex. 78704

82d Fighter Group

I am currently doing research for a book on the history of the 82d Fighter Group in World War II. This work will be coauthored with Steve Blake, who currently publishes the newsletter *Fighter Pilots in Aerial Combat.*

The special feature of this proposed work will be an emphasis on both sides of particular air battles in which the 82d FG was involved. Through sources in Europe we hope to find stories from the German and Italian points of view. We are trying to find as many veterans of the 82d as possible who flew or serviced P-38s during the North African or Italian campaigns.

Any veteran who flew with (or against) the 82d is heartily encouraged to contact either address below.

John Stanaway
3132 Chicago Ave. S.
Minneapolis, Minn. 55407
or
Blake Publishing
26596 Dolorosa
Mission Viejo, Calif. 92691

B-58 and B-70

I would like to know more about the B-58 Hustler and the North American B-70 Valkyrie strategic bombers. If any readers could fill me in on design, performance, development chronology, etc., it would surely be appreciated.

A few well-shot black-and-white or color pictures would also be appreciated. Please contact me at the address below.

Stanley H. Amstelveen
van Landsbergestr., Apt. 8
Paramaribo, Surinam

AIRMAIL

B-17G 44-8543

I'm trying to research the history of B-17G 44-8543 for the years of 1944 and 1945. I'm trying to find out where this aircraft was stationed, either overseas or Stateside, and with what group.

(The Albert F. Simpson Historical Research Center could not help me. They have only the records for after the war.)

Readers with any information may contact me at the address below.

Bob Jesko
5514 South Albany
Chicago, Ill. 60629

564th Strategic Missile Sqdn.

This year Malmstrom AFB, Mont., is completing a museum to help commemorate the twentieth anniversary of the first Minuteman missile installed here. As an assigned unit, the 564th Strategic Missile Squadron will have a display.

Our squadron committee is interested in telling the story of the 564th. We are interested in memorabilia of the 564th, particularly photos and patches from the three periods in the 564th's history: during World War II as a B-24 unit in Europe and North Africa; at F. E. Warren AFB, Wyo., as this nation's first ICBM squadron (with the Atlas missile); and here at Malmstrom as the last squadron to be equipped with the Minuteman.

Any help we receive will be most appreciated. We will make every effort to return unused items, if desired. Please contact the address below.

Attn: 2d Lt. Danny A. Burnett, USAF
564th Strategic Missile Squadron
Malmstrom AFB, Mont. 59402

French Cadets

Starting in 1943, the French Air Force sent personnel to be trained in the US. By the end of the program in 1952, some 4,000 people had been graduated from US pilot training. It is from this pool of flying personnel that French aviation, military and civil, drew on to become what it is today—a very important sector of French life.

At the end of his training, no French pilot knew, of course, that someday he would be flying between Paris and New York, and the Concorde was not even thought of. Nevertheless, many became *chefs du bord,* and all Concorde pilots received their wings in the US. Several years ago, an association was formed—*Association du Personnel Navigant Français Formé aux USA* (APNF-USA). It is an association specifically for those French cadets who received their training in the US.

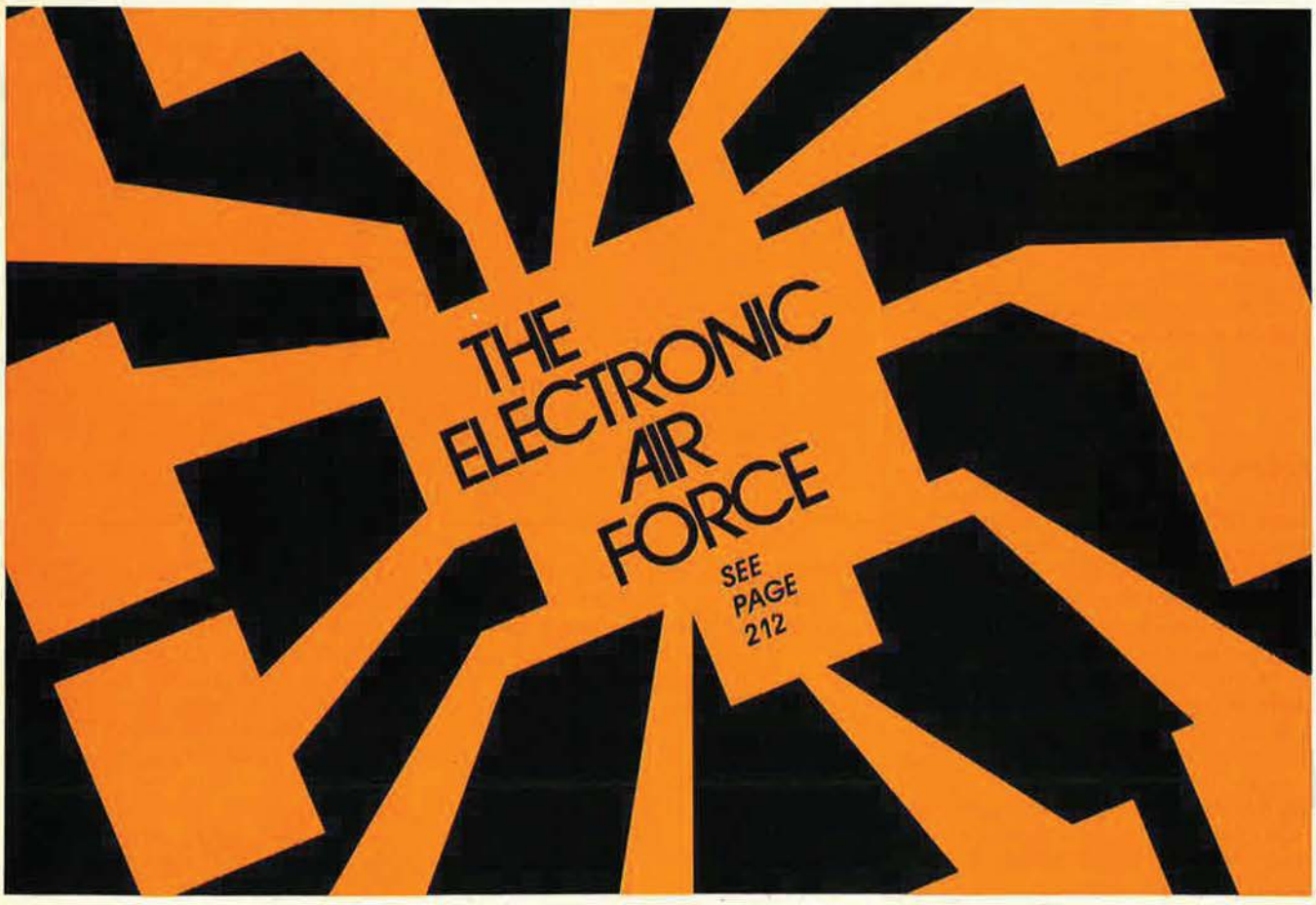
Several of these people have retired from flying, of course, but all former cadets have kept the memory of their training days very much alive. The people they remember best are their instructors. The Association invites all former instructors of French cadets to contact the Association at the address below.

Yves Lonchampt
24 rue Albert Joly
78000 Versailles
France

Bloody Hundredth Memorial

Restoration of the control tower at Thorpe Abbotts as a memorial to the men of the 100th Bomb Group is virtually complete. Members of the nonprofit 100th Bomb Group Association UK could use artifacts, uniforms, memorabilia, etc., for display in the tower.

If anyone who served at Thorpe Abbotts would like to donate items or



relate their wartime experiences, please write to the address below.

Sam Hurry
41 Vancouver Ave.
King's Lynn, Norfolk
PE30 5RD England

Det. 355 Alumni

In 1981, Air Force ROTC was re-established at Boston University. The cadets are interested in compiling a group history. If you are a BU and AFROTC graduate, please contact the History Officer at the address given below.

We want to know who you are, when you graduated, details of your military career, and any interesting stories you may have about your years in AFROTC at Boston University. Also, if you have a copy or a pattern of the group patch, please send it to us.

We are eager to hear from you.

355th AFROTC Cadet Group
Attn: History Officer
Boston University
156 Bay State Rd.
Boston, Mass. 02215

Calling All Aces

I would like to be contacted by any aces willing to autograph my copy of the *American Fighter Aces Album*.

I will pay postage both ways for the mailing of the book. Please contact me at the address below.

Brandon J. O'Brien
2136 E. Wilson Ave.
Orange, Calif. 92667

Maurice Brown

During WW II, flying B-24s out of Italy, I was involved in an incident during which our B-24 was unintentionally shot down by another B-24 (March 12, 1945). I have, over the years, been able to locate many of the men that were aboard the aircraft though we were, for the most part, a "make-up" crew.

To date, however, the location of the pilot, Maurice R. Brown, has eluded me. I credit Lieutenant Brown with saving the lives of all those aboard by his manner in reacting to our emergency.

It is my desire, in light of our forthcoming reunion (451st Bomb Group), to locate and contact this elusive hero from my past. Please contact me with any information at the address below.

Robert Karstensen
President, 451st Bomb Group, Ltd.
1032 S. State St.
Marengo, Ill. 60152

316th Troop Carrier Group

I would be most grateful to hear from anyone who flew with the 316th Troop Carrier Group from Wethersfield on Operation Varsity, the Rhine crossing on March 24, 1945.

Please contact me at the address below.

Ian C. Mactaggart
Craig-y-Llyn
Braintree Rd.
Gosfield, Halstead
Essex
C09 1PR England

Looking For . . .

I would like to hear from anyone who knew my uncle, Lt. Delbert E. Schmid, who was killed in action during World War II. He was a pilot with the 392d Fighter Squadron, 367th Fighter Group, stationed in England.

Also, I would appreciate any information concerning the 392d Fighter Squadron.

Wayne Schmid
138 Bolton Dr.
Jefferson City, Mo. 65101

Anyone Seen? . . .

I would like to establish contact with an Air Force friend of mine, Thomas S.(?) Roberts.

Tom and I were captains together at Shaw AFB, S. C., in the Directorate of Tactical Evaluation at Ninth Air Force during 1967–69. Tom was an F-4 pilot involved in the first MiG shootdown of the Vietnam War. His wife's name is Norma.

Anyone knowing Tom's current whereabouts—please contact me at the address below.

Maj. K. C. Thomas, USAF (Ret.)
Rte. 1, Box 133
Millboro, Va. 24460

Class 60-C

I'm wondering if there are any "Bulldogs" out there from Class 60-C, Bartow AFB, Fla.? Still in USAF? Still flying for a living? Retired?

I visited Bartow AFB in December '81 and found Bob Branson still instructing there, and even ran into "Mr. Meyers." Does anyone know where Hayes R. "Babe" Bryan is?

Please drop me a line or call me from Boston, as I would enjoy catching up with anyone. (I'm still singing and flying helicopters!)

David Jarratt
Hoyt's Wharf Rd.
Groton, Mass. 01450
Phone: (617) 448-6724
AUTOVON: 256-2343

7th Military Airlift Squadron

The 7th Military Airlift Squadron, the oldest active airlift squadron in the Air Force, is soliciting memorabilia—old flight manuals, checklists, leather helmets, oxygen masks, old photos of personnel, etc. This collection will commemorate the unit's fiftieth year of active airlift service.

We are requesting loans or donations of any items readers might have. All items will be secured, and items on loan will be returned on request. Please contact the address below.

7th Military Airlift Squadron
Travis AFB, Calif. 94535
Phone: (707) 438-3103
AUTOVON: 837-3103

Minuteman Education Program

I am trying to locate anyone who was enrolled at the University of North Dakota's Master Degree in Business Administration program, through either the Minuteman Education Program or while stationed at Grand Forks AFB, N. D. Information on the dates attended and current assignments since the enrollment would be helpful.

The purpose of this request is to gather information on the status of all past *enrollees,* and also to compile a current address list to help old friends get back in touch.

Please send any correspondence to the address below.

Minuteman Graduate Program
Box 8114, University Station
Grand Forks, N. D. 58202
Phone: (701) 594-6366

A-7D Corsair II

I have been collecting data regarding Vought Corp.'s A-7D Corsair II in order to write a monograph. I would appreciate the help of any readers who have pictures, flight manuals, or any flight data on the A-7D or other models of the A-7 (A–K). I would like also to hear from pilots regarding their experiences with the handling of these planes.

All help will be properly credited. Any information on these planes from anyone will be appreciated. (I can also copy and then return material if necessary.)

Craig A. Phillips
Naval Surface Weapons Center
Dahlgren, Va. 22448
Attn: K21
Phone: (703) 663-7147 (office)
(703) 663-3134 (home)

Flight Helmets

I am looking for old WW II flight helmets and items such as goggles, masks, etc., to go with them.

I am also looking for a modern-day flight helmet and attachments (I will pay reasonable prices). Please contact the address below.

Jeff Kolln
6620 E. Golf Links Rd.
Apt. 117
Tucson, Ariz. 85730

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Background: The Cessna/Teledyne CAE team has been building the Air Force T-37 for more than a quarter of a century. The cost-effective T-37 has the best safety record of any jet aircraft in the Air Force inventory. This twin engine, side-by-side pilot seating configuration, pioneered by the same airframe/engine team, has become the standard for the USAF training syllabus. Cessna has built more than 169,000 aircraft—more than any other aircraft company in the free world. During the past ten years, Teledyne CAE has been the leading developer of small turbofan technology under USAF contracts.

Proposal: By all standards, the Cessna/Teledyne CAE team is the logical choice for the Next Generation Trainer program. Our NGT system assures the Air Force of unrivaled reliability in the rugged military training environment. Its advanced technology and simple design mean high performance, low operating costs, and ease of maintenance in the field. The NGT program uniquely fits the design and manufacturing capabilities of both companies.

Cessna/Teledyne CAE—the solution today for tomorrow's challenge.

Cessna

TELEDYNE CAE
Turbine Engines

IN FOCUS...

By Edgar Ulsamer, SENIOR EDITOR (POLICY & TECHNOLOGY)

Washington, D. C., April 1

MX Program Delayed

About a year after the so-called Townes Panel was formed in March 1981 to assess the MX program, the Defense Department saw fit to release an executive summary of the final report by this group. Named after Dr. Charles Townes, a Nobel Laureate and Professor of Physics at the University of California, and comprised of thirteen other defense experts, this group helped provide the Administration's rationale for scuttling the MPS (multiple protective shelters) basing mode developed and recommended by the Air Force.

It was ironic that, coincidental with the belated release of an executive summary of the Townes Report, the Senate Armed Services Subcommittee on Strategic and Theater Nuclear Forces—by a vote of nine to nothing that probably adumbrates eventual concurrence by Congress as a whole—struck down the panel's pivotal recommendation of basing MX initially in fixed silos.

This recommendation by the Townes Panel was accepted by the Administration and resulted in the decision to deploy at least forty MX ICBMs in existing Minuteman silos while the search for a survivable basing mode was to continue. Congressional reaction to this decision—which zigzagged haphazardly first from deployment in Titan silos, then to "superhardened" silos and finally terminated in existing Minuteman silos—was essentially negative.

This was understandable and probably predictable since Congress, for more than five years, had been told by scientists and military leaders alike that Soviet ICBM accuracy was making fixed-silo-based US ICBMs nonsurvivable and, thus, created a window of vulnerability of intolerable severity. By extension of this logic, congressional defense experts were quick to point out that emplacing ten-or-more-warhead MX ICBMs in fixed silos provided Soviet targeters more lucrative aimpoints than the three-warhead Minuteman III while failing to solve the vulnerability problem.

As the subcommittee, chaired by Sen. John W. Warner (R-Va.), pointed out, "strategic deterrence and crisis stability could be jeopardized, rather than enhanced, by the deployment of high-value, militarily important weapons in so small a number of relatively easily destroyed shelters."

Late last year Congress sent unambiguous warning to the Administration when it precluded the expenditure of funds for superhardening of existing ICBM shelters "in a manner inconsistent with long-term survivable basing of MX." At the same time, Congress signaled unmistakably its doubts about permanently basing MX in an air-launched mode involving a gigantic diesel-powered glider known as "Big Bird," another key recommendation of the Townes Panel.

First proposed to operate over the CONUS, these CPAs (continuous patrol aircraft) later were envisioned to patrol offshore, neither of which in the view of congressional experts was deemed practical in an operational or political sense.

In its March 23 report language on the MX program, the subcommittee—since seconded first by Senate Armed Services Committee Chairman Sen. John Tower (R-Tex.) and subsequently by the full committee—termed deployment of MX in interim fixed silos imprudent also in terms of cost, assessed at $3.6 billion over the next five years. The conclusion was that "transformation of the interim basing plan into a permanent survivable system incorporating deception and defense is expensive, and from a practical standpoint, infeasible."

The subcommittee recommended specifically full funding of "developmental activities necessary to bring about the earliest possible Initial Operational Capability of a permanent, rather than interim, survivably based MX missile. Advanced technology efforts, designed to provide downstream options for complementing the earliest IOC design with additional deployment-systems for MX, may be pursued as well with these funds. The Secretary of Defense should notify the Congress not later than December 1, 1982, as to which of the candidate technologies shall be pursued."

Also, funding for procurement of nine MX missiles in Fiscal Year 1983 is to be deferred "without prejudice." The purpose in deferring the requested procurement is to bring production in line with the revised Initial Operational Capability date which results from cancellation of the interim silo deployment. The Administration was encouraged, however, to submit a request for production funds for the MX missile in FY '84.

Senator Tower, in seconding the decisions of the subcommittee, underscored his longstanding belief that "the deployment of this system [MX] in a survivable basing mode that retains the central features of a land-based leg of our strategic triad is a matter of paramount importance and urgency" and reiterated his "deep regret" that the Administration decided against deployment of MX in an MPS basing mode.

Stressing that he concurred in the "momentous step" taken by the subcommittee, he explained that the underlying purpose was "to save the MX missile." He rejected the notion that this redirection would either play into the hands of the Soviets or clear the way for the abandonment of the strategic triad. Rather, the Soviets ought to recognize that "the congressional action on MX will result in a more effective, resilient weapon system" that can be in place "appreciably earlier than 1989."

The congressional action also should not be misconstrued as "an embracing of a strategic dyad, consisting only of credible sea-based and air-breathing nuclear forces. The continued invulnerability of our deterrent at sea depends directly upon our ability to prevent the Soviet Union from investing a preponderance of its enormous defense expenditures on anti-submarine warfare. A survivable land-based MX plays a vital, indeed essential, role in diverting Soviet resources and keeping our missile submarines safe," he said.

The consequences of the clash be-

tween the Administration and Congress over MX are difficult to predict at this juncture and will be influenced decisively by whether the Administration "hangs tough"—as was suggested by the Pentagon's initial response—or accommodates to Capitol Hill's seeming preference to resurrect MPS under the new heading of "deceptive basing," possibly linked to ballistic missile defense (BMD). In the view of some congressional pundits, "hanging tough" on interim deployment of MX in nonsurvivable silos would be tantamount to scuttling MX.

Even if a compromise can be struck between the Administration and Congress, the findings by the Townes Panel will continue to have major impact, especially the statement that all panel members "agree that the US should not adopt as a first choice the strategy of striving for a secure retaliatory force by deploying more land-based shelters than the Soviets have ICBM warheads. Although Multiple Protective Shelters (MPS) can extract a substantial price, the Soviet Union can readily compete in a US shelter vs. Soviet ICBM warhead race."

It is reasonable also to suggest that long-term consequences ensue from this assertion by the Townes Committee: "The most promising approach to providing a new secure ICBM retaliatory force appears to be continuous airborne patrol."

Significant also is the recommendation to promptly exploit "the fratricide effects among warheads attacking closely positioned and hardened shelters, deep underground basing, and taking advantage of terrain features such as basing missiles on the south side of, or within, mesas."

Rekindling interest in an approach previously examined by the Air Force and others is the Townes Committee's assertion that "small missiles offer a wider range of basing options than the MX does—in particular certain mobile modes such as helicopter, VTOL aircraft, and road/off road." There is the caveat, however, that "since the cost of small missiles per warhead is higher than the cost of the MX missile, and the most promising mode, continuous airborne patrol, is compatible with the larger missile, the potential advantages offered by the small missile are not sufficient to indicate a change from MX to a small ICBM at this time."

Lastly, the Townes Committee showed only limited enthusiasm for active defense when it concluded that "there is no demonstrated technology or system of sufficient performance to warrant commitment today

IN FOCUS...

to a Ballistic Missile Defense (BMD) deployment to defend ICBMs in silos."

Changing Naval Strategies

The US Navy, according to Navy Secretary John Lehman, plans to deploy by 1990 a total of nineteen battle groups—formerly called naval task forces—four of which will not be built around carriers but rather involve battleships. The rationale for reactivating mothballed battleships, to a large measure, hinges on intensified reliance on land-based tactical airpower.

There are many areas in the world, such as the Caribbean, where battleship-battle groups could be given sufficient land-based air cover—involving in the main F-15s and E-3As—to carry out their military tasks, even though they lack the indigenous airpower of carriers, Secretary Lehman stressed recently.

"Our battle group tactics have been widened immensely by AWACS—we have been working with AWACS for more than two years, both in the Indian Ocean and Persian Gulf area as well as in the GIUK [Greenland-Iceland-UK] gap," he told this writer. Interservice rivalry, he stressed, is nonexistent at the operational level even though it is an acute Washington syndrome. At the field level, the two services work together harmoniously, and "we have been putting our [Navy] people on AWACS and we have [USAF] AWACS people on our ships, and as a result there has emerged a well-integrated new range of tactics using AWACS and land-based interceptors" in concert with naval combatants, thereby enhancing US military effectiveness, according to Secretary Lehman.

This finely honed interaction between the two services is especially important in the Caribbean, where the Soviets are operating Tu-95s and Badger bombers, as well as submarines and other combatants, out of Cuba and engage US naval forces routinely in simulated attacks. In addition, the Cubans are operating two "very new, quiet" Foxtrot submarines, along with some sixty torpedo and missile boats, a new frigate, and MiG-23s, all supplied by the Soviets. This combination constitutes a formidable force sitting "athwart the [US] artery through which more than fifty percent of our logistics has to pass."

The result, he stressed, is a major geopolitical problem for the US that would become acute in case of an East-West conflict in Europe. The US Army's forces in Europe depend largely—on the order of eighty-five percent—on logistics support funneled through Gulf of Mexico ports. The Cubans, in case of a European conflict, could close this artery for perhaps as long as a month until the US can "clean [them] out," Secretary Lehman acknowledged. In case of a war involving US and Soviet forces anywhere, therefore, it would probably become necessary for this country to neutralize the military threat emanating from Cuba, he suggested.

The US Navy faces another, increasingly more acute challenge in the Pacific because the Soviets maintain major "blue-water" surface and submarine combatants on the African west coast on a permanent basis, seemingly to threaten the West's oil pipeline from Southwest Asia, he said. Additionally, the Soviet blue-water fleet in the Western Pacific, operating out of such forward bases as the Vietnamese ports, now numbers about 130 ships.

As a consequence, the Navy can no longer rely on "swinging out of the Pacific" to meet contingencies in NATO or elsewhere, Secretary Lehman said. These factors cause the Navy to be "stretched too thin," and prompted the Administration to seek an expansion of the service's combatant inventory by about thirty percent, he explained.

Another key concern of the Navy, he said, is advancing Soviet submarine technology, especially as manifested by the twin-hull all-titanium Alpha-class attack submarines. Employing titanium-forging technologies vastly superior to those of the US, these submarines are faster and can dive deeper than any American design and are well suited to their task of protecting Soviet strategic submarines (SSBNs launching SLBMs) and of threatening US SSBNs.

One of the reasons the Soviets are able to wring greater speed out of their submarines than the US can is that the USSR operates nuclear naval reactors at far greater power density—and consequently at far higher risk—than the US Navy is willing to. By taking shortcuts on essential safeguards that periodically cause "catastrophic health impairments," including loss of life, the Soviets can operate their submarines at extraordinarily high speeds. The price the

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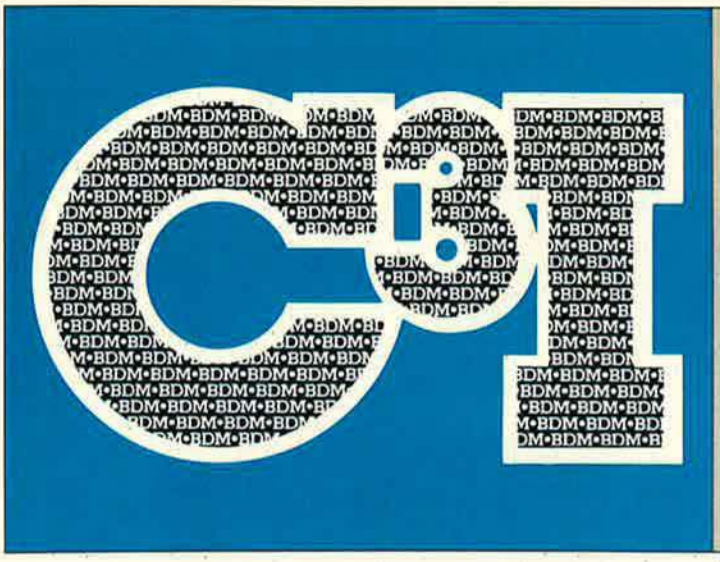
MANAGING THE COURSE OF CHANGE



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CHANGING THE COURSE OF MANAGEMENT

Soviet Navy pays is that they "have to evacuate submarines" occasionally, that "we have seen them tow [nuclear-powered] vessels at the end of three-mile long tows [to minimize exposure of crews to nuclear radiation]," and that there are "hairless sailors in old soldiers' homes in the Soviet Union," Secretary Lehman disclosed.

Soviet ASW (antisubmarine warfare) capabilities are becoming more threatening to the US for two principal reasons, Secretary Lehman said. One pivotal factor is the "sheer number of their attack submarines"; the other circumstance boosting the Soviet ASW threat is increasing technological sophistication, aided to a significant extent through "technology transfer." Modern ASW techniques are derived mainly from high-speed signal processing, sophisticated computer technologies, and advanced electronic componentry, Secretary Lehman stressed. The Soviets, he pointed out, are working hard at building up their ASW technologies through technologies acquired from the US and other western countries, and that is why "technology transfer is a real concern to us."

While the Soviets have not achieved any "order of magnitude breakthroughs" in ASW technology, they are scoring steady refinement and improvement, the Navy Secretary stressed.

Washington Observations

★ The Defense Department and the Air Force are exploring a new MX basing mode known as the Deceptive Dense Pack. The concept involves superhardened (about 5,000 pounds-per-square inch overpressure resistance) capsules spaced about 2,000 feet apart and arranged in arrays of about 200 units. The system's survivability stems from a combination of superhardness, attacker fratricide, and, if necessary, deception. According to initial assessments, there is high confidence that this close capsule spacing will cause some Soviet warheads to destroy each other as well as introduce an inherent limit to the effectiveness of a Soviet attack. Even the most intense attack on such an array, according to Air Force calculations, could leave a significant number of surviving MX ICBMs. Furthermore, debris and dust clouds produced by such an attack won't abate for at least thirty minutes. During that period, no reattack appears possible yet the surviving missiles can be launched by the National Command Authorities during this "safe period."

★ The US ASAT (satellite interceptor) program is now expected to reach limited operational status within three or four years, but probably won't attain full capability until late in the decade. The system involves a miniature homing vehicle derived from a ballistic missile defense design that collides with the target in pinwheel or buckshot fashion. The homing vehicle is launched by a modified SRAM (short-range attack missile) that, in turn, is lofted by an F-15. This arrangement, however, is not suitable for a nuclear warhead. Even though both the US and the USSR agreed not to use weapons of mass destruction in space, it is probably illusionary to expect either side to abstain from shifting to nuclear-armed ASATs in case of nuclear war.

There also is little doubt that ICBMs would be used—and probably are the most efficient ASATs—to take out the other side's essential satellites under such conditions. Because of their high accuracy and the enormous lethality of nuclear weapons in space, such ICBMs as the MX or the Soviet SS-18 and SS-19 would require only limited adjustment for ASAT application.

While there is some danger that a nuclear attack on a "hostile" satellite might disable one's own spacecraft and disrupt ground-based and other sensors such as radars through fratricidal effects, the use of low-yield warheads would minimize risks of this type. If and when space-based laser weapons are deployed for ASAT and BMD missions, the other side's nuclear armed ASATs, either functioning in the form of co-orbital "fellow travelers" that can be detonated on command from the ground or as direct ascent weapons equipped with ablative heat shields to counter laser radiation, could quickly eliminate them. The technologies associated with such nuclear-armed ASATs are mature in this country as well as in the USSR.

★ The Chairman of the Senate Armed Services Committee, Sen. John Tower, expressed strong opposition to a resolution circulated by Senators Edward M. Kennedy (D-Mass.) and Mark O. Hatfield (R-Ore.) calling for an immediate freeze of US and Soviet nuclear weapons. Asserting that this proposal "simply cannot be verified," he said it is "like saying we should have a freeze on the numbers of criminals and policemen [or] the numbers of arsonists and firemen."

Such a freeze proposal, he added, would "lock the United States into a significantly disadvantaged position vis-à-vis the Soviet Union. Do the American people need any better evidence of this than the fact that, within hours of the public release of this proposal, Soviet President Leonid Brezhnev submitted his own proposal bearing a striking resemblance to the resolution we are being asked to consider?"

Meanwhile a bipartisan group of eight Senators, including Majority Leader Howard H. Baker and Minority Leader Robert C. Byrd, drafted a Senate Joint Resolution countering the Hatfield-Kennedy proposal. Specific points of the counterresolution stress that "the current nuclear force imbalance is destabilizing and could increase the likelihood of nuclear war" and underscore the desirability of a "long-term, mutual and verifiable nuclear forces freeze at equal and sharply reduced levels of forces."

This country, the Senators urge, "should continue to press month after month, year after year, to achieve balanced, stabilizing arms reductions, looking, in time, to the elimination of all nuclear weapons from the world's arsenals."

★ Gen. Bernard W. Rogers, NATO Supreme Allied Commander, Europe, recently told an AFA meeting in Chicago, Ill., that more than a year ago when a Soviet invasion of Poland appeared likely, he obtained "predelegated authority" from the NATO governments to take responsive action in six out of seven specific areas that he had requested guidance on. Terming this arrangement "almost unheard of," he said he still carries this predelegated authority "in my hip pocket."

Normally, he explained, "NATO operates under the consensus rule, which is defined as unanimity which means any nation of the thirteen that provide forces [to the Alliance] can stop us from doing what needs to be done."

★ First use of laser weapons, some Pentagon experts believe, won't involve the "star wars" glamour anticipated by the media, but center on tactical battlefield tasks of damaging or disrupting the guidance systems and other sensors of precision-guided munitions, known as "smart weapons." Laser weapons capable of performing these missions may become available in the near future. ■

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AEROSPACE WORLD
News, Views & Comments

By William P. Schlitz, SENIOR EDITOR

A trip into the field before retirement. Gen. David C. Jones, Chairman of the JCS, center, is briefed on the command post exercise "Gallant Knight 82." On the right is Army Lt. Gen. Robert C. Kingston, Commander of the Rapid Deployment Joint Task Force. General Jones will step down after eight years with the Joint Chiefs, four of those as Chairman. He has recommended sweeping structural changes in the Joint Chiefs organization to correct deficiencies. See April issue, p. 17.

Washington, D. C., April 6

★ "I see Project Warrior as the best opportunity in a corporate sense to reach out and cause our people to really think about the main mission of the Air Force, namely to fight a war," said Brig. Gen. Wilma L. Vaught, Deputy Chief of Staff/Comptroller, Hq. AFSC, Andrews AFB, Md.

Project Warrior is a concept of Air Force Chief of Staff Gen. Lew Allen, Jr. The goal is to create an environment in which Air Force people think, plan, and act in war-fighting terms.

Among programs being implemented at AFSC in support of Project Warrior is a "Project Warrior Commander's Distinguished Paper," to give AFSC people an opportunity once a year to present papers on a selected war-fighting theme of interest to the command. There will also be an informal monthly seminar to review appropriate books and hold discussions on subjects of military interest.

Other ideas being discussed are computer war games, an exchange program with some operational units, and briefings and films on the military past, present, and future.

"We need a broad view of the many aspects of war-fighting," said General Vaught. "This project offers an opportunity to discover and think through any possible problems we may encounter.

"I am very hopeful that our program will be exciting, interesting, and a challenge. The people I've spoken with since the suggestion of the program have not only been willing but eager to learn about their wartime role," the General concluded.

★ The first test launch of an operational SAC air-launched cruise missile and the arrival of cruise missiles at Wurtsmith AFB, Mich., are scheduled for early this summer.

The ALCM is scheduled to be fired from an operational B-52G from Griffiss AFB, N. Y., in July. The missile is to be selected at random from the 416th Bombardment Wing's inventory.

The B-52G is to launch the ALCM over the Pacific Missile Test Range and then continue on to a test range in Nevada where it will launch a short-range attack missile and drop a simulated gravity weapon.

According to SAC officials, the multiweapon test is designed to profile an actual combat mission and is the eighteenth in a series of twenty special tests being conducted on the ALCM.

The first ALCM deliveries to the 379th Bombardment Wing at Wurtsmith will take place in June. The wing, the second in SAC to receive cruise missiles, is scheduled for more than 200, with the first B-52G modified to carry the missile arriving in November. The unit is slated to become operational with the cruise missile in April 1983.

Grand Forks AFB, N. D., Fairchild AFB, Wash., and Blytheville AFB, Ark., are the next SAC units scheduled for the cruise missile.

★ Versions of the video games that have captured the fancy of many young people have begun to assume military applications.

"We recognize the interest shown in the games by our young recruits," said Maj. Jeff Samuel of the Army Public Affairs Office in Washington, D. C., noting that the skills needed to operate the games compare favorably to the techniques used by Army tank gunners and missile-system operators.

"One game simulating tanks in battle especially interested us," commented Major Samuel. The Army had a prototype built with more realistic control devices and was so impressed with the results that it ordered more for incorporation into its training program. "We've found that the games not only help tremendously in developing hand-eye coordination but also increase our training proficiency and shorten training time," said Major Samuel.

He added, "Instead of building expensive tank simulators we can now use relatively inexpensive video games adapted to our needs."

The Air Force, too, has noted the video game craze and its practical potential but has not yet climbed on the bandwagon: "Although we are not planning to follow the Army and use video games extensively in our train-

ing procedures, we are aware that arcade video games may be useful to us," said Dr. Bernell Edwards of the Air Force Human Resources Laboratory, Williams AFB, Ariz.

★ Installation and final checkout of a Tacan navigation ground station at Kennedy Space Center in Florida has been completed, officials said.

Tacan is to provide terminal area reference data for Space Shuttles landing at the Space Center.

A similar station at Edwards AFB, Calif., provided navigational reference for the first two Shuttle landings. Signals from the device are used by the crew to update the on-board navigation computer immediately upon emerging from radio blackout during the final phase of reentry.

While the on-board navigation computer tracks the motion of the spacecraft and provides very accurate information on positioning, it depends upon periodic updating from other reference sources—such as Tacan—to retain maximum accuracy in the earth environment.

Tacan—for Tactical Air Navigation—was originally developed for the US Navy's carrier-based aircraft. For more than twenty years, the system, created by ITT, has been the primary navigation aid for US and foreign military aircraft worldwide.

The crew of a Tacan-equipped aircraft uses a cockpit display that presents a continuously updated display of azimuth and distance information for precise position fixing.

★ At the behest of the Department of Energy, USAF's Arnold Engineering Development Center, Arnold AFS, Tenn., is engaged in a continuing program to demonstrate efficient conversion of high-temperature gases into electric power.

Working with the Center are more than thirty companies, universities, and national laboratories. The stake is huge.

At issue are experiments in MHD or magnetohydrodynamics, which involves a new concept for converting a flow of hot combustion gases directly into electric power without moving parts such as turbines in powerplants. In a recent run, AEDC's generator produced more than 30,000 kilowatts of power.

The object of the program is to demonstrate the feasibility of using such generators in conjunction with conventional powerplants to increase markedly the amount of electricity produced from each ton of coal.

In conventional powerplants, coal is burned at about 3,000° Fahrenheit to produce steam to drive turbines. In contrast, the MHD system burns pulverized coal at more than 5,000°F. These hot combustion gases—called plasma—are channeled through a magnetic field that extracts electric power directly from the flow. Once out of the MHD channel, the plasma is still above 3,000°F and thus can be used in a conventional powerplant.

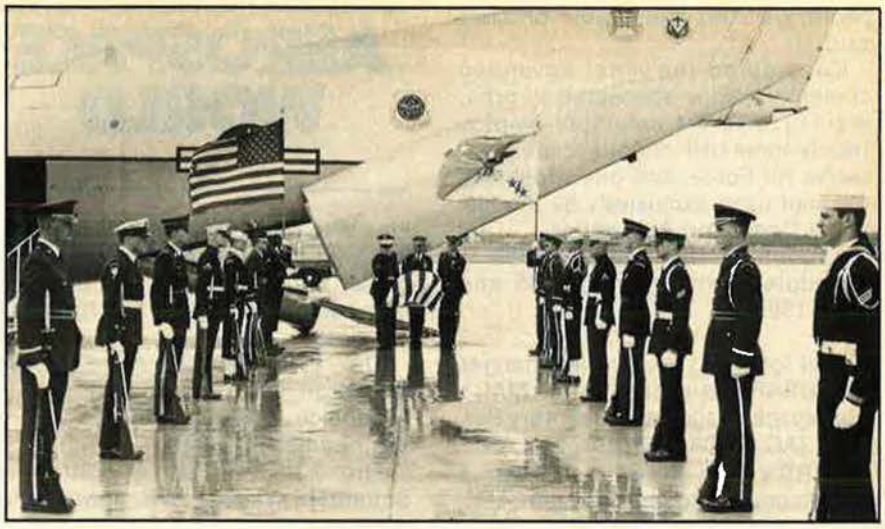
With the hoped-for production of 45,000 kilowatts, the Center would demonstrate that fifty to fifty-five percent of the energy in coal could be harnessed vs. thirty-five to forty percent realized from the most modern steam plants now operating. With commercial use then in reach, utilization of MHD could help stretch coal resources and cut electricity costs nationwide.

★ Production of three additional satellites in the military's Fleet Satellite Communications System program was initiated recently with the award of a $47 million contract to TRW's Defense and Space Systems Group, Redondo Beach, Calif.

The agreement is for the procurement of long-lead-time and high-technology components.

The FLTSATCOM system provides global communications to Navy fleet and Air Force nuclear-capable forces. The system's four satellites are currently operational over the Pacific, Atlantic, and Indian Oceans, in synchronous orbit 22,250 miles (35,730 km) above the equator. A fifth damaged during launch last August is not functioning.

The new satellites are to "close identified communication gaps" ap-



One of the US's great military leaders, Gen. Nathan F. Twining, USAF (Ret.), died in March. Here his body is escorted past an Honor Guard at Andrews AFB, Md. For a biography and tribute to General Twining, see p. 46.

Jammed Stabilizer Probably Caused Thunderbirds Crash

The probable cause of the tragic Thunderbird accident on January 18 was an unknown foreign object jamming the lead aircraft's horizontal stabilizer at a critical time in the formation loop the four aircraft were practicing. Gen. W. L. Creech, Commander, TAC, said, "The evidence is consistent with a serious flight control malfunction in the Thunderbird lead aircraft that prevented a safe recovery from the team's formation loop."

He also announced that the Thunderbirds are now reequipping with the F-16 Fighting Falcon aircraft. The revised concept is for the Thunderbirds to use fighter aircraft from an operational TAC squadron for the purpose. (The 430th TFS at Nellis AFB, Nev., has been designated.) The Thunderbird F-16 aircraft will be restorable to fighting configuration and deployment within seventy-two hours.

The 1982 Thunderbird demonstration season with the F-16 "will not begin before mid-August," General Creech said. He also told AIR FORCE Magazine that the paint scheme has not been decided upon, but basically it will be white for high visibility.

The exhaustive investigation determined that Maj. Norman L. Lowry, Thunderbird leader, in no way contributed to the accident. In fact, General Creech said the investigation "simply added to his lustre as a superbly qualified Thunderbird leader."

Selection and training of new Thunderbird pilots is under way.

—F. C. B., Jr.

pearing in the mid-1980s, officials said.

Considered the most advanced communications spacecraft in orbit, the FLTSATCOM satellites employ twenty-three UHF channels; ten Navy, twelve Air Force, and one widebeam channel used exclusively by the National Command Authorities.

Launch of the new vehicles is scheduled between mid-1985 and early 1987.

★ The following are aircraft changes that USAF has proposed for MAC's Aerospace Rescue and Recovery Service, TAC, PACAF, AFRES, and ANG.

ARRS's 55th Aerospace Rescue and Recovery Squadron, Eglin AFB, Fla., is to replace five HH-3E helicopters with the UH-60A Blackhawk helicopter early next year. The unit will gain some fifty military and five civilian slots.

AEROSPACE WORLD

The 19th Tactical Air Support Squadron, Osan AB, South Korea, is to replace its sixteen OV-10s with a like number of OA-37s.

The 22d Tactical Air Support Squadron, Wheeler AFB, Hawaii, is to replace its nine O-2As with OV-10s. The older aircraft will be retired to the storage center at Davis-Monthan AFB, Ariz.

A squadron of ten QF-100s is to be assigned to Tyndall AFB, Fla., and eighteen F-101s there will be phased out late this year with the deletion of 210 military positions.

Five T-33s and sixty military slots are to be transferred from Peterson AFB, Colo., to Tyndall this year, increasing the number of T-33s there to forty.

Luke AFB, Ariz., is to lose forty-seven F-104Gs, thirty military, and twenty civilian positions with the closing of the German Air Force training program. Six F-16s are to be de-

Helicopter Unit Flies Oldest Huey in the Air Force

An Olden Goldie is the UH-1P Huey assigned to the 1st Tactical Fighter Wing. (Photos by A1C Ron Golden)

When most people think of the 1st Tactical Fighter Wing, the sleek, supersonic F-15 Eagle comes to mind. A surprise to most people is that with the 1st TFW at Langley AFB in Virginia is a unit that operates the oldest "Huey" helicopters in the Air Force inventory.

The 1st TFW Helicopter Operations Unit flies two UH-1P Hueys, one built in 1963 and the other in 1966. One of the two Hueys still has the gun switches used in Vietnam.

While this helicopter unit may be diminutive in size, its mission is quite varied. According to Maj. Frank Zahrobsky, chief of helicopter operations, the unit's primary mission is support of the Dare County Bombing Range.

The range is a 46,648-acre site on North Carolina's eastern shore. "We provide logistics support for Seymour-Johnson AFB, N. C., by transporting passengers and cargo to and from the range," said Major Zahrobsky. "We also work at the range positioning targets as well as conducting aerial surveys of the area."

The unit also supports wing and Hq. TAC by transporting VIPs on administrative flights.

"We do medevacs on an 'as-available' basis," said Major Zahrobsky, "usually five to seven patients a year from Langley to Portsmouth Naval Hospital." Additionally, the helicopter unit is often involved in accident investigations such as the recent search-and-rescue operation involving an Air Force aircraft downed off the North Carolina coast.

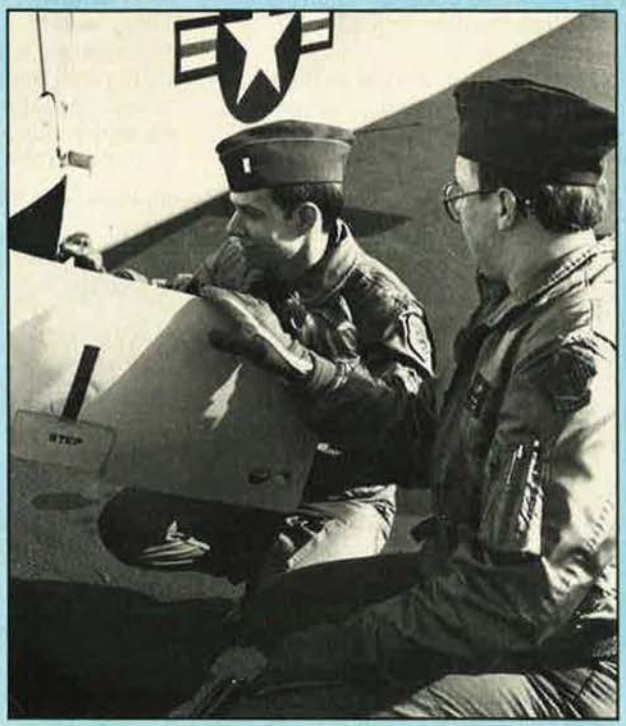
The helicopter operations branch has six pilots and three flight engineers. Maintenance is performed by the six-man helicopter maintenance section of the wing's 1st Equipment Maintenance Squadron.

The Hueys usually have a crew of three—pilot, copilot, and flight engineer—and can carry eight passengers. They have a range of 200 miles and top speed of 120 knots.

"The fact that they have been around so long is proof of their dependability," said Major Zahrobsky of the Hueys. "Usually the only problem with maintenance has to do with availability of parts."

And how do the pilots feel about flying helicopters in a wing with the most advanced air-superiority fighter in the world? "Here, as on many Air Force bases around the world, there are helicopter units that provide support to larger organizations that fly other types of aircraft," said the Major, who has been flying helicopters for sixteen years. "Our pilots are just as proud to belong to the 1st TFW as they would be if they were flying the F-15. We know that the support we provide contributes to the overall mission of the Air Force."

—BY A1C RON GOLDEN, USAF



1st Lt. Brian Sackett and SSgt. P. J. Williams conduct a preflight inspection at Langley AFB, Va.

ployed there, adding 120 military slots for USAF and future foreign military sales training.

Eighteen F-106 interceptors, 550 military, and ten civilian positions at McChord AFB, Wash., are to be replaced by eighteen F-15s, 650 military, and ten civilian positions late next year.

An additional ten F-16s and 200 military positions are to be added to Nellis AFB, Nov., bringing the number of F-16s there to ninety-six.

Eighteen more F-4Es are to be added at Moody AFB, Ga., with an increase of 570 military and ten civilian slots.

Six A-10s and 200 military positions are to be added at Eielson AFB, Alaska, in mid-1983.

As for the Air Guard and AFRES:

Six RF-4Cs are to be added to the 124th Tactical Reconnaissance Group at Boise, Idaho, along with sixty-one part-time drill pay positions and twenty-four full-time military positions in mid-1983.

The 192d Tactical Fighter Group, Byrd IAP, Sandston, Va., is to add six A-7Ds, 123 drill pay positions, and twenty full-time military positions in mid-1983.

The 160th Tactical Reconnaissance Squadron, Dannelly ANGB, Montgomery, Ala., is to convert from RF-4Cs to F-4Ds in mid-1983, and be redesignated a fighter squadron. This conversion will result in a decrease of seventy-nine drill pay positions and nine full-time military positions. Some $2.75 million in military construction is planned for Dannelly Field.

The 176th Tactical Airlift Group, Anchorage, Alaska, will convert from C-130Es to C-130Hs late next year, with no change in the number of personnel.

In early 1985, AFRES is to convert from six CH-3Es to twenty-four F-4s at Luke AFB, Ariz. The 302d Special Operations Squadron will be redesignated the 302d Tactical Fighter Squadron. This action will result in an increase of 901 reserve military positions, 218 civilian/technician positions, and $6.8 million in military construction. The aircraft being replaced are to be redistributed within AFRES or put out to pasture at Davis-Monthan AFB.

The 466th TFS at Hill AFB, Utah, is to convert from eighteen F-105s to eighteen F-16s in early 1984. Six additional F-16s will be added at a later date. The 419th Tactical Fighter Wing will be activated and the 508th TFS will be deactivated, resulting in an increase of 179 reserve military positions, a decrease of eighteen civilian/technician positions, and an additional $1.2 million in military construction.

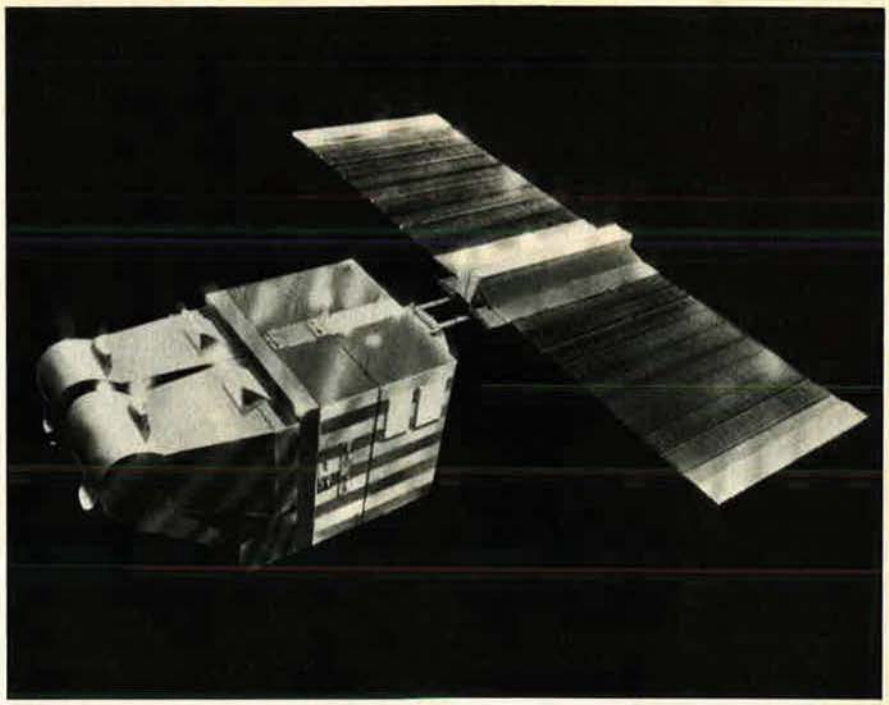
The 357th TAS at Maxwell AFB, Ala., is to convert from sixteen C-7s to eight C-130Es late next year, resulting in an increase of 320 reserve military positions and forty-three civilian/technician positions.

The 169th TFG at McEntire ANGB, S. C., is to convert from the A-7D to the F-16 in 1983, the first ANG unit to receive the Falcon.

In other AFRES moves, airlift control elements (ALCEs) have been added to six tactical airlift units.

The units are the 94th Tactical Airlift Wing, Dobbins AFB, Ga.; 433d TAW, Kelly AFB, Tex.; 439th TAW, Westover AFB, Mass.; 440th TAW, Gen. Billy Mitchell Field, Wis.; 459th TAW, Andrews AFB, Md.; and 446th MAW (Associate), McChord AFB, Wash.

The ALCE serves as a focal point for



Artist's concept of France's earth resources satellite scheduled for launch in 1984. The satellite will be powered by a generator provided by Germany's AEF-Telefunken. From synchronous orbit, the satellite will survey agricultural and forestry areas as well as monitor water levels and aid in crop predictions.

Built by Mitchell Aircraft Corp., Porterville, Calif., an ultralight for other than recreational flying. This full three-axis aircraft can carry a pilot and fifteen gallons of agricultural chemicals for low-volume application. The ultralight, powered by a thirty-hp engine, can cruise at fifty-five mph and is also designed for fence patrol and irrigation surveillance. The plane lands at thirty mph and its wings can be folded in less than five minutes for storage.

AEROSPACE WORLD

all airlift activities at an operating location and is composed of a commander and two other officers, three loadmasters, three air operations specialists, and an administration specialist.

For the most part, AFRES ALCEs are visualized as backups to their active-duty MAC counterparts, which can be deployed anywhere in the world on short notice, officials said.

The second prototype of the Atlantic Nouvelle Génération aircraft, built by Dassault/Breguet of France, made its first flight in late March. The "new-generation" aircraft, based on the classic Atlantic, is destined for the French Navy and service on antisurface and antisubmarine warfare missions.

★ The government and industrial team—including NASA, Rockwell International Corp., Martin Marietta Corp., and Thiokol Corp.—that "proved the concept of a manned reusable spacecraft" is to be awarded the Collier Trophy for 1981.

The National Aeronautic Association, sponsor of the annual award that recognizes the greatest achievement in aeronautics or astronautics, extended special recognition to Astronauts John Young, Robert Crippen, Joseph Engle, and Richard Truly. The four crewed the two successful Space Shuttle flights in 1981.

In citing "the extraordinary technical and management challenges" that were met by the flight of *Columbia I* by Young and Crippen in April 1981 and *Columbia II* by Engle and Truly in November, the NAA underlined the achievement in both aeronautics *and* astronautics—"probably a first in itself."

Other highlights noted: The first airplane-like landing of a craft from orbit; the first use of solid rockets to launch a manned spacecraft and the first recovery of boosters for reuse; the first launch of a manned American spacecraft into orbit without prior or unmanned testing; and the first reuse of a manned spacecraft.

The Collier Trophy was established in 1911 and first presented to Glenn Curtiss for his development of a seaplane.

★ Tactical Air Command and Air Force Logistics Command have been awarded the Secretary of the Air Force Safety Award for 1981.

The award recognizes two commands that have had the most effective overall safety program during the year. TAC won in the category of those commands that have a mission constituting more than two percent of total flying hours; AFLC was victorious over the commands without a flying mission or less than the two-percent total.

The awards were presented at the recent "Corona South" Air Force commanders conference at Homestead AFB, Fla.

TAC's major mishap rate for aircraft was the lowest in seven years, during tactical operational missions that logged more than 650,000 flying hours. Equally impressive was the command's ground-safety record that terminated the year with no operational on-duty fatalities.

AFLC also turned in an outstanding performance, considering that its worldwide logistics mission involves some 90,000 people engaged in complex industrial activities. There were no on-duty operational fatalities, and total military and civilian injuries were twenty percent below those of the previous year, officials said.

★ **NEWS NOTES—Army Gen. John W. Vessey, Jr.,** has been nominated to succeed Gen. David C. Jones, USAF, as **Chairman of the Joint Chiefs of Staff** effective July 1. General Vessey is currently serving as Army Vice Chief of Staff and will be the first JCS Chairman from the Army not to have

Powerless giant bird with its wings removed, the first of seventy-six C-5As to receive new wings is backed into a hangar at Lockheed-Georgia Co. facilities in Marietta. The aircraft's new wings are constructed of new aluminum alloys specially heat-treated to extend the aircraft's life well into the next century.

TROUBLE SHOOTER.

The USAF/Fairchild A-10 is the most effective anti-tank weapon system in use today.

With its lethal 30mm airborne cannon—the seven-barrel General Electric GAU-8/A—the A-10 is built to attack armor in the toughest combat zone and survive. Low-level flying tactics and superior maneuverability present the enemy with an extremely difficult target to track and hit while the A-10 attacks. Defending trouble spots the world over, the A-10 is on station in the U.S. and Europe—today!

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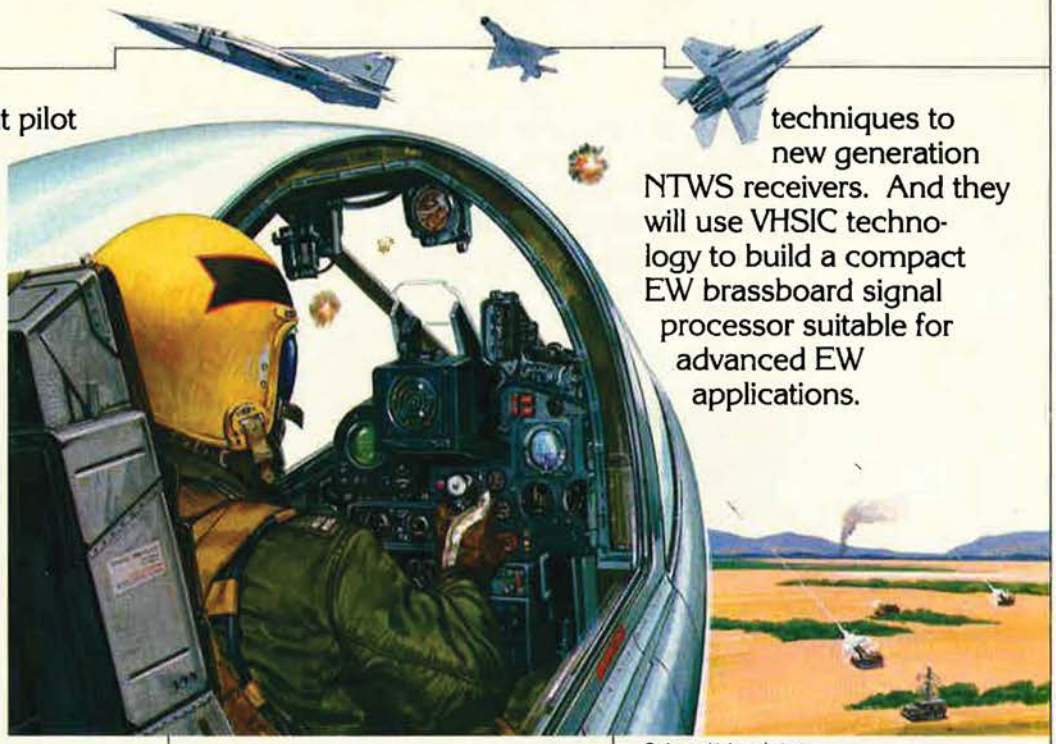
ELECTRONIC BODYGUARD



When a combat pilot enters hostile territory, he is barraged by electronic signals from hundreds of enemy emitters: he needs to instantly identify all air defense radars, surface-to-air missiles, and airborne interceptors posing lethal threats to his mission.

Unfortunately, the signal density of today's EW threat environment has nearly outgrown the warning and threat management capabilities of conventional avionics.

The good news is that TRW has the necessary digital and RF VLSI, plus advanced avionics software to handle the problem.

We're putting it all to work in helping the Air Force and Navy design a new, highly integrated, threat warning system (NTWS).

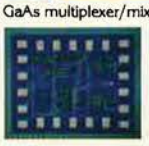
Consisting of broadband receivers, extremely high speed signal processors, and emitter identification software, our NTWS will allow pilots to instantaneously locate and identify emitters across a wide frequency range.

And we'll enhance it with multi-sensor data correlation and ECM management support.

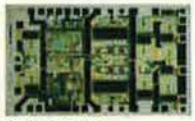
NTWS will provide 10 times the processing capabilities of existing avionic receiver and signal processing systems — in the same available space.

To do the job, TRW engineers are applying mature VLSI and receiver techniques to new generation NTWS receivers. And they will use VHSIC technology to build a compact EW brassboard signal processor suitable for advanced EW applications.

GaAs multiplexer/mixer



VLSI convolver



Silicon RF LSI

For more information on NTWS, please contact:
Richard A. Maher
4045 Sorrento Valley Blvd.
San Diego, CA 92121
(714) 450-3836

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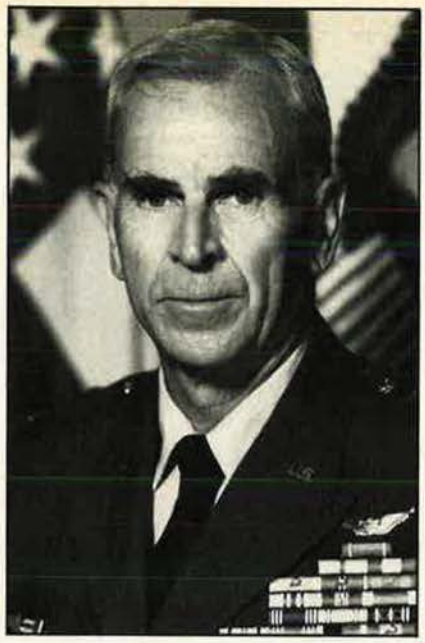


New Chairman of the JCS, Army Gen. John W. Vessey, Jr.—a "soldier's soldier." See News Notes, p. 36.

AEROSPACE WORLD

served as Chief of Staff of his service. He will also be the first Chairman from the Army not to have graduated from West Point. The General is a former enlisted man who received a battlefield commission during World War II on the Anzio beachhead. He is fifty-nine and is considered a "soldier's soldier." General Jones will step down after eight years with the JCS—four as Chairman. He recently espoused revamping the Joint Chiefs to make the nation's highest military echelon more effective. See April issue, p. 17.

Alaskan Air Command's 21st TFW, Elmendorf AFB, has begun to receive the **twenty-seven F-15 Eagles** scheduled to replace the unit's F-4E Phantom IIs, also built by McDonnell Douglas. The changeover will be concluded in mid-year.

Japan's daily newspaper, *Asahi Shimbun,* is sponsoring **a small "Getaway Special" experiment aboard** an early Space Shuttle flight, possibly this year. The experiment is to make pure artificial snow crystals in weightlessness, the idea of **two high school students** from among the some 17,000 suggestions submitted by readers.

Of the some **600 Air Force air traffic controllers** deployed to sixty-two civilian facilities during the ATC strike that began last August, **nearly 230 had returned to parent units** by late February. The remainder are expected to be recalled to their home units by September.

Died: Edith E. Caffrey, former secretary to Air Force Chiefs of Staff White, LeMay, McConnell, and Ryan, following a long illness in Clinton, Md., in March. She was sixty-four. ■

INDEX TO ADVERTISERS

Powerful stuff. When it comes to sheer performance, nothing—but nothing—beats the F-15 and

F-16 fighters and their F100 engines from Pratt & Whitney Aircraft, a division of United Technologies.

CAPITOL HILL

By Kathleen G. McAuliffe, AFA DIRECTOR OF LEGISLATIVE RESEARCH

Washington, D. C., March 26

MX Cut

The Senate has taken another step in pushing the Administration into a decision on a permanent, survivable basing mode for MX. An Armed Services Committee panel unanimously rejected interim basing and recommended accelerating deployment of MX in a permanent basing mode. The Secretary of Defense now must make the selection and so notify Congress by December 1. Last year Congress moved up its deadline to July 1983.

The action has the support of Senate Armed Services Committee Chairman, Sen. John Tower (R-Tex.), because, he claims, it will save the MX system by making it less vulnerable to attacks on the House and Senate floor where the Administration's plan might have lost. Senator Tower believes DoD's recommendation will be for a form of deceptive basing with a ballistic missile defense overlay deployable "appreciably earlier than 1989." He discarded the Continuous Patrol Aircraft as a viable basing mode because of its problems with timely base escape, a radar cross section "the size of Buckingham Palace," and crew fatigue. He also said the deeply buried silo approach was not acceptable because it denies urgent response capability.

The subcommittee proposal, unlikely to meet resistance in the Senate while providing substantial momentum for a similar move in the House, defers all procurement money ($1.5 billion) for the first nine missiles; eliminates the $715 million previously earmarked for interim basing; and keeps intact $1.7 billion for missile development to support a first flight test in January 1983 and $565 million to pursue DoD's recommended basing solution.

Tower on Defense Cuts

Sen. John Tower cautioned the Senate Budget Committee against significant reductions in the President's $258 billion FY '83 defense request. He asked that the Armed Services and Appropriations Committees be allowed to make the necessary cuts. Without giving specifics, he cited $2 billion in outlay savings he has already found in the request.

Senator Tower endorsed force structure reduction as the only prudent means of achieving immediate savings, and treated as sacrosanct those areas slighted for years—readiness and force modernization. Lending credence to his proposal, he cited the Joint Chiefs' concurrence that "a slightly smaller, fully manned, and well-armed force structure" is preferable to one that is "hollow." A smaller force will yield immediate reductions in costs by requiring less money for operations and maintenance (O&M), and personnel, but will ensure a balanced cut in training, O&M, and civilian and military personnel.

Some of the force reductions must come from overseas, but Senator Tower said US forces are already stretched too thin to meet expanding commitments. Over the last five years, overseas troop strength has risen by nine percent while overall strength has decreased by two percent. Force reductions may mean inability to meet some foreign policy commitments.

747 Proposal

Sen. Henry Jackson (D-Wash.) questions the Air Force decision to buy fifty C-5Bs and forty-four KC-10s for $11.8 billion and wants Congress to look at other airlift options. Specifically, he proposes that the USAF buy commercial Boeing 747s as allegedly the most cost-effective way to substantially increase airlift. Senator Jackson represents the state where Boeing is headquartered.

Air Force Chief of Staff, Gen. Lew Allen, Jr., told the Senate that the decision to go with the C-5B rather than the 747 stems from the fact that the Boeing aircraft is not a "good" carrier of outsize cargo. The current airlift shortfall is primarily in the outsize cargo category. Further, the C-5B has roll-on, roll-off capability. The Air Force now is evaluating a new Boeing proposal to buy thirty existing, surplus 747s. However, twelve of these are US owned and are already part of the Civil Reserve Air Fleet (CRAF) program. The remaining eighteen are owned by foreign airlines. With a sluggish economy and an election in November, Congress probably will not agree to buy such aircraft and improve foreign airlines' competitive position vis-à-vis the already troubled US airline industry.

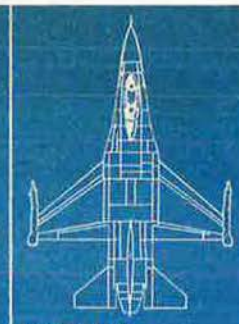
LANTIRN Questioned

Congress is questioning again the need for LANTIRN, the Air Force's top-priority tactical program. The Air Force is seeking $108 million for R&D on LANTIRN to provide the F-16 and A-10 with improved navigation and targeting capability during night and adverse weather.

Congressional sources charge the program with technical and cost problems and want the services to reduce the number of electro-optical pods by devising a plan to achieve maximum commonality in this area. Last year Congress directed the Air Force to conduct a competitive development program to include LANTIRN and the Navy's F-18 FLIR (Forward Looking Infrared) pod. USAF officials recently told a House panel that adapting the FLIR pod for F-16 use might prove difficult in terms of cost and schedule. Currently, procurement cost for LANTIRN is about $6 million per pod, which the Air Force believes is not out of line with FLIR. Initial cost-effectiveness studies show that LANTIRN even at higher cost would still be a good buy.

C-17 R&D

Congress is looking askance at USAF plans to continue R&D on the C-17 (CX competition winner) while buying the C-5B. The Air Force wants "minimal" funds for FY '82 and FY '83 in order to make a recommendation for additional airlift in 1984. A C-17 type aircraft will be needed since the planned buy for the C-5B is inadequate, and it cannot meet the intratheater requirement, according to Air Force officials. The C-130s are to be phased out beginning in the early 1990s. The intratheater airlift shortfall will become acute at that time unless Congress funds a replacement. ■



Length: 47.64 ft.
Wing span: 31 ft.
Wing area: 300 sq. ft.
Weight empty: 15,200 lb.
Max. takeoff weight: 35,400 lb.

F-16 Fighting Falcon
Combat radius: 500+ nautical miles
Speed: Mach 2+
Load capacity: 15,200 lb.
Weapons capabilities: Sidewinder heat-seeking missiles, rapid-fire Vulcan 20mm M61 gun, free-fall and guided bombs, and ordnance dispensers. Systems upgrade to include Sparrow and AMRAAM radar-guided missiles.

F-16 Fighting Falcon. High Performance. Outstanding reliability. Flexible multimission capability. Now in operation with the 388th Tactical Fighter Wing, Hill AFB, the 56th Tactical Fighter Wing, MacDill AFB, the 474th Tactical Fighter Wing, Nellis AFB, and the 8th Tactical Fighter Wing, Kunsan AB, South Korea.

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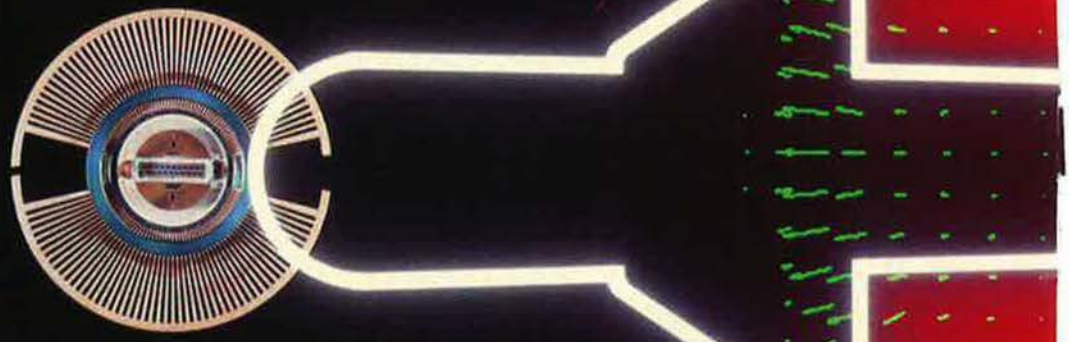

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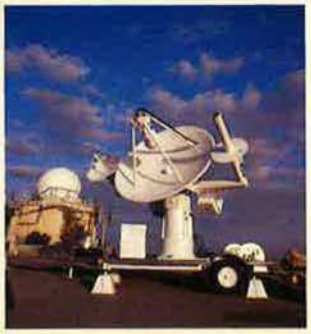
Propulsion and Rocket Casing

Test Range



Fuzes

Micro-Electronics

Electro-Magnetic Capabilities

General Twining Dies at 84

Renowned as a leader in pursuit, attack, and bomber aircraft, Gen. Nathan F. Twining had peacetime and wartime experience that fitted him admirably to serve his country as its top airman and top military leader, bringing the Air Force and the other services into the Space Age. He always led by example, and was considerate of others while remaining toughminded on the important points of national security.

By Ann Leopard and The Editors of AIR FORCE Magazine

GEN. Nathan F. Twining, USAF (Ret.), third Chief of Staff of the US Air Force and third Chairman of the Joint Chiefs of Staff, died at Wilford Hall USAF Medical Center on March 29 of cardiopulmonary arrest. Following funeral ceremonies at the Fort Myer Chapel, General Twining was buried at Arlington National Cemetery on April 1.

General Twining, who liked to echo Orville Wright's sentiment that the airplane "is the only guarantee of peace in the world," leaves a legacy of accomplishment, devotion to his country, and proven courage.

After he became USAF Chief of Staff on June 30, 1953, AIR FORCE Magazine noted that "America's number one airman is a cigar-smoking, soft-voiced, handsome, grey-haired, rugged man of fifty-five, who has spent more than thirty-seven years in the service of his country." He logged seven more years of active-duty service before retiring as Chairman of the JCS on September 30, 1960. From then until his death, his wise counsel continued at the service of his country's leadership.

Born October 11, 1897, General Twining grew up in Monroe, Wis., and Portland, Ore., where, at age eighteen, he enlisted in the National Guard because he "liked to shoot." After service as a corporal on the Mexican border, he earned a competitive appointment to West Point. He entered in the summer of 1917 and graduated on November 1, 1918. His class was recalled as student officers on December 3, 1918, and graduated again on June 11, 1919.

Commissioned in Infantry, he served on a postwar observation team visiting allied battlefronts, and then attended the Infantry School at Fort Benning, Ga., graduating in June 1920.

He entered primary flying training at Brooks Field, Tex., in 1923, and won his wings in 1924. He served as a flight instructor at Brooks and at March Field, Calif., until February 1929 when he was assigned to the 18th Pursuit Group at Schofield Barracks, Hawaii. While there Twining met and married Maude McKeever, the daughter of a sugar broker, on March 9, 1932.

On his return to the States, General Twining was assigned to 3d Attack Group at Fort Crockett, Tex. In February 1934, he took part in "flying the mail" as engineering officer of the Central Zone of the USA, under Col. Horace Hickam. Afterward, he served a series of flying and school assignments, including graduating from the Air Corps Technical School at Maxwell Field, Ala., in 1936, and the Command and General Staff School at Fort Leavenworth, Kan., in 1937. In 1935, after seventeen years as a lieutenant, he was finally promoted to the rank of captain.

The 1930s were years when service life was lean, promotions slow, and challenges many. They were also years when future wartime leaders like George C. Marshall, "Hap" Arnold, and "Tooey" Spaatz began, as Spaatz said, "to notice up-and-coming youngsters like Van [Gen. Hoyt S.] Vandenberg, Twining's predecessor as Chief of Staff, and Nate."

In August 1940, he began a two-year tour in Washington, first in the Inspection Division, and later with the Operations Division of the Army Air Forces and in the AAF Chief of Staff's office.

In July 1942, General Twining was assigned to the South Pacific as Chief of Staff of Allied Forces, and in January 1943 he became the first commander of the Thirteenth Air Force. On January 26, 1943, en route from Guadalcanal to his headquarters on Espiritu Santo, his B-17, with fifteen aboard, went down at sea. Adrift for six days in rafts, General Twining and his men lived on meager rations—including a few canned sardines and an albatross the General shot with his service pistol—until rescued by a Navy PBY patrol aircraft.

In November 1944, General Twining assumed command of the Fifteenth Air Force in Italy, succeeding Maj. Gen. James H. Doolittle. He also commanded the Mediterranean Allied Strategic Air Forces, launching strike missions against Germany, Austria, and the Ploesti oilfields in Romania. In July 1945, General Twining assumed command of the Twentieth Air Force, taking over from Gen. Curtis LeMay and leading it until the war's end, including the atomic bombings of Hiroshima and Nagasaki.

Following the war, General Twining commanded the Air Materiel Command (now AFLC) at Wright Field, Ohio, then became Commander in Chief of the unified Alaskan Command. AIR FORCE Magazine recounted his consideration for others in an encounter that took place just before he left Wright Field for Alaska. At a social affair, a young lady who knew of his Alaskan assignment and his prowess with a rifle asked him to "please shoot her a parka while he was in Alaska." He winced mentally and then promised to do so, in order to avoid embarrassing her.

General Twining returned to Air

Force headquarters in mid-1950. In October of that year he was named Vice Chief of Staff. General Twining succeeded Gen. Hoyt S. Vandenberg as Chief of Staff on June 30, 1953, promising that the visions of earlier airpower advocates would be realized in the still-new Air Force. His amiability, dedication, and refusal to engage in partisan rivalries enhanced the image of the nation's Air Force.

While Chief of Staff, General Twining addressed himself to national concerns with relevance for today. Example: "If we Americans ever get to the point where we shudder at each new invention of science, instead of rejoicing in it . . . where we worry more and more about the possible misuse of each scientific and mechanical development and show less and less enthusiasm for the wider opportunities offered . . . then indeed our days of greatness are over and defeat is but a matter of time."

During his tenure as Chief of Staff, General Twining saw the Air Force Academy established, the ICBM program begun, and the first airborne thermonuclear bomb drop over Bikini Atoll, among other events.

After two tours as Chief of Staff, General Twining was appointed by President Eisenhower to succeed Adm. Arthur W. Radford, USN, as Chairman of the Joint Chiefs of Staff, and he took up the post on August 15, 1957. During his more than three years as Chairman, General Twining saw the Soviet ICBM threat develop into reality, the US space program begin in earnest, and US troops employed to enforce court-ordered integration in Little Rock and landed in Lebanon to restore order.

In one of his last speeches as Chairman, on September 28, 1960, General Twining reflected on development and support of national policy. Among the points he raised with his audience was this: "A man engaged in this kind of serious business has to be toughminded. Because the stakes are vital, we shall undoubtedly encounter situations in which the United States will have to follow courses that are momentarily or superficially unpopular—both at home and abroad." Referring to our people overseas: "They should be judged primarily on how tenaciously they defend the American interest. Being loved is an unreliable alternative for a foreign policy."

General Twining was a Command Pilot. When he became Chief of Staff, he had 4,444 hours of single-engine time logged, and thousands more on multiengine aircraft. His decorations included the Distinguished Service Medal, Navy Distinguished Service Medal, Legion of Merit with Oak Leaf Cluster, Distinguished Flying Cross, Bronze Star, Air Medal, and others, as well as numerous decorations from foreign governments.

After military retirement, he was Vice Chairman of the Board of the publishing company of Holt, Rinehart, and Winston. His last years were spent at the Air Force Village in San Antonio, Tex., a place he enjoyed. He was a charter member of the Air Force Association and served on its Board of Directors until his death.

General Twining is survived by his wife Maude; two sons, Richard and Nathan; and a daughter, Olivia Twining Hansell. ■

Reflecting the Air Corps's leanest times, General Twining remained a lieutenant for seventeen years, left photo. Mrs. Twining recalled the General's long-awaited promotion to captain as "the biggest and most exciting, even including the latest [promotion to four-star rank]." As World War II neared, General Twining and other aviators advanced quickly into command positions. In the center photo, General Twining is congratulated on his rescue in January 1943 after spending six days adrift in the Coral Sea when his B-17 was forced down. After the ditching, General Twining took command of his most unusual unit—the fourteen people jammed into two life rafts with him. "We didn't have a mimeograph aboard to publish the order," one of the crew members wrote later, "and General Twining never bothered to make a public announcement that he had assumed command. He led without benefit of band or ceremony, for his was a natural leadership." Some years later, with the benefit of band and appropriate ceremony, retired Lt. Gen. Jimmy Doolittle, in the photo at the right, was on hand to congratulate General Twining on his reappointment to the Air Force's top leadership post, in June 1955. General Twining was well known for his thoughtfulness toward others. In fact, a member of his staff told an AIR FORCE *Magazine writer in 1953, "He seldom 'blows his stack.' I've probably seen him when he was mad and didn't even know it myself."*

Add a couple of you may not need the

Needless to say, the purchase of different aircraft to meet different mission requirements is, to some extent, inevitable.

A jet fighter will never double as a cargo plane.

But the number of aircraft types you need to buy in order to perform such missions as priority personnel transport, cargo transport, air ambulance service, flight inspection/calibration, pilot and systems training, remote surveillance, search and rescue and reconnaissance and mapping can, in fact, be reduced dramatically.

To one.

For example, a Canadair Challenger outfitted for cargo transport can quickly be converted into a 28-passenger people-hauler. Or a 14-passenger people-hauler with a large cargo area.

A Canadair Challenger outfitted for priority transport of V.I.P. personnel can, with the addition of two partitioned operators' consoles, easily double as a surveillance or flight inspection/calibration aircraft.

A Challenger outfitted for remote sensing and surveillance can quickly be refitted for reconnaissance and mapping.

A Challenger outfitted as an air ambulance or MED/EVAC aircraft can, with relative ease, switch to a flight inspection/calibration interior. Or an advanced pilot and systems trainer interior. Or a maritime surveillance/search and rescue interior.

All told, the variations of equipment you can move into and out of a Challenger are far too numerous to mention.

What's just as important, the Challenger gives you more AC power to run it on than any other aircraft in its class.

In fact, it's the only all-AC electrical system you'll find on any jet short of the latest commercial airliner. Unlike DC systems, AC gives you the benefits of extreme light weight in relation to power produced and far less chance of electrical failure due to low current, constant frequency and the obvious fact that there's no need for cumbersome inverters.

As for those of you who just want to get from point A to point B, you'll find the Challenger will fly you more economically and in greater comfort than any comparable jet in the world.

Overall, the Canadair Challenger averages a 22% lower rate of fuel consumption per mile than a Gulfstream III, virtually the same rate of fuel consumption per mile as the far smaller Falcon 50 and, hard as it may be to believe, a 24% lower rate of fuel consumption per mile than the small, short-range T-39.

Yet the Challenger is actually bigger than all of them in the one dimension crucial to passenger comfort and a realistic working environment: width.

Measured at the floor line, the Canadair Challenger is roughly 30% wider than the Gulfstream III, and 48% wider than the Falcon 50.

And speaking of range.

With the Challenger's big fuel tanks and extremely low rate of fuel burn, you can cross the Pacific with one stop, fly from New York to the Middle East with one stop or fly from Washington to London non-stop.

Or, getting back to multiple missions, fly a thousand miles out for, s remote surveillance and still remain on station for four to five hours before flying back.

To find out more about the aircraft that can perform the roles of two or three or four aircraft, just cal Mr. James B. Taylor, President of Canadair Inc., at 203-226-1581. O write Canadair Inc., 274 Riverside Avenue, Westport, CT 06880.

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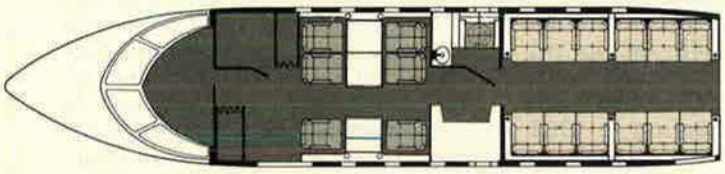
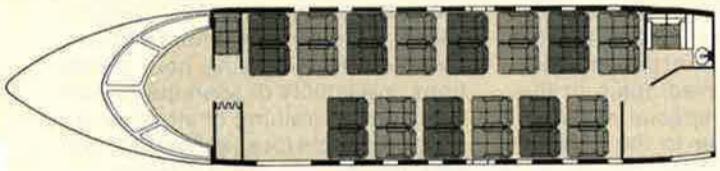
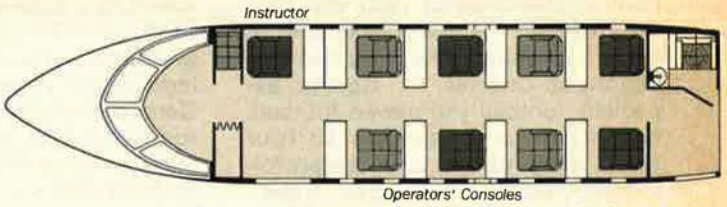


VIP Interior

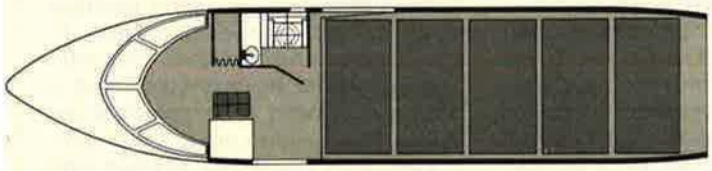
Flight Inspection/Calibration



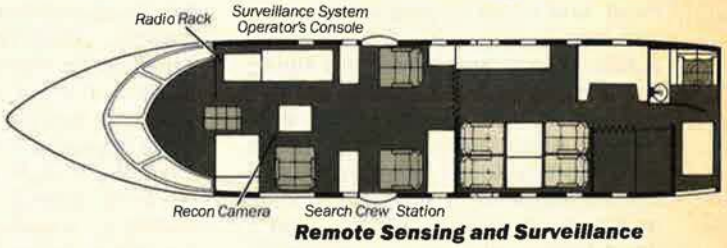
28-Passenger Interior



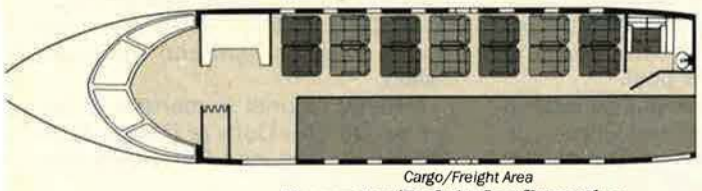
Advanced Pilot and Systems Trainer



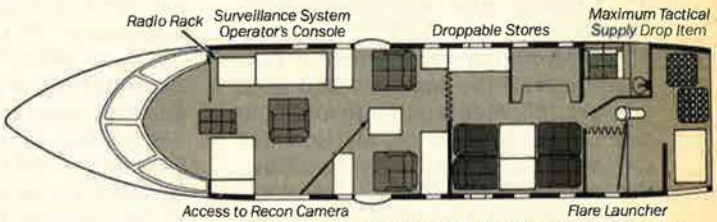
Cargo Configuration



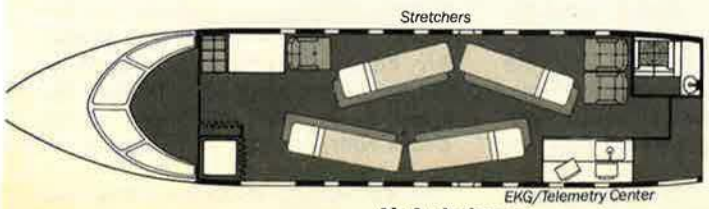
Remote Sensing and Surveillance



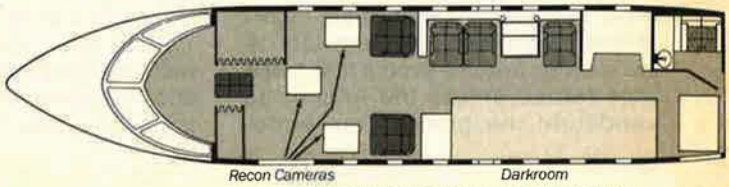
Passenger/Freight Configuration



Maritime Surveillance/Search and Rescue



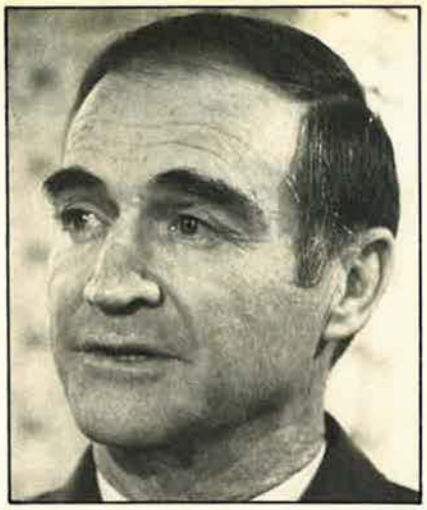
Air Ambulance



Reconnaissance and Mapping

The New Chief: STRONG ON READINESS

Gen. Charles A. Gabriel, Commander in Chief of US Air Forces in Europe, was recently named by President Reagan to succeed retiring Gen. Lew Allen, Jr., as USAF Chief of Staff. A veteran fighter pilot who flew combat missions in Korea and Vietnam, General Gabriel has been a strong advocate of readiness and sustainability in combat during his tour as Commander of both USAFE and Allied Air Forces Central Europe.



Gen. Charles A. Gabriel will be USAF's next Chief of Staff, replacing retiring Gen. Lew Allen, Jr., on July 1.

GEN. Charles A. Gabriel, fighter pilot in two Pacific wars, will become the US Air Force's eleventh Chief of Staff on July 1. He is currently Commander in Chief, US Air Forces in Europe (USAFE), and Commander, Allied Air Forces Central Europe (AAFCE), with headquarters at Ramstein AB, Germany.

Born in Lincolnton, N. C., January 21, 1928, General Gabriel graduated from the US Military Academy at West Point in the Class of 1950, standing 283d of 670. His classmates said of him: "Easygoing is the word that best describes Charles. . . . Sports, especially football [he played football, basketball, and baseball all four years], were his first love, closely followed by music and dancing. Gabe's ever-present smile, even temperament, and warm sincere manner rate him tops. . . ."

After basic and advanced flying training, he earned his wings in 1951. His first combat was flying F-51 Mustangs in Korea. He transitioned to the F-86 Sabre in Korea, at the 51st Fighter Interceptor Wing. A squadron mate of those days says, "Charlie was a good fighter pilot, with good hands. The transition into the F-86 consisted of our giving him an orientation, having him read the manuals and do a cockpit drill, then launching for a solo flight. He took to it readily, and was quickly an effective jet fighter pilot." While flying F-86s, General Gabriel is credited with shooting down two MiG-15s.

From Korea, General Gabriel went to Germany to fly with the 86th Fighter Interceptor Wing at Landstuhl. A few months later, when the first F-86s were ferried across the Atlantic to Landstuhl, he greeted the bone-weary lead pilot with a smile and a bottle of champagne.

For three years in the late '50s, he was an air officer commanding at the US Air Force Academy, then returned to flying at Moody AFB, Ga., for two years. From there he attended the US Naval War College Command and Staff course, graduating in 1962. After that, he earned a master's degree in engineering management at George Washington University, followed by a three-year tour on the Air Staff in the Directorate of Plans. After graduating from the Industrial College of the Armed Forces in 1967, General Gabriel served again in Europe, this time as special assistant and executive officer to the Chief of Staff, SHAPE.

He returned to aerial combat in the Pacific as Vice Commander and Commander, 432d Tactical Reconnaissance Wing, flying 152 combat missions in the F-4 out of Udorn, Thailand. His second Pentagon tour was three years in the operations directorate of the DCS, Plans and Operations, 1972–75, during which he was promoted to brigadier general (November '72). Promoted to major general in September 1974, he moved to Headquarters, TAC, at Langley AFB, Va., as DCS/Operations, serving two and one-half years in the post.

Promoted to lieutenant general in September 1977, General Gabriel returned to Korea as Deputy Commander, US Forces Korea, and Deputy CINC, UN Command. (He was deputy to Army Gen. John Vessey, who becomes Chairman, JCS, on July 1.)

From April 1979 to July 1980, he was USAF's DCS/Operations, Plans, and Readiness, the position he held until promotion to general and appointment as CINC, USAFE, and Commander, AAFCE, in July 1980.

During his tenure in Europe, General Gabriel has become well known throughout US and allied commands as an advocate of increased unit readiness. He has expanded and redefined the concept of "readiness" to include greater sustainability. He has emphasized achieving better readiness and sustainability through better use of existing resources and proper employment of recently increased operation and maintenance (O&M) funding. He emphasizes increased effective flying hour allocations, availability of spare parts, realistic combat training of aircrews and support people for sustained combat, and improved logistics support.

He has been a strong advocate of increased US and NATO funding to furnish minimum essential facilities at all collocated operating bases to provide wartime bed-down for reinforcing units. He has also been a strong supporter of increased interaction and training among allied aircrews, with increased realism and rigor in combined training.

He will bring to bear all his skills in interservice and allied operations in continuing to forge a US Air Force that is ready to fight and win when called.

General Gabriel is married to the former Dorothy Cutts of Oxford, N. C. They have two children, Jane and Charles.

He is a command pilot, whose US military decorations include the Defense Distinguished Service Medal, Air Force Distinguished Service Medal, Legion of Merit with oak leaf cluster, and Distinguished Flying Cross with four oak leaf clusters. ■

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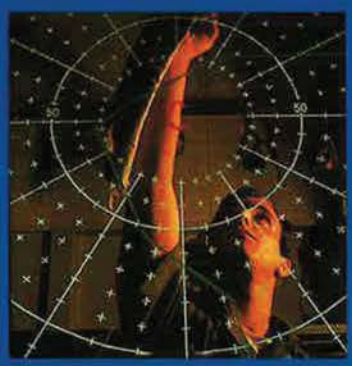
Total Force Operations: AFCC control tower people, right, annually handle more than 12,000,000 takeoffs and landings, like the AFRES F-105 Thunderchief, below.

A brief look: Air Force people meeting the defense challenge of the 1980s.

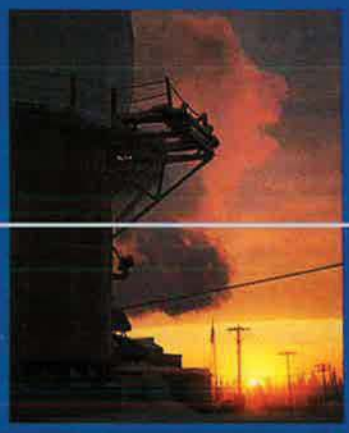
USAF at Work

BY CAPT PHIL LACOMBE, USAF,
CONTRIBUTING EDITOR



Training for Success: Air Training Command students are trained in the many skills needed for combat effectiveness, like the plotter, right, or the Military Airlift Command crew chief preparing for an early morning departure at Norton AFB, Calif.

Maintenance, an important part of the combat team: TAC maintenance people, left, ready an A-10 for a mission during Gunsmoke '81. Below, AFLC's depot level maintenance goes on around the clock at the San Antonio Air Logistics Center.



Worldwide effort: Air Force ground facilities around the world, like the USAFE aircraft shelters, above, and Alaskan radar, left, play an essential role in combat readiness.

...ple make it happen: An Air National Guard mechanic, ab...ve, making sure the C-130 is ready to perform as expected. People are also the subject of some AFSC research activities; left, an Air Force Human Resources Laboratory project.

Capability for the '80s: Representative of the weapon systems needed to meet the defense challenge are the Air-Launched Cruise Missiles aboard a SAC B-52, above, and PACAF F-15s, left, working with a TAC E-3A AWACS aircraft.

FEARS ARE MOUNTING THAT INFLUENTIAL ELEMENTS IN CONGRESS MIGHT INADVERTENTLY SACRIFICE CRUCIAL NATIONAL DEFENSE REQUIREMENTS FOR EPHEMERAL BUDGETARY COMFORT.

HOW THE DEFENSE BUDGET BATTLE IS HEATING UP

BY EDGAR ULSAMER, SENIOR EDITOR (POLICY & TECHNOLOGY)

Moscow's Janus-faced tactics of preaching disarmament abroad while chaining its own people and economy to a rapacious weapons culture are summed up tellingly by Soviet theatrics involving theater nuclear systems: The deployment rate of the SS-20, an intermediate-range ballistic missile carrying three high-yield warheads, has been boosted to one missile every five days—up from one weapon every seven days—while the Kremlin escalates its propaganda war against NATO's plan to start deployment in 1983 of a countervailing force of cruise missiles and Pershing IIs.

That the threat drives US defense requirements should be axiomatic. Yet influential elements of Congress seemingly subscribe to the proposition that defense investments should be determined by economic conditions and scaled to social spending.

Soviet President Leonid Brezhnev played Western gullibility to the hilt when he offered to halt further deployment of SS-20s in western Russia—with 300 of these weapons already deployed—in exchange for the US foregoing deployment in NATO of its cruise missiles and Pershing IIs—none of which could be in place before 1983. The result, obviously, would be a Soviet monopoly in long-range theater nuclear missiles. Not content with this charade, the Soviet leader raised the ante further by threatening that US failure to abide by his terms would prompt the USSR "to take retaliatory steps that would put the other side, including the United States—its own territory—in an analogous position." There were hints from Moscow that this meant the emplacement of Soviet missiles in such places as Cuba.

In announcing the accelerated deployment of the SS-20, Defense Secretary Caspar Weinberger termed this "just one example" of Soviet duplicity and warned those bent on cutting the US defense budget in the face of Moscow's increasing threat that "we will never know that we haven't done enough until it is too late."

That the threat drives US defense requirements should be axiomatic. Yet influential elements of Congress seemingly subscribe to the proposition that defense investments should be determined by economic conditions and scaled to social spending. The battle over the defense budget for FY '83 and the Five-Year Defense Plan—to judge by the initial skirmishes in Congress—promises to be drawn out, pitched, and its outcome unclear until the appropriation process is completed. But that may not happen until after October 1, the start of FY '83.

Also, a new, volatile factor is obscuring the outlook for defense funding in the current session of Congress. Owing to spreading, mutually reinforcing "grassroots" movements toward halting and subsequently reducing the development and deployment of nuclear weapons, Congress is likely to be pressured into cutbacks and

delays of strategic and theater-nuclear force modernization programs. Moreover, this new peace movement might help freeze the US in a position of strategic nuclear inferiority, hinder realistic and equitable arms reduction, and lead to destabilizing imbalance, with the likelihood of nuclear war increased rather than decreased.

The Fallacy of Negotiating From Weakness

The flawed logic of freezing US strategic capabilities—as recommended by a coalition of traditional defense critics, arms controllers, and sincere recruits to the new peace movement who hope that if the US scuttles its nuclear arsenal the Soviets will follow suit—can be illuminated with this fact: Over the ten-year period 1972–81, the cumulative dollar costs of Soviet strategic force procurement exceeded those of the United States by about $130 billion, which is almost twice the total US procurement for strategic forces for the same period. At the time the Soviets entered on this spending spree, the strategic forces of the two countries were at rough parity.

The most ominous aspect of the Soviet strategic buildup, according to the Air Force's FY '83 Posture Statement, is the vast improvement in their ICBM force, which is undergoing stem-to-stern modernization and, at this time, carries more than 5,540 highly accurate, high-yield warheads, or more than twice the US total of 2,152 warheads.

On top of the current round of Soviet ICBM modernization, there is evidence that the Soviets are developing yet another generation of ICBMs.

The situation is almost as grim in terms of SSBNs and SLBMs. From 1970 to 1980, the USSR commissioned more than fifty SSBNs and SSNs (attack submarines that threaten US SSBNs), compared to none for this country. Since then, the Soviet Union has introduced a new class of SSBN, the Typhoon, and the US commissioned the first Trident SSBN in November 1981. Since 1973, the USSR has brought three new SLBMs into its inventory, the SS-N-8 (in two versions), the SS-N-18 (in three versions), and the SS-N-20 (the world's largest submarine-launched ballistic missile); the US brought out the Trident C4 in 1979, which is much smaller and has far less range than the latter-named Soviet SLBM.

Over the ten-year period 1972–81, the cumulative dollar costs of Soviet strategic force procurement exceeded those of the United States by about $130 billion, which is almost twice the total US procurement for strategic forces for the same period.

The USSR's strategic bomber force consists of more than 880 aircraft, some of which are of marginal capability when used in intercontinental missions. The US strategic bomber force numbers 376 primary aircraft: 316 B-52s and sixty FB-111s. While the US bomber force is considered superior to its Soviet counterpart, the fact that the USSR has vast and sophisticated air defenses and the US has virtually none, probably more than offsets any US lead. In addition, there is evidence that the USSR is developing a new long-range bomber and probably a strategic cruise missile carrier, along with long-range cruise missiles.

The Soviets are known to conduct massive research and development devoted to advanced ballistic missile defense systems and probably could field such weapons before the US is able to.

As noted, the Soviets have in being the most extensive strategic air defense system in the world, which makes penetration of the USSR's airspace difficult. According to the Joint Chiefs of Staff, modification of existing systems, along with the development and deployment of new weapons, ensures that this threat will continue to increase.

The Soviet air defense network already has good detection and tracking capabilities under all-weather conditions against aircraft at medium to high altitudes, according to the JCS's latest Posture Statement. Further, radars with improved low-altitude acquisition capabilities are being developed. A major advance in Soviet detection and tracking capability is expected from the impending deployment of an Airborne Warning and Control System. This system will extend detection over land and water and facilitate interceptor control. About 10,000 Soviet SAM strategic launchers are deployed at about 1,000 sites.

Modernization of Soviet air defense aviation continues with the first operational deployment of the modified MiG-25 Foxbat and new deployments of the MiG-23 Flogger and MiG-25 Foxbat. The Soviet interceptor force consists of about 2,500 aircraft that operate in conjunction with some 7,000 air defense radars. The US, by contrast, fields fewer than 120 ground and airborne air defense radars, no SAMs for CONUS defense, and fewer than 300 interceptors, most of which are of 1950s vintage.

In the field of ballistic missile defense (BMD), the Soviets continue to upgrade their capabilities in the Moscow area, including completion of a large phased-array radar seemingly meant for battle management.

The Soviets are known to conduct massive research and development devoted to advanced ballistic missile defense systems and probably could field such weapons before the US is able to. The US has had no BMD capability since 1976, when the single Safeguard site was phased out.

The Soviet Union also excels in the protection of strategic command control and communications systems through hardening and other techniques while at the same time bolstering its ability to attack US C^3 facilities.

As a result of sustained Soviet investments, about two-thirds of their 4,500 air-to-air fighters are new generation aircraft—the so-called "third-generation" aircraft, such as the MiG-23 and MiG-27 Flogger, the MiG-25 Foxbat, and the Su-24 Fencer.

Lastly, the imbalance in passive civil defense between the two countries is striking. The Soviets are investing more than $2 billion annually in civil defense and employing about 115,000 personnel to manage and exercise the program. A sheltering program exists for government personnel and eleven percent of the urban population. Almost half of the shelter spaces are for essential workers. The balance of the Soviet population is supported by a program keyed to evacuation. The US has no civil defense program comparable in scope, structure, or performance to the Soviet effort. The US civil defense program is centered on state and local governments and by statute is a dual-use effort in which the same measures serve natural disaster relief and nuclear attack preparedness. In the past, the US has allocated funding for planning of crisis relocation for selected risk areas, but there are currently no provisions for supporting a dispersed population or protecting war-supporting industry and its labor force.

In a long-overdue departure from past US self-delusion concerning the strategic balance—by emphasizing systems that count under SALT and similar negotiations and disregarding those that don't—the Administration now acknowledges that Soviet doctrine "categorizes nuclear forces differently [from the US], by regarding their other nuclear forces and ours as essentially an extension of intercontinental nuclear forces." If that is so, Soviet dominance in theater nuclear weapons gains added importance. Beyond the obvious and ominous implication of Soviet superiority in long- and medium-range theater nuclear weapons in terms of NATO, Secretary Weinberger told Congress that "we must recognize the global threat to our interests posed by the overall asymmetry in the types of nuclear warheads and the comprehensive coverage and operational characteristics of Soviet nuclear systems. In East Asia and the Pacific, as well as on the Western front, the Soviets continue to add SS-20s to their formidable and growing arsenal of nuclear-capable aircraft, nuclear submarines, and other platforms. Much of this capability could be quickly shifted or retargeted to be concentrated against potential theaters of conflict."

Since the ultimate objective of deterrent forces is to influence Soviet views and decisions, it is useful to extend this logic to take account of Soviet perceptions of the roles and utility of nuclear forces. The evidence suggests that the Soviets give short shrift to the central US concern with an "out-of-the-blue" attack and concentrate instead on the outcome of large-scale, global war, in which conventional, theater nuclear, and intercontinental nuclear forces coalesce. Moreover, there is ample evidence that the Soviets expect and are preparing for multiple, protracted nuclear exchanges in case of such a war.

A negative synergism ensues from this set of circumstances that compounds the vulnerability of US strategic nuclear forces in combination with the vulnerability of this country's theater nuclear forces, and vice versa. Freezing this country's nuclear forces at this time, therefore, would seem to create a condition of double jeopardy, leading to a Hobson's choice in case of strategic confrontation with the USSR: annihilation or capitulation.

Other Soviet Gains

The reason for the Pentagon's emphasis in the FY '83 budget request on deploying increased quantities of operationally effective systems as rapidly as possible, and on rapidly grafting new technologies on deployed systems, is compelling. As the Under Secretary of Defense for Research and Engineering Richard D. DeLauer told Congress, "We are seeing the products of a steady and persistent Soviet force modernization program that combines historic Soviet emphasis on producing large quantities of military equipment with their more recent efforts to field more sophisticated and capable systems. Our past technology lead can no longer offset the quantity deficiency by itself—the numerical disadvantage in most categories of weapons is too great, and our advantage in most deployed technologies is too small." Dr. DeLauer cited a wealth of backup information, the most telling being that during the last ten years the cumulative Soviet advantage in aggregate military investments has grown to about $440 billion, reflecting a level twice that of the US, and that Soviet spending on research, development, test, and evaluation is also double that of this country, and is growing.

The Soviets, he reported, are gaining further ground through "their broad, intensive, and well-funded program to acquire the West's advanced technologies through espionage and by exploiting inadequately controlled transfers abroad. Soviet leaders have viewed technological transfers as an important element in developing their military/industrial base, and, quite frankly, our fragmentary and uncoordinated program of control has seldom denied them success." (The new

defense budget imposes stringent measures to reduce the loss of critical technologies to the Soviet Union.)

The Tactical Imbalance

The Soviets, the Air Force Posture Statement asserts, have instituted a comprehensive modernization of their numerically superior tactical air force. They have transformed their tactical air force from one consisting mainly of limited range, low payload, day fighters into a potent, long-range, tactical air arm with increasing capability to operate in adverse weather. They are producing capable, modern tactical fighters at a rate more than double that of the United States. In Europe, NATO airfields, ports, and storage facilities are within striking distance of the modern, longer-range, and large-payload Soviet tactical fighters based in Eastern Europe and the Western Soviet Union.

Gen. Bernard W. Rogers, Commander in Chief of the US European Command, recently told Congress that "1981 saw the Warsaw Pact inventory modernized with about 1,000 modern tactical combat aircraft with significantly longer ranges and larger payload capabilities. Fewer than half that number of new aircraft were deployed to modernize allied air forces committed to Allied Command Europe (ACE). The rapid modernization of the Soviet air forces in recent years is particularly disturbing. Over the past decade the development of a third generation of Soviet aircraft has significantly narrowed the technological advantages which our forces formerly enjoyed. This trend continued in 1981 as we saw development of the modified Foxbat, the USSR's first look-down/shoot-down fighter, and continued trials of the new Sukhoi close air support fighter. The increasingly offensive nature of Soviet air forces makes last year's achievement of full Alliance participation in the AWACS program essential to our air defense posture."

. . . the Administration now acknowledges that Soviet doctrine "categorizes nuclear forces differently [from the US], by regarding their other nuclear forces and ours as essentially an extension of intercontinental nuclear forces."

In total tactical fighter production, the Soviets are outproducing the US by better than 2½ to one, according to Dr. Alton G. Keel, Assistant Secretary of the Air Force for Research, Development and Logistics. Over the decade of the '70s, he told Congress, the Soviets produced more than twice the number of fighter aircraft as the US. The production rate of the Soviet Flogger alone exceeds all US fighter aircraft production. With the Soviet rate of aircraft production, the US could replace the entire active US Air Force tactical fighter force every seventeen or eighteen months. On the other hand, with the USAF rate of fighter aircraft production planned for Fiscal Year '83, it would take more than twenty-five years to replace the Soviet tactical fighter force.

As a result of sustained Soviet investments, about two-thirds of their 4,500 air-to-air fighters are new generation aircraft—the so-called "third-generation" aircraft, such as the MiG-23 and MiG-27 Flogger, the MiG-25 Foxbat, and the Su-24 Fencer. These new generation aircraft are replacing the older second-generation aircraft—the MiG-19 and the MiG-21 series. More impressive perhaps is the fact that within the next year or so the Soviets will begin introducing their fourth-generation aircraft. They are programmed to begin introduction of their future generation aircraft before they even complete the current introduction of their new aircraft. The obvious result is that the Soviets are rapidly modernizing their air force with more and more capable aircraft. The average age of their fighter force is about 5½ years—or about one-half the average age of the US fighter force.

The problem is being exacerbated because the growth in Warsaw Pact SAM systems has provided them a significant advantage in air defense capabilities. The SA-4 medium- to high-altitude system (employed at both Front and Army levels); the SA-6, SA-8, and SA-11 low- to medium-altitude systems (employed at division level); and the SA-9 and SA-13 low-altitude systems (fielded in conjunction with the ZSU-23-4 AAA system at regiment level) provide the Pact an impressive mobile, all-weather air defense capability. The extensive air defense network of the Warsaw Pact has allowed the Soviets to divert some frontal aviation aircraft from air defense to ground attack roles.

The air balance between NATO and the Warsaw Pact, the Joint Chiefs of Staff point out in their Military Posture Statement, must be viewed in the context of the Alliance's differing requirements for tactical air. NATO places heavy reliance on close air support (CAS) to offset partially the large ground force firepower imbalance. In contrast, the Warsaw Pact, with its heavy emphasis on armor and artillery in a combined arms offensive, has relied less on CAS, although its CAS capabilities are increasing.

The mobility and firepower of Soviet ground forces have also undergone substantial improvement. A steady infusion of large numbers of new tanks, infantry fighting vehicles, self-propelled artillery, and attack helicopters has greatly increased the offensive power of the Soviet Union.

In terms of Warsaw Pact ground forces, General Rogers reported "our assessment of the number of divisions facing ACE increased substantially over the past year. The Warsaw Pact continues to outnumber NATO in divisions of all types by more than 2:1 and in mechanized/armored divisions by 4:1. Divisional reorganization in the Group of Soviet Forces Germany is nearing completion, which, *inter alia*, adds an artillery battalion

to all their tank regiments and upgrades the regimental motorized rifle companies in their tank divisions to battalions. Approximately 2,000 T-64/72 tanks were added to the Warsaw Pact inventory, with the T-80 entering production. In ACE we fielded fewer than one third this number of tanks."

Furthermore, the proximity of large Soviet forces to Western Europe, Southwest Asia, and Northwest Asia—regions vital to US interests—provides them protected lines of communication, which facilitate their ability to conduct offensive actions. In contrast, US forces based in the continental United States would be compelled, in the event of Soviet aggression, to deploy over intercontinental distances to reach these theaters and to reinforce in-place forces.

With allied ground forces seriously outnumbered and the Soviets able to pick the time and place of aggression, the West must rely heavily upon the firepower and flexibility of airpower to deter and, if necessary, defeat a Soviet attack. Soviet doctrine, force structuring, and training exercises indicate, in the event of European conflict, Warsaw Pact forces would attempt to seize the initiative by mounting a massive air and ground blitzkrieg offensive. The NATO forces would be confronted with armor-heavy enemy ground forces assaulting allied lines at several points, backed by waves of reinforcing divisions moving toward the front and supported by massive theater-wide air strikes.

To maintain a credible deterrent against such Soviet aggression, USAF's tactical air forces must be able, first, to achieve air superiority quickly so that NATO's armies and air forces can fight and be reinforced free from the disruption of enemy air attacks and, second, provide critical offensive air support to allied ground forces.

To accomplish these demanding and simultaneous tasks with a limited force structure, the Air Force must have highly capable, flexible tactical aircraft able to perform both air-to-air and air-to-ground missions. These aircraft must be capable of flying a high number of effective sorties per aircraft over a sustained period of time and be equipped to fight at night and in adverse weather conditions.

In the air-to-air role, USAF's aircraft must be able to detect and destroy the numerically superior, sophisticated Soviet aircraft before they can attack NATO forces. Effective, autonomous search radars, a mix of all-aspect missiles, avionics that facilitate weapons employment, and superior aircraft performance, therefore, are of pivotal importance.

For the air-to-ground mission USAF's aircraft must be able to evade and suppress enemy defenses. They must be able to deliver munitions accurately and in large quantities in all weather conditions whenever and wherever Soviet forces are conducting offensive operations or are most vulnerable.

The Soviet blitzkrieg, according to US intelligence assessments, relies on a steady flow of reinforcing formations to the front. Consequently, it is especially vulnerable to an effective air interdiction campaign designed to destroy, disrupt, and delay these follow-on echelons. Moreover, in areas such as Southwest Asia, where the US does not have a substantial number of forward deployed forces, air interdiction is critical as a fast response to Soviet invasion.

Further complicating the task of tactical airpower is the fact that, by the very nature of this country's global strategy, USAF must plan to use its forces to provide tactical air support in more than one theater. A credible deterrent presupposes highly capable aircraft in the numbers necessary to counter the threat by being able to fight and win an intense air campaign. World War II and the Arab-Israeli conflicts made clear that victory requires substantial numbers of capable aircraft. The Soviet force structure and production rates suggest Moscow is making ample allowance for the high consumption rates of modern warfare.

The Soviet force structure and production rates suggest Moscow is making ample allowance for the high consumption rates of modern warfare.

Since budgetary and infrastructure constraints limit the alternatives available, the Air Force must also rely on a mix of aircraft to meet a wide spectrum of mission demands.

To meet these challenges, the Air Force's FY '83 budget request contains a modernization plan that allows for evolutionary improvements to existing fighters while continuing balanced procurement of the F-16 and F-15. At the same time, such systems as the Low-Altitude Navigation and Targeting Infrared System for Night (LANTIRN) and standoff weapons are being developed to boost the effectiveness of tactical airpower, especially under adverse weather conditions.

LANTIRN will provide the single seat A-10 and F-16 fighters a twenty-four-hour, under-the-weather, air-to-surface precision attack capability. It also allows them to penetrate at low altitude, thus reducing exposure to defenses. Also, the Air Force is investigating other technologies that can expand the capability to attack targets in all weather conditions.

To compensate for NATO disadvantages in numbers as well as the dense defenses of Warsaw Pact, USAF is developing weapons with much higher effectiveness—through accuracy and lethality—while reducing aircraft attrition through standoff or reduced exposure. The Advanced Attack Weapons and Wide Area Antiarmor Munitions programs provide for a family of area munitions, warheads, and guidance systems for multiple armor kills-per-pass in weather and for delivery from minimum altitude. This feature will help interdict second-echelon forces before they can reinforce first-echelon forces.

Weapons under development in these programs include the Antiarmor Cluster Munition (ACM) and the Wasp Missile System. The Air Force also is procuring the 30-mm gun pod to provide attack aircraft with capability against armor and other vehicles. The pod will provide a reliable, easy-to-employ, strap-on weapon and can be mated to the A-7, F-4, and F-16 fighter aircraft.

USAF's Pave Mover Engagement System and Pave Mover program will develop the technology for a conventional, standoff weapon system capable of engaging multiple, second-echelon targets. The primary purpose of the system is to delay, disrupt, and destroy massed Warsaw Pact ground forces. The system can use a variety of weapons. It can guide missiles carrying a payload of multiple submunitions or it can be used to vector penetrating aircraft to the target for delivery of advanced munitions, such as Wide Area Antiarmor Munitions.

The new budget provides also for improvement of such existing weapons as the Maverick missile and development of the Laser-Guided Bomb for delivery at low altitudes. The Low-Level Laser-Guided Bomb's (LLLGB) expanded launch envelope allows for low-level attack of fixed, high-value, point targets such as bridges and tunnels. This improvement will reduce aircraft attrition, and enhance tactical flexibility. The LLLGB program also develops improved target acquisition capabilities under limited visibility conditions common to Europe.

Although delayed by cost growth, the Air Force will go ahead with procurement of the Imaging Infrared (IIR) Maverick missile to expand the ability to destroy small, hard tactical targets during night and limited visibility conditions. This weapon will complement the daylight-only TV Maverick currently in the inventory and the laser version being developed for the Marine Corps. The Maverick is suitable for carriage by the F-4, A-7D, A-10, F-16, and the F-111F.

The Air Force will qualify a second source for the IIR Maverick to stimulate competition and to allow for increased annual production quantities. A qualification program is scheduled to start this year with an option for later production. There are plans to integrate the Maverick imaging infrared seeker with the GBU-15.

The Medium-Range Air-to-Surface Missile, or MRASM, under joint development with the Navy is a conventionally armed cruise missile that will give aircraft the capability to engage high-value targets, such as airfields and ships, while standing off beyond the range of enemy point defenses.

The Soviets are fielding new fighters with capabilities comparable to USAF's F-16 and F-15 aircraft and a new air-to-air missile to equip them with look-down, shoot-down capability. It follows that the Air Force must continue to procure and improve F-15 and F-16 fighter aircraft, along with sufficient numbers of AIM-7/9 missiles. Over the long term, the Advanced Medium-Range Air-to-Air Missile (AMRAAM) is required to equip the F-16 with an all-weather, air-to-air capability, and to improve the lethality of the F-15 force.

The current adverse weather air-superiority armament for the F-15 aircraft is the AIM-7 Sparrow air-to-air missile. The FY '83 request is for the AIM-7M variant, which has an advanced monopulse seeker that provides improved electronic counter-countermeasures (ECCM) capabilities and better look-down, shoot-down capability than the AIM-7F. These improvements provide an increased capability to destroy low-altitude targets.

Sparrow performs a key role in countering the large number of enemy aircraft by providing the capability to attack enemy aircraft at medium beyond-visual-ranges. Because of a critical shortage of medium-range missiles, the Air Force plans to continue to procure the AIM-7 Sparrow until the more capable AMRAAM is available.

The AIM-9 Sidewinder is an air-to-air "dogfight" missile and the primary within-visual-range air-superiority armament for both the F-15 and F-16. The Sidewinder has shorter range than the AIM-7 and is heat-seeking, rather than radar-controlled. The FY '83 request is for the latest version, the AIM-9M, which has improved capabilities against infrared counter-countermeasures and improved acquisition/tracking ranges. As with the AIM-7 Sparrow, the supply of Sidewinder missiles is well below inventory objectives.

The most important improvement under development to increase USAF's air-to-air capabilities is AMRAAM. AMRAAM will provide significant improvements over current systems by employing technology that gives it a high kill probability from standoff ranges, rather than being drawn into close-in dogfights. AMRAAM will give pilots the chance to win engagements, even if outnumbered, by attacking multiple targets before they can attack. The Air Force will equip both the F-15 and the F-16 with the AMRAAM, with first production delivery expected in late FY '85. The Navy plans to use the AMRAAM on both the F-14 and F-18.

Work is under way for development and integration of beyond-visual-range identification technology into aircraft systems to exploit fully AMRAAM capabilities. Identification developments are accomplished in two programs, Combat Identification Technology and Combat Identification Systems.

Radar improvements and AMRAAM integration for the F-15 and F-16 are being pursued as part of the Multi-Staged Improvement Program. The improvements fall into several areas: target acquisition, identification and destruction, command and control, and self-protection. The program extends the operational effectiveness of the F-15 and F-16 by using new technologies in combination with the aircraft's inherent growth potential.

Emphasis of BMD

Congress willing, the Defense Department plans to spend about $1 billion a year in FY '83 and FY '84 on ballistic missile defense (BMD), and in effect treats these systems as a potential "fourth leg" of the strategic triad. The US BMD program, carried out by the US Army in coordination with the Air Force and supervised by a special high-level Defense Department committee, is undergoing significant change, impelled by the Administration's decision last fall to link long-term survivability of land-based ICBMs to dedicated BMD systems. As yet, however, no decision has been made to deploy a US BMD system. Such a step would require revision or abrogation of the SALT I ABM Treaty. Senior Defense officials are known to be chary of such an action at this time because they fear the Soviets might be able to field such weapons before the US can. The underlying reason is that Soviet BMD R&D has been more intensive than comparable US efforts. Secretary Weinberger told Congress the US has "fallen behind" the USSR in this technology.

The recent speed-up of US BMD programs is meant as a hedge against Soviet treaty abrogation as well as unconstrained threat growth and as a potential active

defense for US ICBMs. The Commander of the Army's Ballistic Missile Defense Systems Command, Maj. Gen. Grayson D. Tate, Jr., recently told the House Armed Services Committee that the Army is revamping the two long-standing BMD efforts, the Advanced Technology and the Systems Technology programs, to funnel the findings from both into a "Baseline BMD System" concept.

Centered on what has been called the Low-Altitude Defense (LoAD) program, he said the emphasis now "will be on designing and developing a 'common system' that is compatible with deceptive ICBM basing as well as fixed nondeceptive basing. The technology for this appears available based on the previous programs to develop the LoAD interceptor, radar, and data processor, although all of the components designed for LoAD need further work. Technical issues remain to be resolved regarding the radar, the data processor, and the design of efficient software." Test and demonstration of LoAD's key components will get under way soon, to resolve remaining technical risks.

A high-priority goal of the Army's restructured BMD baseline effort is to establish the feasibility of killing Soviet RVs (reentry vehicles or warheads) within the atmosphere with conventionally armed interceptors, known as "Endoatmospheric Nonnuclear Kill," or ENNK. The Army will try this year to resolve questions about attaining requisite miss distances, the lethality of conventional warheads, and options for overcoming Soviet countermeasures, including maneuvering RVs.

Another key component of the new BMD program involves work on an exoatmospheric "overlay" system that within the next decade could augment an endoatmospheric defense. Technologies associated with exoatmospheric defense are "not very mature," according to General Tate, and require further research of "different kill vehicles, of multiple vs. single kill vehicles on an interceptor, divert radius requirements, threat tracking requirements, and potential interception performance."

The Air Force, according to Dr. Keel, "is working closely with the Army to assure effective coordination of BMD efforts without MX deceptive basing efforts. It is essential that full cooperation and communication be achieved and all levels of management are dedicated to accomplishing this."

A Clear Perception of National Interest

The Chairman of the Senate Armed Services Committee, Sen. John Tower (R-Tex.), in a recent, widely noted appearance before that chamber's Budget Committee, pleaded "that we not sacrifice the defense of this country for some momentary budgetary comfort." Testifying in support of the Administration's FY '83 $215.9 billion defense request (outlays), Senator Tower pointed out, "The magnitude of US interests in Europe, Asia, and the Western Hemisphere is represented by our participation in eight formal treaties involving national security commitments to forty-two countries," all of which are driven by a clear perception of national interest.

The basic objective of the US presence overseas, he stressed "is the defense of North America" and reflects the time-honored wisdom of defending "our interests as close to the source of danger, and as far from our borders, as possible." Yet at this time, the US is "well below" the force structure levels required to support America's national security commitments with the result "that US forces are stretched too thin and that, in the event of a serious crisis or conflict, the risks of an unfavorable outcome are too high."

Rejecting in a historical, macroeconomic context the argument that the federal budget is abnormally skewed in favor of defense, he told the Senate Budget Committee that "given our greatly weakened defense posture, one might ask whether, in fact, the President is doing enough."

Such a *mésalliance* of fiscally conservative "hawks" and "dovish" social causists could indeed prove lethal to the task of restoring the military deterrent of the nation to effective, credible levels.

Enumerating the FY '83 request's modernization initiatives, Senator Tower stressed that "each of these modernization programs is required to meet basic defense and policy objectives [as well as] sound force management objectives."

Congress, the Senate's Armed Services Committee Chairman cautioned, "should not make the mistake of trading systems and capabilities like baseball cards. An appropriate balance among strategic, land, sea, and air forces—and the infrastructure required to support them—is essential to maintain the flexibility required by our political leadership. Moreover, a balanced and sustained modernization effort translates into a warm industrial base which will provide a hedge against mobilization and force expansion scenarios."

Noting that there are no immediate fiscal advantages to reducing the pace of force modernization, he asserted that "because the spendout rate for modernization programs is so slow, major cuts in defense procurement will have no meaningful impact on the budget deficit this year." He summed up his testimony with what most Defense experts on Capitol Hill consider the crux of this year's debate over national security requirements, "that this Committee or some prominent coalition might agree to cut defense, with some hoping to reduce the deficit but others actually intending to add money to domestic programs, in which case the defense program would go down and the deficit would remain high—two unacceptable outcomes." Such a *mésalliance* of fiscally conservative "hawks" and "dovish" social causists could indeed prove lethal to the task of restoring the military deterrent of the nation to effective, credible levels. ■

SCIENCE/SCOPE

Solar-powered ion propulsion will be demonstrated on a spacecraft in the near future. Compared to conventional chemical propulsion, ion propulsion saves weight and is better for spacecraft control and interplanetary travel. It generates small but exact thrust for long durations. Hughes has developed a mercury ion thruster system having a specific impulse of 2500 seconds. It is being incorporated for NASA into a prototype Ion Auxiliary Propulsion System (IAPS) to be launched from the Space Shuttle on the U.S. Air Force P80-1 spacecraft. The flight package also includes diagnostic sensors and data processing to determine potential electromagnetic and contamination effects on the spacecraft.

Ambitious manned missions in space will become possible with development by NASA of advanced solar-power platforms capable of electric-power output as high as 100 kilowatts or more. Hughes, under contract to the NASA Lewis Research Center, is building a breadboard 25-kilowatt dc-to-dc power converter that uses a transistorized series-resonant inverter. This module provides the basic building block required to match solar-array characteristics to payload requirements. The converter will use technology demonstrated by a lightweight 10-kilowatt converter that operated at over 91% electrical efficiency.

Better windows for infrared sensors may be forthcoming after more research into a new fabrication process. Hughes scientists have made discs of fluorohafnate and fluorozirconate glasses by pressing glass pieces under low pressure (1024 psi) and high temperature (340°C). The process offers two important benefits. First, infrared glass compositions, which tend to crystallize when large batches are cooled from the melt, can now be formed into large optical elements up to 30 centimeters in diameter. Second, because the discs are cast into their final form, they have neither surface strains due to grinding nor polishing impurities, both of which reduce infrared transparency.

The first equipment for West Germany's new air defense system is being installed to help monitor the skies of southern Germany. The new German Air Defense Ground Environment (GEADGE), a replacement for the network that was built in the early 1960s, is comprised of radars, computers, displays, and other electronic subsystems. It uses advanced data-processing methods to track, identify, and evaluate airborne targets, and to direct intercept missions more efficiently. Besides covering German airspace, GEADGE will become part of the NATO Air Defense Ground Environment (NADGE), which provides a protective radar umbrella from Norway to Turkey. Hughes, with support from German and other NATO firms, is responsible for the system's design, manufacture, and installation.

The U.S. Navy will meet air threats through the 1990s with an improved Phoenix air-to-air missile, the first production model of which has been delivered on schedule. The new version of the long-range radar-guided weapon, called the AIM-54C, includes a new digital electronics unit, inertial navigation reference system, and solid-state transmitter. The improvements give the Hughes-built weapon greater range, accuracy, flexibility, and reliability. One F-14 Tomcat fighter can launch as many as six Phoenix missiles against six separate targets.

NICHOLS TO MILITARY:

We won't turn ou

An Interview With Congressman Bill Nichols of Alabama

Congressman Bill Nichols, an Alabama Democrat with a long record as a leader in congressional efforts to improve military pay and compensation, forecasts mixed reactions in Congress to military personnel issues this year. The budget deficit will have a dramatic impact as the House and Senate consider per diem equity, a cost of living raise, changes to veterans' educational benefits, and support of ex-spouses.

DEMOCRATIC Congressman Bill Nichols of Alabama has been called the new champion of American men and women in uniform—it's a title he relishes. Retired from the Army in 1947 because of wounds suffered in World War II, and a recipient of the Bronze Star for Valor, Congressman Nichols was elected to the House in 1969. His interest in supporting military people led to his position as Chairman of the Military Personnel and Compensation Subcommittee of the House Armed Services Committee. He also sits on the Research and Development Subcommittee. His legislative successes have been many, including leadership of the effort to pass the pay raise bill last year. A recipient of the Air Force Sergeants Association's L. Mendel Rivers Award in 1978, Congressman Nichols is in a unique position to assess the future of military personnel issues in the Congress this year. Recently, Chairman Nichols shared his views with Air Force Association Special Assistant for Defense Personnel Ben Catlin and AIR FORCE Magazine Contributing Editor Capt. Phil Lacombe. (Please note: the interview was conducted before DoD revealed its position on increased educational benefits for veterans [the GI Bill].) —THE EDITORS

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AIR FORCE Magazine: Sir, first I'd like to ask you about your personal goals for the coming year in the Congress. What are the major issues you'd like to see Congress address, particularly in your role as Chairman of the Military Personnel and Compensation Subcommittee?

Congressman Nichols: Well, of course, the most pressing and most imminent issue that faces us on the Armed Services Committee and in the whole United States Congress is the budget. As a Southern conservative, I'm just not happy at all with the deficit this year. For FY '83, the forthcoming year, the deficit looks like it will probably exceed $120 billion. That's just unreal. We're talking about a possible $500 billion deficit in the next three years, and that's just downright scary! So that is the big issue that has got to be addressed by the Congress; it's an issue that's on the front burner up here. I guess it supersedes all other issues that this Congress will be addressing. And you have lots and lots of suggestions coming from both sides of the House as to how we can reduce the tremendous deficit that we foresee for 1983.

That brings us down to my particular subcommittee and the defense posture of this country. The President has wisely, I think, gotten behind and is very supportive of a budget that carries a sizable figure in it for defense. We let our defense go for a number of years, and we just haven't modernized, and we're into that issue right now and, of course, a defense budget that is, to many, many people in the Congress and the country as a whole, sizable.

I tell them there's one thing that's more expensive than defense, and that's not having a defense when you need it. But we're going to be faced with strong efforts in this Congress to reduce the defense budget. They're going to be stronger, I think, than they have been in the past because a lot of our people see defense competing with social programs in this country, and you're going to have "guns and butter" issues right up in the forefront.

. . . the President has indicated the cost of living raise will be about eight percent for active-duty and five percent for the civilian sector in the federal government.

AFM: You are viewed as an advocate of the military member by many in the service. How does that impact on your work?

Congressman Nichols: Well, I hope I'm an advocate. If I'm not an advocate, you don't have any in the Congress. I serve on the Armed Services Committee by virtue of the fact that the former chairman, L. Mendel Rivers, one of the greatest advocates of the soldier, saw fit to honor my request to go on the

backs on you.

Armed Services Committee and, if the soldier ever had a friend, it was Mendel Rivers. He was a great chairman and a great Member of Congress. But in my particular area, for compensation and military pay, I expect to see some efforts being made to look into such matters as retirement pay, and, of course, active-duty pay, for which the President has indicated the cost of living raise will be about eight percent for active-duty and five percent for the civilian sector in the federal government. I'm certain there will be some efforts made to reduce that eight percent to five.

AFM: Do you think that will gather enough support?

Congressman Nichols: I think there will be some effort to do that. I think it would be a mistake. I say that because the arguments for it will be this: that last year we had a fourteen percent raise for military people, the year before we had about eleven percent, as I remember. Well, I have to tell these people who suggest that we ought to go from eight to five, that these were catch-up raises, because of the '77–78 cost of living that was deferred for military people. And the eight percent that the President's advocating is not a figure that's just pulled out of the air. It has some basis behind it. It has justification for comparability, cost of living, and so forth.

And so, if we should forego any part of this, then at some point down the line we're going to be faced with trying to catch up again.

Plus, when I look at military pay, the serviceman, I believe, is pleased, in general, with what the Congress has done toward equalizing military pay with the civilian segment in the past two years. I think to blatantly forego some of this would be looked at as sort of a retrenchment effort on the part of Congress, and I hope we don't have to do it. If the military budget is to be reduced, I feel as if it should be done by members of the House Armed Services Committee in conjunction with the services themselves.

. . . when I look at military pay, the serviceman, I believe, is pleased, in general, with what the Congress has done toward equalizing military pay with the civilian segment in the past two years.

I'm not saying that the military budget is so entirely sacred that we shouldn't make reductions in it. I think there's room for reduction in the military, just as there's room for reduction in some other areas. But I hope we don't have to make any excessive cuts in military pay for active-duty or retired servicemen.

AFM: But it's not something that can be ruled out, either.

Congressman Nichols: No, I wouldn't rule it out. I certainly don't rule it out. But I'd say this: A reduction in military pay would be one of the last avenues that I'd want to look at for the active-duty man.

AFM: If I could get you to be just a little more specific, we've heard you have four specific issues that you're going to ask Congress to address again this year: per diem equity, the retirement that you've already talked about, the coming pay raise, and support of ex-spouses. Would you address these four, starting with ex-spouses? That's probably the toughest.

Congressman Nichols: This is a carryover, of course, from the first half of this Congress, and I detect some rather strong feelings in our committee to take a good look at it—I'd say to explore the possibilities of legislation that would address this issue. Now let me make it explicitly clear: I don't believe our committee would be supportive of the proposition to say automatically that if a spouse had lived with her husband "X" number of years, she was automatically entitled to half his retirement check. I don't like to sit in the role of being a judge, but I would say that when divorce comes, dissolvement of a marriage, it's oftentimes a two-way street, and I'm not willing to agree that in every case it's the fault of the serviceman.

I would be amenable to looking at legislation that would treat that subject in a similar manner as we treat matters relating to alimony and child support in the civilian sector. I think it's an issue that the Congress and the Armed Services Committee should leave to the judiciary or the private sector, perhaps, rather than us trying to mandate that such-and-such should happen when the marriage has been dissolved.

As you know, there's presently a provision for child support, but it does not address the matter of alimony for spouses. Our committee

has had numerous hearings on this matter. We've heard a lot of the horror stories—facts of life—of the military spouses. But I'm persuaded that it's a two-way street, and I would expect that the committee will address this issue this year, following the appropriations bill and matters that relate to money—that's got to come first. Now, the next issue I imagine you're going to want me to talk about a little bit is the GI Bill.

AFM: Yes, sir. We were going to ask you about that separately, but that's fine.

Congressman Nichols: Well, it's a money bill. And since it does involve money, it has to be one of the first issues that the committee will address. The spouses issue does not involve money out of the government, so we're taking up these other bills first. As you know, we have H.R. 1400 before our committee, which is sponsored by Congressman Montgomery (D-Ala.), Mrs. Holt (D-Md.), and, I believe, maybe a majority of my committee are cosponsors of that particular bill, so it has strong support in the Armed Services Committee. It has strong support in the military—each of the services has been before our committee last year and testified in support of some type of GI Bill.

Then the services promised us that they would—DoD promised us—that they would take a look at the present bill and would make some sort of a decision by February 1 as to whether they supported that particular bill, or whether they supported that bill with certain changes in it, or whether they supported any type of an educational system.

February came and went and the services [or] DoD did not come back to us, and the reason being was that I believe Mr. Carlucci advised each of the services that the cost of this bill, which would probably be somewhere in the neighborhood of a billion and a half dollars after the third year—there would be no cost to it, no appreciable cost—but that money would have to be amortized beginning with the 1983 year. In other words, it would have to come out of the hide of the services. And so, for that reason, the services have taken a second look at it and are presumably in the process of making a decision on it. Now that decision, we understand, is to be made this week and Dr. [Lawrence J.] Korb, [Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics], has agreed to come back before our committee and the subcommittee of the House Veterans Affairs Committee. He is going to meet with us on March 11. At that time we are expecting some sort of a response as to what DoD supports, and what its job is.

Congressman Bill Nichols (D-Ala.) is a key member of Congress in matters relating to military personnel.

My personal views are that the GI Bill would be very desirable—some type of GI education bill.

Most of us older members who came out of World War II remember the GI Bill. I'm a recipient of it. I received some training on the GI Bill, after World War II. About $90 a month, as I recall. It was an on-the-job training program, and it was very helpful to me as a young soldier coming back, trying to find my place in society. So that's about all I can say on it. I think it's very desirable if we can afford it.

The arguments that will be used against the GI Bill are that we're meeting our quotas at the moment, nobody's had any problem, so why do we need to spend this additional money on an educational systems bill? The obvious answer that will be coming from the services, in the event they elect to support the GI Bill, I'm certain, is that while that's true today, in the years ahead we see a smaller pool of people within the age limits for going into the service. We see a further need for attracting people who are better educated in the service—who can handle the missiles, the ships, and so forth. Therefore, we feel we need some type of educational system in order to attract these people down the road.

AFM: That squares with what you said before, that in the military of the future, beginning this year, there's really no room for an uneducated soldier, an uneducated airman or sailor.

Congressman Nichols: That's right. That's correct.

AFM: The next one would be per diem equity. You're an advocate of that, a champion of it. What do you think the chances are this year for our lower-ranking people to come up in terms of per diem?

Congressman Nichols: As desirable as it would be, I think it's going to be a difficult measure to pass in light of the budget restraints that are going to be placed on the Department of Defense this year. I think there are a lot of these little emoluments that would be desirable—increased mileage, certainly that's desirable. It's ridiculous to think that a serviceman can travel on ten cents or thirteen cents a mile today. But in a year where budget's going to be tight, if something has got to drop through the crack, I think we're going to have to probably postpone some of these little perks that we would like to have in order to keep some of the bigger things in the budget.

AFM: Another area, obviously of interest to our readership since several of them or many of them are retired military people, are what changes do you foresee in terms of retirement? There are movements afoot that one hears about all the time to change the retirement system, to reduce it.

Congressman Nichols: Well, I'll go back to a few years ago, I guess it was President Carter who appoint-

ed this blue-ribbon committee to study the whole matter of military retirement. It was an excellent panel. They put a great deal of time on it. They brought it back to us at a time when the services were having difficulty attracting and retaining people. It was right after Vietnam. At that time I took the position that I just didn't want to talk about changing military retirement as it was. What they proposed, I believe, was twenty years and 37.5 percent or something like that. Then if you stayed in for thirty years, maybe you were eligible for sixty-two percent—something less than the fifty and seventy-five that we have now.

I didn't think that it was the right time to talk about reducing military retirement pay, so I didn't bring it up at that time. I haven't brought it up until now. We are expecting some recommendations to come from the Department of Defense to talk about making certain changes in retirement pay. The retirees of 1971 and '72, I believe that's about the time the big pay change took place, some people who were retired at that time and have been receiving cost-of-living increases over the years, are actually making more money now—a major who retired in '71 with pay increases over the years is making more than a major would make if retired in 1982.

We have received information that legislation will be coming over to say that if instead of that man getting a full cost-of-living increase, his cost of living would be reduced over the years until it squared up or evened out to what his counterpart would be receiving in 1982. I feel certain that we'll probably see that legislation sometime later in the year. One other thing, and I don't know whether you're interested, we're going to have a series of hearings on contracting-out that is going to be a big issue in government circles this year.

AFM: This is the quota for Circular A-76?

Congressman Nichols: That's right. We have directives from OMB called Circular A-76, and one of the provisions of that circular—it's somewhat of a mandate to all segments of government—is to let the private sector bid on government work. And consequently, in our military, every military job which is now performed by civilians is going to be bid upon by the private sector. For example, Pan Am—you might think they fly planes only—but I understand they are very much interested in bidding on some of the military work load in the Petersburg area near Fort Lee. This has caused a great deal of concern among Civil Service people.

We're presently doing a study on military commissaries' contracting-out that work in three places. We even talked about contracting-out military hospitals—doctors, nursing services. I take a rather dim view of contracting-out. I have to tell you, I've seen some of it in operation. It's predicated, of course, on the fact that the private sector can do this job and can do it cheaper, and it's difficult for me to argue about that.

As a conservative, I want to save money. But I've seen a lot of evidence that cheapness is not always cheap in the long run. I think, and I have written the Secretary of Defense on several occasions, saying that certain jobs in the military, because of the nature of those jobs, are closely identified with the defense posture of this country, and we just ought not to even talk about contracting-out those jobs! We're going to have a series of hearings on it. The Defense Department will be heard one day, and they will bring the witnesses and tell us all the good things that they see about contracting-out. The second day we're going to hear from other segments that have a great deal of concern about some of our contracting-out.

. . . certain jobs in the military, because of the nature of those jobs, are closely identified with the defense posture of this country, and we just ought not even talk about contracting-out those jobs!

AFM: Your concern about contracting-out, sir, is it that some contractors might bid low just to get in, and then perform poorly or force higher rates?

Congressman Nichols: Well, that's exactly right. We've had some evidence that people will bid low to get their foot in the door. Then after they get established, it's a different story. I think we ought to give a lot of thought before we contract-out military hospitals, people that are actively engaged in the repair of military weapons, vehicles, and so forth.

AFM: If I could just ask you one final question: What would you like to say, if anything, to our military people out there?

Congressman Nichols: Well, I'd just like to say to them, that sometimes they read *Air Force Times, Army Times, Navy Times, Stars and Stripes,* and other publications and I guess they wonder if anybody up here in Congress is thinking about them. I'd just like to say to them that they have a lot of friends in this Congress. They have more friends than they realize sometimes. A lot of those friends actively support military people and their dependents. I'd like to think that our Armed Services Committees of the House and the Senate recognize a lot of the problems that military people have that are a great deal different from their civilian counterparts. Some of the other folks here in Congress don't recognize that. But I do. And we're not going to turn our backs on them.

AFM: Thank you, sir. ■

The air arm of the United States Coast Guard operates a mix of fixed-wing and rotary aircraft. It and USCG are inextricably intertwined in a staggering diversification of tasks ranging from law enforcement to saving lives . . .

COAST GUARD AVIATION: Multimission Men and Machines

BY WILLIAM P. SCHLITZ, SENIOR EDITOR

It was 1916, and flying-boat designer and aviation pioneer Glenn Curtiss suggested that the US Coast Guard fit out a "surfboat" with the accoutrements of a flying machine—engine, wings, etc. After a water landing, these were to be dispensed with and the craft was to revert to its role as motorized surfboat. Though this marriage of aviation and lifesaving at sea never took place because of inherent impracticality, better ideas were to follow.

The year before, in 1915, the US Coast Guard as we know it today had come into being through the merger of the US Life Saving Service and the Revenue Cutter Service. Though aviation was still in its infancy, forward-looking Coast Guard officers understood its potential for sea searches, rescue work, beach patrol, and the numerous other missions charged to the fledgling service. With brief lapses in lean periods, the Coast Guard and aviation have since been inextricably intertwined.

The first Coast Guard Aviation Group set up shop at Naval Air Station Pensacola in Florida as early as 1917. (Among the group was Elmer F. Stone, designated Coast Guard Aviator No. 1. Two years later he was assigned as pilot aboard Navy Seaplane NC-4 during the first transatlantic crossing by an aircraft, just one example of the many contributions to aviation progress by Coast Guard aviators. In 1982, Stone was inducted into the Naval Aviation Hall of Honor.)

The Coast Guard established its first Air Station at Morehead City, N. C., in 1920.

Today, Coast Guard Aviation comprises about 700 officer aviators and some 2,000 enlisted people—including flight mechanics, flight engineers, avionics specialists, dropmasters, loadmasters, and others. A number of these enlisted aviation personnel have been trained in aerial navigation—the only enlisted navigators in the services other than the Marine Corps. Officers can also serve as navigators, but all are aviators as well.

The aviators and enlisted specialists are assigned mainly to the twenty-six Air Stations strategically located on the US Atlantic and Pacific coasts, the Great Lakes, the Gulf of Mexico, in Alaska, Puerto Rico, and Hawaii. At them, minuscule detachments—by Air Force standards—of people and aircraft stand ready on a twenty-four-hour basis to conduct the aviation side of a wide assortment of Coast Guard missions. (*See box on resource cutbacks.*)

Coast Guard aviators would be the first to agree, though, that the backbone of the service is its vessels—the cutters, tenders, tugs, even lightships—and the people who operate them. "In the wide scope of Coast Guard missions, there are many that aircraft just can't do," commented Capt. Stephen Duca, chief of Coast Guard Aviation. "For example, we can't mount a boarding party to search for narcotics or tow a disabled vessel. It's outside of aviation's responsibility to teach boating safety or police a sailing regatta."

Coast Guard Aviation, in performing its wide range of missions, relies on the workhorse HC-130 and the HH-3F (opposite page). An equipment upgrade is in progress, with the introduction of the HH-65A (above), which is slated for the primary role of short-range search and rescue.

Coast Guard Aircraft

To conduct its seaward missions, Coast Guard Aviation is equipped with four types of aircraft—both fixed-wing and helicopter. For long-range surveillance, it operates a total of twenty-five C-130s. For medium-range surveillance, Coast Guard Aviation operates a total of nine C-131s (former USAF T-29 twin-engine transports that were used for VIP airlift and resurrected by USCG from storage at Davis-Monthan AFB, Ariz., and four remaining two-engine HU-16E Grumman Albatross amphibians.

Coast Guard Aviation operates its helicopters in a manner similar to that of MAC's Aerospace Rescue and Recovery Service. For example, its seventy-three single-engine amphibious HH-52As fly short-range missions. Also amphibious is the twin-turbine HH-3F. Coast Guard Aviation owns thirty-seven, equipped with navigation computers for medium-range missions. Both types of helicopter were built by Sikorsky Aircraft Division of United Technologies Corp. The HH-52A can be deployed aboard Coast Guard cutters equipped with flight decks.

While Coast Guard Aviation has no pararescuemen as such, many of its enlisted helicopter crewmen are trained as EMTs—Emergency Medical Technicians. They are, of course, well-versed in helicopter hoisting techniques.

Rounding out Coast Guard Aviation's aircraft fleet are its two one-of-a-kind aircraft used for administrative chores: a Grumman Corp.-built twin-turbojet Gulfstream II (VC-11A) and twin-turboprop Gulfstream I (VC-4A). Both are assigned to the Coast Guard Air Station at National Airport in Washington, D. C.

An equipment upgrade is currently under way. The aging Albatross amphibians and C-131s are being replaced by the twinjet medium-range surveillance aircraft designated "HU-25A." Some forty-one of these Falcon 20 derivatives, built by Falcon Jet Corp., are to be acquired. These aircraft will be capable of hauling oil pollution detection sensor systems to aid in locating and identifying marine polluters. There was some skepticism about the purchase of high-speed jets. But Coast Guard officials point out that their search speed is comparable to the C-130, and that the HU-25A's high dash speed enables it to return to base and refuel, possibly change crews, and return to the search area without serious degradation of the search effort. The aircraft's normal search-and-rescue crew is five.

The Coast Guard is also acquiring the HH-65A Dolphin helicopter built by France's Aerospatiale Helicopter Corp. to assume the short-range recovery mission. The Dolphin will have a three-person crew for its primary role of search and rescue. USCG is purchasing ninety Dolphins. And while the purchase of this foreign-built aircraft has stirred some controversy, "the procurement fully meets the requirements of the Buy America Act governing foreign and domestic competing interests," said Captain Duca, meaning that there are enough US-made components in the aircraft to conform to the requirements of the law.

For organizational purposes, the Coast Guard Air Stations are located in Districts commanded by Rear Admirals, who, while ultimately responsible to Hq. USCG in Washington, D. C., enjoy considerable autonomy. The Districts are formed into the Pacific and Atlantic Areas, commanded by Vice Admirals to coordinate intra-District operations.

At the Air Stations there may be a mix of helicopters and fixed-wing aircraft, the numbers and types tailored to meet the station's area of coverage responsibilities. "The Stations differ widely because of area weather and surrounding geography," explained Lt. Cmdr. Richard

Mattingly of the Aviation staff in Washington, D. C. "Certain behavioral patterns of our largely civilian clients can be anticipated. For example, aircrews at the Barbers Point Air Station in Hawaii have long been accustomed to foolhardy pilots in light planes taking off for the islands from the mainland with the most rudimentary of navigation and communications equipment. When they get off course and start to run low on fuel we get a 'Mayday' call. Then we have to intercept them and bring them in. And, of course, common to rescue people everywhere, the majority of emergencies seem to happen in bad weather; so, for us, flying in the goo is a way of life," concluded Commander Mattingly.

A unique aspect of duty at an Air Station is that all officers (excepting warrants) must be aviators. The aviators not only fly the aircraft but provide all support services—there are no nonrated specialists assigned. There is no base commander/flying unit commander setup as is the case Air Force-wide.

This lean-and-mean approach extends to the aircrew enlisted members, who undertake all their own aircraft maintenance under the supervision of an aviator doubling as Engineering Officer. (Depot-level maintenance is conducted either by civilian contractor or the Coast Guard Aircraft Repair and Supply Center at Elizabeth City, N. C.)

At the Air Stations, each aircrew optimally stands a twenty-four-hour period of alert duty every fourth day in addition to normal daily office or maintenance duties. However, in practice, every third day with an occasional "port or starboard" (every other day of twenty-four-hour duty) is more often the case. (The Coast Guard Aviation goal is to reduce the work week to sixty-five hours, from about eighty currently.)

"It is not unusual to get a call in the middle of the night that a pleasure boat is overdue. We'll then plan and execute a 'first-light' search. By the time the aircraft returns to the Station, possibly ten hours later, the crew will have spent a total of nearly thirty-four hours of continuous duty," explained Commander Mattingly. "Meanwhile, the relief alert crew has assumed its 'day' of duty manning the alert desk and phones while ready to respond to requests for search flights or other missions."

The alert crews would be tasked, say, for a search by the District Rescue Coordination Center, which has personnel monitoring emergency and maritime radio frequencies around the clock. A Coast Guard-related emergency can also be reported via the emergency telephone number listed in the front of most telephone directories.

The District Rescue Coordination Centers are charged with not only directing search-and-rescue missions but with overseeing the span of such Coast Guard activities as pollution surveillance, fisheries patrols, narcotics intercepts, etc.

Recruiting and Manning

The Coast Guard has fewer recruiting problems than the other services, say officials, because of the types of duty offered, especially the humanitarian aspects that young people find so appealing. Another key feature that draws youths to careers in the Coast Guard is the opportunity for upward mobility—it is much more flexible than the other services. Theoretically, at least, there is no barrier to a person rising from the enlisted ranks to become Commandant of the Coast Guard. While this hasn't happened, a former enlisted man has been promoted to Vice Commandant, three have made Admiral, and a substantial number have attained O-5 and O-6.

The reason is that the Coast Guard has a well-established program for the selection of qualified enlisted people to attend Officers Candidate School to earn commissions—without the requirement for a college degree. Furthermore, once one is commissioned, the lack of a degree is no handicap to applying for flying training, as long as the applicant can meet the same physical fitness and aptitude qualifications required of his college-graduate counterpart.

There is a method to this liberal policy. USCG believes that once a former enlisted person has become an officer and then an aviator—which entails an additional five-year commitment—that person has a vested interest in continuing a Coast Guard career.

Thus, USCG is manned through enlistments, OCS, the Coast Guard Academy, and—in some cases—direct commissions from the other services. Enlisted people apply for a specialty while in boot camp but, unlike the other services, there is no guarantee as an inducement to enlist. (A number of enlisted Coast Guard women have opted for careers in Aviation, and three women officers have become aviators. Sadly, Lt. Coleen Cain was lost with two other members of her crew in the crash of an HH-52A on Molokai Island off Hawaii in January. Another of the women aviators has resigned.)

After eight weeks of boot camp

Coast Guard Budget Cuts

In the face of expanded defense spending, the US Coast Guard is alone among the five services in having its budget cut. As this article was being prepared for publication, Coast Guard officials announced planned reductions in force necessitated by funding $46 million less than the budget request of $1.357 billion. At press time, a fight over the Coast Guard's budget was in progress and USCG appeared to be winning.

USCG intends to decommission eleven cutters based in eight states. It will close fifteen Search and Rescue Stations in eleven states. Three Air Stations—in Savannah, Ga., Los Angeles, Calif., and the single one in Puerto Rico—are to shut down. Coast Guard enlisted personnel will be reduced by 1,000, mostly through attrition.

Among other cutbacks, twenty-eight boating safety detachments will be terminated, as well as sixty recruiting detachments. Also being reduced is the number of civilian employees, who make up about ten percent of the force. Among its economies, the Coast Guard Academy at New London, Conn., decreased its corps of cadets by 100. The Coast Guard Band once stationed there has been more than halved, from forty-five musicians to twenty-one, and reassigned to Washington, D. C. Vessel-control operations using radar, radio nets, and computers in New Orleans, San Francisco, Berwick Bay, La., and the one scheduled for New York Harbor have been terminated.

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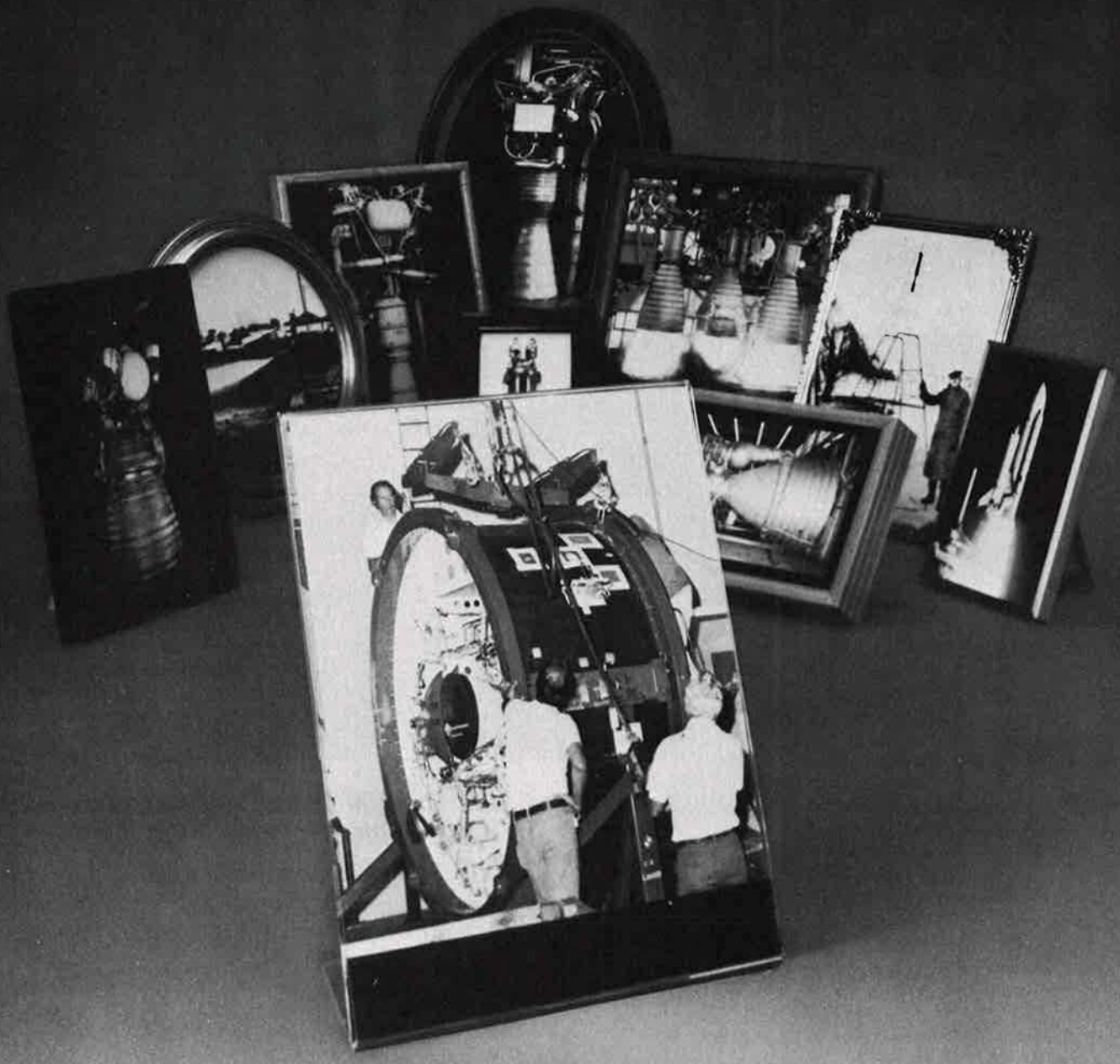

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and in many cases a sea tour, those enlisteds selected for Aviation then attend a Class A apprentice school in their specialty—aviation mechanic or electronics, for example. The twenty weeks of technical school conducted at the Coast Guard Aviation Technical Training Center at Elizabeth City, N. C., earns a permanent rating in that specialty.

The youngster is then assigned—only volunteers are accepted—to an Aviation unit for hands-on training. He or she will become a member of an aircrew. They fly with the aircraft, and on the ground learn to service—gas, oil, and park—the aircraft. Being exposed to the flight syllabus is especially important for the young crewman—giving the proper commands to the cockpit crew in lowering a rescue basket on a hoist in helicopter operations, for example. Later will come periods at Class C schools acquiring advanced technical knowledge in the chosen discipline. Thus, a career in Coast Guard Aviation is launched.

The Making of an Aviator

Coast Guard aviator candidates take the basic flying course at the Navy's Flight School at Pensacola Naval Air Station in Florida. Then they go on to either fixed-wing or helicopter transition training at the Coast Guard Aviation Training Center at Mobile, Ala., before being assigned to an Aviation unit.

But flying proficiency as a copilot is only one side of the coin for the new aviator. The other is learning the full scope of Coast Guard missions—the law-enforcement aspects, for example.

While the parent organization for the other four services is the Department of Defense, in time of peace the US Coast Guard is answerable through the Department of Transportation to the US Congress. In many cases, the Coast Guard—and thus its Aviation branch—has acquired new mission areas through congressional legislation. As an example, once a Coast Guard officer takes his oath, he automatically becomes a law-enforcement agent of the federal government. This is also true of Coast Guard petty officers.

At the Air Stations it has been noted that all officers fly, including the commanding officer, executive

The Range of Coast Guard Missions

While Coast Guard Aviation's contribution to the nation is unparalleled, even broader and more diverse are the missions performed by the parent organization—the US Coast Guard, 45,000 strong. Besides the aircraft noted above, USCG is equipped with forty-two destroyer-size vessels, seven icebreakers, seventy-nine patrol craft, and 118 other vessels. A brief list of missions follows:

- Clearly the most visible is USCG's role in search and rescue. In FY '80, to quote one set of statistics, the service undertook 81,000 "responses" (surface vessels acting on calls for assistance) and 93,726 "sorties" (by aircraft). While it is estimated that 6,958 lives were saved that year, this figure does not reflect the thousands of others assisted by the Coast Guard whose lives were not endangered.
- The public is generally unaware of USCG's part in the enforcement of treaties concluded with other nations—for example, management of the quota agreements concerning the 200-mile coastal fisheries conservation zone established by the US.
- Coast Guard vessels and aircraft patrol waterways to protect against environmental pollution and to act rapidly when it occurs. For example, USCG has strategically placed three "strike teams" with equipment to contain and clean up oil spills. A Coast Guard officer assigned as liaison to MAC's Aerospace Rescue and Recovery Service, Scott AFB, Ill., may be called on to assist in arranging rapid airlift by USAF transports to afflicted sites.
- The Coast Guard still assumes its decades old responsibility for International Ice Patrols, searching the North Atlantic shipping lanes for menacing icebergs. Its icebreakers, with helicopters aboard for surveillance, annually force passage to Thule in Greenland and McMurdo Station in the Antarctic. Each winter, USCG also keeps watch on the ice buildup in the Great Lakes.
- The Coast Guard has been charged by Congress with facilitating seaborne commerce through support of navigation and aids to navigation. This entails flying the OMEGA and LORAN chains located in various parts of the world to verify the devices' signal accuracy and correcting them if necessary. (A number of LORAN sites where Coast Guardsmen operate and maintain the equipment, such as the Pacific island of Yap, are considered hardship posts with tours at these remote sites limited to a year.) In addition to signal verification, USCG is responsible for full logistics support of a good many of the sites, especially in the weather-tempestuous Alaskan chain.

In terms of national defense, USCG has been charged by the Joint Chiefs of Staff with keeping current the master plan for navigation of global sea-lanes.

- In the area of law enforcement, USCG since its inception has fought smuggling—in the 1920s against rum-running during Prohibition; today, the major threat is the importation of narcotics. Acting against abundantly financed and tenacious opponents, in 1981 USCG, in league with other agencies and governments, seized 1,222.5 tons of drugs valued at $1,387.9 million. In that year, some 158 vessels were confiscated and 448 people taken into custody.

In less dramatic fashion, the Coast Guard regulates and inspects US-registered commercial shipping and licenses US merchant mariners, among other administrative tasks.

In many life-saving instances, Coast Guard ships and planes have been instrumental in bringing a semblance of order to the chaos resulting in recent years from the swarms of immigrants coming to our shores from Latin America.

Organizationally, the US Coast Guard is composed of three categories: operational units such as Coast Guard Stations and the Air Stations; units that report directly to Hq. USCG, such as the Coast Guard Academy, the aviation training centers, and recruit training centers; and the Coast Guard Areas, whose commanders—Vice Admirals—are largely autonomous. They report to the Commandant who is responsible to the Secretary of Transportation.

A final news note: When a World Airways DC-10 skidded off the runway at Logan International Airport into Boston Harbor in late January, the Coast Guard had rescue boats on the scene within minutes.

Coast Guard Aviation is also acquiring the HU-25A, capable of high dash speeds. Besides its search-and-rescue role, the aircraft will haul oil pollution sensor systems to aid in locating and identifying spill sources.

officer, and operations officer. When age or other reasons eventually ground an aviator, general management billets such as at USCG Headquarters or a District office offer continuing career progression.

Wartime Record and Missions

On December 7, 1941, the Coast Guard cutter *Roger B. Taney* was able to get up steam and thus escape the carnage at Pearl Harbor. She also provided a small but welcome triumph—the first confirmed kill of an enemy aircraft, a Zero.

During World War II, the Coast Guard helped shepherd convoys and conducted antisubmarine patrols. It was instrumental in formulating the use of sonar in detecting enemy submarines and pioneered the first air-sea rescue techniques. While safeguarding the sea-lanes, Coast Guard aircraft delivered sixty-one bombing attacks on enemy submarines, located some 1,000 survivors of torpedoed ships and downed aircraft, and helped in the rescue of ninety-five of these.

The potential for helicopter use was recognized with the first Coast Guard helicopter unit established at Bridgeport, Conn., in July 1943.

In the postwar period, to avoid confusion and duplication of effort, the Coast Guard was assigned search-and-rescue responsibility over the maritime region while the Air Force was charged with similar duty over land.

Although no Coast Guard aircraft participated directly during the Korean War, USCG cutters were strung out across the Pacific on weather patrol and on plane stations for the rescue of aircrews forced to ditch. Coast Guardsmen—rather than US Navy personnel—were assigned to train the Korean Navy.

During the war in Southeast Asia, small Coast Guard boats patroled inland waterways to interdict infiltrators, while frigate- and destroyer-size cutters roamed offshore. Coast Guard C-130s provided logistic support for the service's LORAN navigation aid stations in Thailand and Vietnam. Coast Guardsmen provided port security and applied their expertise in handling dangerous cargo in ports by advising on the unloading of munitions. Coast Guard aviators engaged in an exchange program and flew Jolly Green rescue helicopters with USAF units.

In the event of all-out war, control of the Coast Guard would be shifted from the Department of Transportation to the Department of the Navy. As the Fifth Service, USCG would join the Defense community to perform its traditional wartime missions of search and rescue, surveillance of the major sea-lanes and entrance channels, and the like. "In addition, under current national contingency plans, the Coast Guard would be responsible for providing aircraft and personnel to establish mobile search-and-rescue units at certain strategic locations," said Captain Duca.

Other potential wartime tasks for Coast Guard Aviation could include coastal antisubmarine surveillance and interdiction, mine laying and hunting, airlift, ASW barrier patrols, and an expanded role in harbor defense, with the aircraft armed as required.

Other Joint Activities

With the Air Force responsible for search and rescue over land and USCG over water, the two jointly operate the National Search and Rescue School on Governors Island in New York Harbor. All US services and a number of civilian agencies send students to the school, which offers ten different courses (Air Force students are usually search-and-rescue coordinators rather than pilots or aircrews). Since 1966, 6,000 have graduated, including military and civilian students from fifty-seven different countries.

Besides using Air Force transient facilities in the movement of aircraft, the Coast Guard has worked up a contingency plan for the rapid deployment of large quantities of pollution-response equipment—barriers, skimmers, and the like—to oil spill sites. This equipment would be airlifted aboard Military Airlift Command transports on a priority basis. On a standard basis, USCG would employ its own C-130s. In all likelihood, involved in this would be the Coast Guard liaison officer assigned to Hq. Aerospace Rescue and Recovery Service, Scott AFB, Ill.

In a modest exchange program, Air Force officers have served with Coast Guard Air Stations at Sacramento (McClellan AFB) and San Diego, Calif.; Clearwater, Fla.; Astoria, Ore.; and Elizabeth City, N. C. Coast Guard aviators, in turn, have been assigned to Air Force squadrons at RAF Woodbridge in England; McChord AFB, Wash.; Kadena AB, Okinawa, Japan; and Osan AB, South Korea. In addition, a Coast Guard aviator is customarily in each class at the Air War College at Maxwell AFB, Ala. ■

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FACING TWO CRITICAL CHALLENGES

BY THE HON. VERNE ORR
SECRETARY OF THE AIR FORCE

IN ASSESSING the current state of the Air Force from the perspective of my first year as Secretary, I believe that the progress made and future prospects are directly related to our ability to successfully meet two critical challenges. First, we must develop a viable defense program to meet an ever-expanding and menacing Soviet threat. Second, the program must be accepted by the American people and our Congress in such a way as to leave no doubt as to the need for the program or uncertainty that it will be executed efficiently. If we do nothing else, we must meet these challenges head on to prevail.

The First Challenge: Meeting the Soviet Threat

Today this nation continues to be challenged and threatened, more so than at any time in the recent past. Several factors within the context of the current international system have nurtured this threat, including the tremendous expansion in the military capability of the Soviet Union, and growing United States resource dependence. Our Secretary of State has described the first of these factors as the transformation of Soviet military power from a continental and largely defensive land army to a global offensive army, navy, and air force. Two decades of massive military spending have enabled an awesome expansion of Soviet weaponry. While the United States has been devoting less than six percent of our GNP to defense, the Soviets have been spending between twelve and fourteen percent.

More alarming than the amount of money spent or the forces acquired is the fact that this new military muscle of the Soviet Union has altered both the reality and the perception of the global military balance, and given the Kremlin increased confidence to undertake military options previously considered too risky. In recent years, we have seen an increased Soviet willingness to use their military capability either directly, as in Afghanistan, or indirectly through Cuban or Vietnamese surrogates in Angola, Ethiopia, Central America, and Cambodia.

Secretary Orr: "I am happy to report significant progress has been realized."

The continuing growth of Soviet military might and the willingness to employ it presents the principal security challenge facing the United States today. The challenge is greatest in Europe, the linchpin of western security; yet it is no less real in other areas of the world. The threat, in short, is global.

The reasons for this global threat are basic and fundamental. Today, US security interests are linked to other regimes of the world on a greater scale than ever before. Third World or developing nations flank twenty-three of the thirty-one essential US foreign trade routes, upon which the economic lifeblood of the United States and Europe depends. These same Third World nations are the principal sources of the energy resources and raw materials critical to the economy and defense of the free world. This fact is a second condition in the current international environment posing a new threat to our security—resource dependency.

Over the past decade, this nation has become increasingly more dependent on foreign resources for oil—a fact that is readily known—and other critical, strategic raw materials—a fact that is not always fully appreciated.

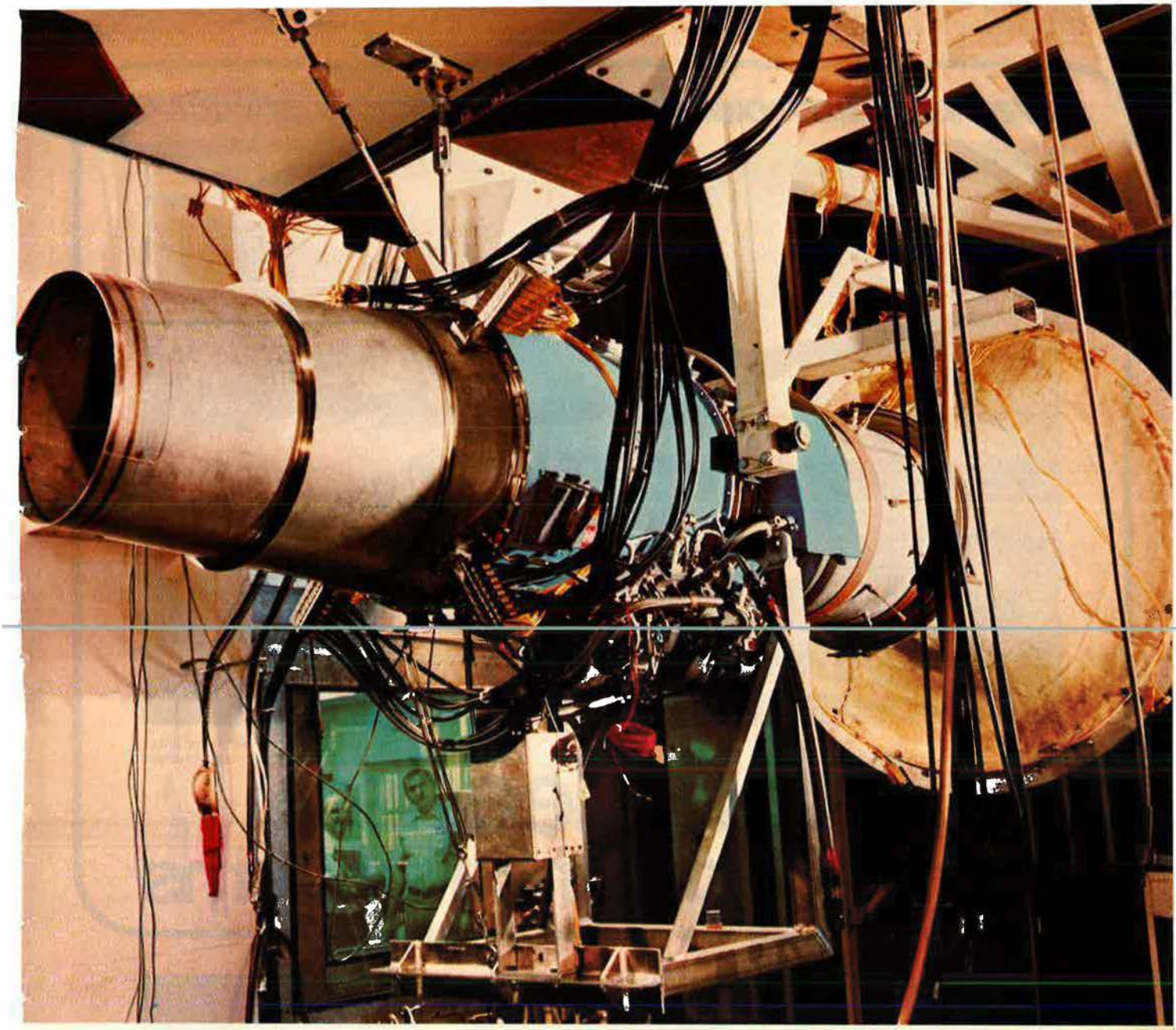
This nation, which was once self-sufficient in oil and, in fact, was a net exporter of oil until the 1950s, must now import approximately fifty percent of its total oil requirements. The problem is more acute for our NATO allies and for Japan, and for that very reason, it must be of primary concern to us—even if we could become self-sufficient in energy.

Our dependence on foreign oil is a significant problem, but of equal if not greater concern is US reliance on imports of critical minerals and materials. Today we depend on foreign sources for approximately twenty-two of the seventy-four non-energy mineral commodities essential to the economy. In fact, the United States must import more than ninety percent of nine of the most critical commodities. Our dependency on cobalt helps illustrate this critical problem.

Today, the United States imports ninety-three percent of its cobalt needs, forty-two percent of which comes from the African nation of Zaire. During the civil war in that nation's Shaba Province in May 1978, the critical supply of cobalt to the United States was disrupted with a resultant price rise from $6 to $25 per pound and $50 per pound on the spot market. Perhaps not too surprising, during the six-month period preceeding this Cuban-supported conflict, the Soviet Union was purchasing most of the market's stockpiled cobalt.

Further, it is estimated that if the supply of cobalt had been entirely cut off and we had depleted our reserves, a significant proportion of the US commercial aircraft fleet would have been grounded after a single year as a result of a major shortfall in engine spare parts. One can imagine the impact it would have on Air Force operations. For example, the F-15 and F-16 engine (F100) uses 910 pounds of cobalt. The price rise of cobalt that occurred in 1978 caused the price of each of those engines to increase by $18,000.

The impact of US resource dependency is more alarming when one realizes that the Soviet Union does not have the same problem. In fact, the USSR imports fewer than a dozen strategic raw materials and is dependent on foreign sources for only half of what it needs of those materials. Further, most of the strategic materials we import either come from Third World areas that are the least stable politically or must pass through strategic waterways where the Soviet Union has expanded its influence. The Persian Gulf and Southwest Asia come immediately to mind.



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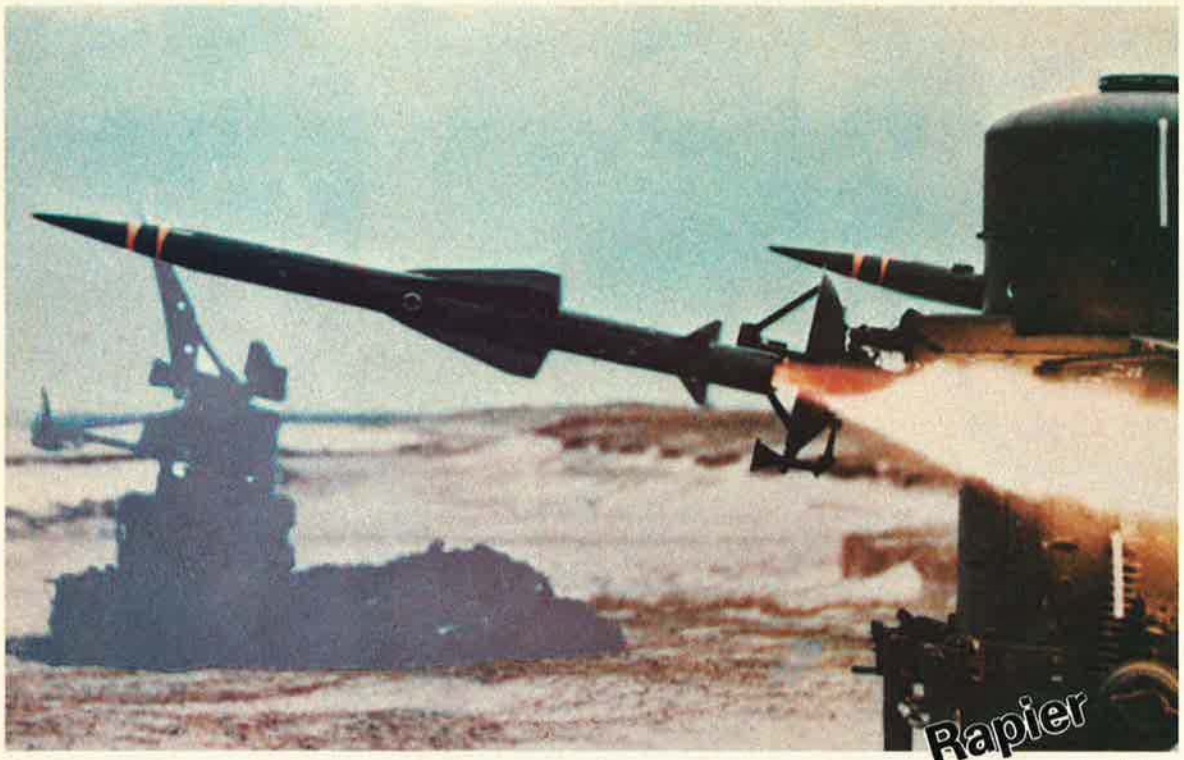

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Reagan Defense Strategy

To meet the challenges posed by a changing international system and the threat of increased Soviet military capability, the Reagan Administration has developed a defense policy and strategy that is both realistic and affordable. Built upon strength, it is premised on the idea that to deter Soviet expansionism in Europe or anywhere in the world, we must have the will and the capability to meet the challenge head on, capitalizing on the enemy's weaknesses while optimizing our own strengths.

We can ensure our security only if we have the capability to deter military excursions globally and, should deterrence fail, to limit the resulting conflict. This can best be achieved through a strategy of flexible response—matching response to the threat in order to deny the enemy the achievement of his objectives at any level of conflict.

To implement this strategy, we need to develop flexible, highly mobile, ready, and sustainable forces that are capable of meeting aggression in Europe, Southwest Asia, or anywhere our interests are challenged. We believe airpower has a crucial role in implementing this strategy. Its long range, speed, and flexibility permit the most efficient allocation of forward deployed and reserve forces by providing a capability to respond globally in the shortest period of time.

Air Force Programs

I believe we have made real progress in developing the forces necessary to implement the Reagan defense strategy. The Air Force is progressing toward a more capable and resilient force, better able to meet Soviet challenges and threats. As a direct result, today our nation is moving toward a more secure future. In short, I believe we are "turning the corner" away from years of neglect of our defense needs. This movement results, in part, from a President who has put a new vigor into restoring the military capability of this nation. The foundation of the effort is a dedicated and highly motivated military force led by professionals of the highest caliber, a new appreciation by the citizens of this nation for the contributions of the men and women in uniform, and, as a result, greater support within the Congress for defense programs.

In terms of our nuclear capability, the President's announcement in October of a comprehensive strategic modernization program was a significant step toward redressing the strategic imbalance with the Soviet Union. The Air Force has significant responsibility in implementing this program. In terms of conventional forces, the priority emphasis placed on improving the readiness and sustainability of our forces is bearing fruit and the recent decision to purchase C-5B and KC-10 aircraft will give this nation the capability to meet the Soviet threat head on, wherever it occurs.

Ultimately, however, the combat capability and, thus, the deterrent value of the Air Force depends on having adequate numbers of highly qualified, motivated, and technically competent people—military and civilian, active and Reserve. For this reason, people remain my number-one priority.

I am happy to report significant progress has been realized during this past year in the people area. With the support of Congress, we have restored relative pay comparability through last year's 14.3 percent pay raise for officers and the ten to seventeen percent raise for enlisted personnel; provided a cost-of-living allowance (COLA) for singles stationed overseas and living in government quarters; provided advance travel payments for family members in PCS moves; repealed the overseas dependent ceiling; increased the Aviation Career Incentive Pay (ACIP) by thirty to thirty-five percent and provided it to those who have more than twenty-five years of service and are in operational flying positions; increased and expanded hazardous duty incentive pay; and, finally, increased Serviceman's Group Life Insurance coverage to $35,000.

AFA Executive Director Russell E. Dougherty places an AFA membership pin on the Secretary's lapel. Secretary Orr describes two critical challenges for the Air Force: to develop a viable defense program and to leave no doubt of the ability to execute it.

Since assuming this office last February, I have had the opportunity to travel to nearly three dozen Air Force bases and talk to our people on three continents to learn of their needs and concerns. I found that morale is high and our people are dedicated, competent, and, above all, effective. Our recruiting efforts are moving forward splendidly. For example, during the first three months of this fiscal year, we recruited eighty percent of all the nonprior-service recruits we expect to bring in during Fiscal Year 1982. It is interesting to note that recruiters today often spend as much time explaining to anxious parents why their son or daughter could not be accepted into the Air Force right away as they spend encouraging new recruits.

Verne Orr was appointed to his post by President Reagan, with whom he served in the California state government and during the Presidential campaign and transition. He served in the Navy during World War II, and was discharged from the Naval Reserve in 1951 as a lieutenant commander. He earned a bachelor of arts degree from Pomona College and a master's in business administration from the Stanford Graduate School of Business.

Along with good recruiting results have come outstanding retention rates. Our most critical problem is retaining the right numbers of quality people to support mission requirements. In this effort to retain quality people, we in the Air Force are engaged in a highly competitive enterprise with private industry. The intense competition over funds that takes place between the public and private sectors is more than equaled when it comes to people.

Surveys of people entering the service indicate that the two major motives for joining the Air Force are education and training. Those two functions we do quite well, in fact, in some respects too well. We understand all too well that once we educate and train our people, they become highly prized resources for which the private sector is willing to pay dearly. We are forced, therefore, to compete with that sector to retain these people. Today, this is not an easy task, but tomorrow it will become more difficult because of an expanding national requirement for highly qualified individuals.

The Second Challenge: Retaining Public Support

The progress we have realized toward developing a credible defense capability to meet the Soviet threat is continued and expanded in the Air Force's FY '83 Program. General Allen's accompanying article discusses a number of the specifics of this program. We have high hopes that this program will find public as well as congressional acceptance, and be implemented to continue the recent progress. However, we understand that such support is not guaranteed.

Our challenge, therefore, is to assure this acceptance by retaining the support and confidence of the American people and our Congress. Such support, in light of the perception of decreases in social programs (in reality, it is only the rate of increase in spending on social programs that is being reduced), will depend upon our ability to articulate the need for defense expenditures. To do this, we must clarify the nature of the threat and show that our programs are not only the most cost-effective, but also the most militarily sound solutions. Furthermore, we must demonstrate that we can spend defense dollars wisely. The continued consensus for a strong defense developed during the past year demands that we be good stewards of the money entrusted to us, and this responsibility must be shared by everyone throughout the defense community, including the Air Force.

To help achieve this goal, a five-point Integrity and Management Improvement Program has been developed. This program will serve as an umbrella for many existing oversight, cost awareness, and incentive programs, and will add new management, emphasis, and crossfeed to obtain efficiencies at all levels of the Air Force. To be effective, however, it will require the conscientious effort and support of everyone in the Air Force, civilian and military, active and Reserve.

A major part of this program is aimed at acquisition management. In this area we are implementing a series of specific actions that we believe will result in significant savings in new weapon systems by reducing acquisition costs, decreasing acquisition time, and improving the selection management and support process. Multiyear contracts are one of the major initiatives in this area. By avoiding yearly contractual processes and retaining contractors and quality control procedures over several years, the multiyear contract produces direct and indirect savings in contract administration. For example, for the F-16 contract initiated in FY '82, we estimate a savings of $259.5 million over the next four years.

Concluding Assessment

In *The Third World War,* his fictionalized account of World War III, General Sir John Hackett provides a vivid commentary on what can result if the challenges of an adequate defense are not met. He writes:

> Those who argue for the reduction of defense expenditure in the countries of the West not only seem to live in a land of total make-believe, but they refuse to give the Marxist-Leninists who govern the USSR any credit either for meaning what they say (and have been saying for a long time) or for knowing what they are doing. . . . What they have been doing is building up huge armed forces, far greater than what would be necessary in any conceivable situation for their own defense. . . .
>
> There is . . . a very high probability that unless the West does a good deal within the next few years to improve its defenses, a war with the Warsaw Pact could end in early disaster.

The current defense program is built upon the necessity to meet this Soviet buildup. During the past year, we have made real progress toward implementing that program. However, despite this record, the prospects for continued progress and for precluding the disaster General Hackett describes will be short-lived without continued public support. That support is contingent on each individual doing the best job he or she can. With your help, I am confident we will succeed. ■

WE ARE in a dangerous decade. As in the early 1940s, we face a hostile power with imperial ambitions that has built large and modern military forces well beyond those needed to assure the security of the USSR.

Our chief adversary, the Soviet Union, has demonstrated an increased willingness to use its growing military might to extend its sway and threaten Western interests. The actions of the Soviets in Poland and Afghanistan and, through Cuban proxies, in Africa and Central America speak more eloquently of Soviet aims than the pious pronouncements about peace and progress that regularly emanate from the Kremlin.

The Russian military buildup and adventuresome activities around the world reflect the Kremlin's persistent search for advantage in the grand, global competition with the US. We must recognize that we are engaged in an enduring conflict with the Soviet Union. It is a classic confrontation between radically different political systems. Our views of the rights of men and nations are unalterably opposed. The majority of Soviet actions are today, and will continue to be, inimical to our interests.

A Clear Challenge

The Soviet leaders take a comprehensive view of this protracted struggle, describing and analyzing it in terms of the so-called "correlation of forces" between East and West. The military balance, both nuclear and conventional, is one of the central elements in this correlation. The Kremlin's determined accumulation of military might reflects, therefore, not only a commitment to be able to fight and win a war, should it occur, but also their objective of influencing the perceptions of friend and foe alike that the forces of history are on the side of the Soviet Union.

The challenge is clear. We can no longer postpone the defense effort required. We, in concert with our allies, must maintain military forces of sufficient power and flexibility to counterbalance Soviet military capabilities, deter future Soviet expansionism, and defend Western interests wherever and whenever they may be threatened. Inadequate Western defense capabilities affect the military balance, perceived as well as real, between the Soviet Union and the West, and encourage Soviet assertiveness in such areas as the Arabian Gulf and the Caribbean basin.

Strengthening our defenses adequately will not be an easy task. We have significant deficiencies in our military capabilities caused by greater Soviet defense efforts over the last decade or more. These deficiencies in

TIME TO STRENGTHEN OUR DEFENSES

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

our forces cannot be remedied overnight, or in a single budget. It will require a steady, long-term commitment to strengthening our defenses. I am convinced we can and will meet the security challenge before us. The United States possesses the intellectual and financial resources to build and maintain the defense capability required.

After giving inadequate attention to our defenses over the preceding decade, we have, in the past two years, set in motion the improvement programs needed to rebuild our defense capabilities. We have a good foundation of people and basic equipment, and, in the five-year program before the Congress, have established the right blueprint to follow. The task before us as an Air Force, as a nation, is to have the courage and stamina to stay through what will be a difficult course and bring our essential improvement programs to fruition.

If we can muster the determination and persistence to follow through with the course we have set, I am convinced we will have the necessary military strength to get through the difficult period that lies ahead. We will thereby be able to deny the Soviet Union military superiority, deter further Russian aggression, and convince the Kremlin's leaders that time is not on their side and that the "correlation of forces" will not favor the Soviet Union. By demonstrating that we are committed and able to counterbalance Russian military power, we may be able to persuade Soviet leaders that continuation of their massive military buildup would be fruitless, and that the burden on their people and economy would be too much to bear. By convincing the Soviets that they cannot hope to gain from an arms race, we can set the stage for serious negotiations toward a meaningful reduction in arms.

Should we fail to proceed vigorously on the path we have set, however, the Soviets will continue to gain in relative military power, and our ability to deter aggression will be dangerously weakened. As we learned at great cost in the face of Nazi expansionism, at Pearl Harbor, and in Korea, weakness invites aggression. Only through maintaining adequate military strength can we contain Soviet expansionism and protect ourselves and our allies.

General Allen: "We can no longer postpone the defense effort required."

People—The Key

Because of our concern with the dangerous situation we face, particularly in the next few years of this decade, we have placed emphasis on improvement programs that will substantially increase our combat capability in the near term. We have directed our efforts toward improving the effectiveness and survivability of our strategic forces, further enhancing the combat readiness and sustainability of our general-purpose forces, and expanding our airlift capability.

The key, of course, to our force improvement efforts is having adequate numbers of experienced, motivated people to man and maintain our weapon systems.

Because of the compensation improvements enacted by the Congress over the past two years and renewed public appreciation of military service, Air Force retention rates are up markedly. Our first- and second-term reenlistment rates for last year were up by fifteen to twenty percent over the preceding year, and the pilot retention rate increased nearly thirty percent. All signs point toward 1982 being another banner year, as it must be.

Even with the encouraging turnaround in retention rates, our personnel situation remains all too fragile. We are still feeling the effects of the loss of skilled people in the late 1970s, when service pay and benefits failed to keep pace with that in the private sector and too many of our people came to believe that their service was no longer valued.

To ensure that the Air Force will continue to be able to attract and retain the people we need, we are committed to ensure that military compensation maintains a fair relationship to pay in the private sector, to remedy the serious inadequacies in PCS reimbursements, to develop a new education incentives program, and to improve health care for military members and their dependents.

Strategic Forces Improvements

While we must continue to improve all elements of our forces to keep pace with Soviet developments and meet the nation's defense responsibilities, we have directed our first priority toward strengthening our strategic nuclear forces.

The broad strategic modernization program set forth by President Reagan last October provides the blueprint for building and maintaining a strong, credible deterrence and defense capability. The Air Force is responsible for implementing the bulk of this comprehensive program. With congressional approval of the program last fall, we have set in motion several critical force improvements. We will rebuild our aging bomber forces by fielding 100 B-1B bombers and equipping our B-52G/Hs with air-launched cruise missiles, while also proceeding, as quickly as feasible, with the development of an advanced technology bomber.

We will be improving the striking power of our ICBM force by deploying the MX initially in Minuteman silos while we work on more survivable basing modes. To ensure that we can obtain warning of an enemy missile or bomber attack and can communicate with our strategic forces, we will be enhancing the survivability and performance of our warning sensors and our command control and communications systems.

Finally, we are upgrading the nation's

defenses against bomber and cruise missile attack by replacing our F-106 interceptors with F-15s and expanding our fleet of airborne warning and control aircraft.

The long-awaited B-1B program has gotten under way, and we look toward introducing the first squadron into operational service in 1986. The B-1B will incorporate advances in design and avionics that will make it highly survivable against both existing and projected Soviet defenses. With the expected deployment of an advanced technology bomber in the early 1990s, we anticipate the B-1B will begin to transition to a cruise-missile carrying role, and will serve as a cruise-missile carrier and conventional bomber into the twenty-first century.

In the interest of assuring MX survivability, we are actively examining Deep Basing, Continuous Patrol Aircraft, and Ballistic Missile Defense basing alternatives, with the aim of reaching a long-term basing decision in 1983. In the interim, we will deploy a minimum of forty MX missiles in existing Minuteman silos.

Though not a lasting solution to growing ICBM vulnerability, initially deploying MX in silos will complicate and add uncertainty to Soviet attack calculations. More importantly, it is a needed early step toward countering Soviet ICBM capabilities. It will thus confront the Soviets with some of the vulnerability problems that their heavy, accurate SS-18 and SS-19 ICBMs present to us.

Our MX and bomber efforts, in combination with the upgrades in our command and control capabilities and strategic defenses contained in President Reagan's comprehensive strategic modernization program, will send an unmistakable signal to Moscow that the US is determined to restore an adequate strategic balance. These efforts will provide us with a solid basis for the negotiation of equitable and verifiable strategic arms reductions.

At the Aerospace Education Foundation's Salute to Jimmy Doolittle and Ira Eaker, last fall, General Allen is flanked by, from left: Supreme Court Chief Justice Warren E. Burger, Sen. Howard Cannon (D-Nev.), General Doolittle, and former Astronaut Mike Collins.

Readiness, Sustainability, Mobility

While we must, as a matter of urgency, rebuild our nuclear deterrent, we must also continue to improve our general-purpose forces. With Soviet conventional capabilities steadily expanding, it is imperative that our conventional forces have the capability to deploy and employ effective fighting power rapidly. Accordingly, we have continued to place priority emphasis on enhancing the readiness and sustainability of our tactical and airlift forces.

In the coming fiscal year, the Air Force will increase tactical flying hours by eight percent, bringing the average flying hours per pilot up to about eighteen hours per month compared to less than fifteen in 1980. We will eliminate the long-standing backlog in depot-purchased equipment maintenance, and we will have fully funded both peacetime and initial war reserve spare parts for our tactical forces. Over the next five years, we will invest nearly $20 billion to upgrade our munitions inventory and bring our stocks up to the levels required to fight and win a prolonged conventional conflict.

The global character of US interests and commitments makes it imperative that we maintain forward deployed forces in key regions, and that we be able both to reinforce those forces rapidly and to deploy effective combat forces worldwide with great dispatch. Improved mobility is absolutely essential if we are to bring US military power to bear in distant regions with the speed dictated by the nature of modern warfare and to sustain effective combat.

We have modified our earlier airlift plans, because of the urgent and compelling need to acquire added capability to transport large quantities of equipment and supplies over intercontinental distances as rapidly as possible. Our previous program would not have provided the needed increases in airlift capability before the end of the decade. Because we believe we cannot afford to wait that long, we now plan to proceed with a combined KC-10/C-5B program that will substantially increase

our long-range airlift and refueling capability over the next few years.

When this new program is carried out and the modifications to present C-141s and C-5As are completed, we will have an airlift capacity of 50,000,000 ton-miles a day—a doubling of our present capacity.

Finally, we are proceeding with the modernization and expansion of our tactical forces at a steady pace. We will continue deployment of F-15s and F-16s throughout the decade and will complete our buy of A-10s next year. These tactical fighters have proven themselves not only highly capable, but exceptionally reliable and maintainable as well. Our program provides for evolutionary improvements in these proven and reliable aircraft to enable us to achieve air superiority, to fight at night and in adverse weather, and to penetrate increasingly capable Soviet air defenses.

Stay the Course

Today's US Air Force is an effective fighting force. We have, in the past few years, made significant progress in correcting long-standing deficiencies in our forces and in improving our defense capabilities. We have the right people, the right training, and the equipment modernization programs needed to maintain a deterrence and defense capability adequate to the challenge our country faces.

We must muster the determination and persistence required to see this defense improvement program through. We are at a crucial period in history, where the actions of an implacable and powerful Soviet foe make it imperative that we strengthen our forces. We must stay the course. Sacrifice is required. It will not be easy. But we can and must afford the cost. We cannot afford the weakness and loss of credibility that a failure to stand up to the Soviet challenge in this dangerous decade would bring. ■

Gen. Lew Allen, Jr., graduated from the US Military Academy in 1946. He has served as USAF's tenth Chief of Staff since July 1978, and will complete his tour at the end of June 1982. He flew with SAC as a bomber pilot, then earned a doctorate in nuclear physics in 1954 and spent seven years in the nuclear weapons field. From 1961 to 1971, he was involved with space systems. In later assignments he was Director of the National Security Agency, Commander of Air Force Systems Command, and Vice Chief of Staff, USAF.

NCOs MUST DISPLAY LEADERSHIP AND PROFESSIONALISM

BY ARTHUR L. ANDREWS
CHIEF MASTER SERGEANT OF THE AIR FORCE

NEARING the end of my first year in this position, I have had the opportunity to visit our installations around the world. I have met with our commanders, senior NCOs, and thousands of young officers and airmen. Each contact leaves me honored and proud to be a part of a great team—looking to the future and working hard to make this a better Air Force.

I have also learned much and appreciate this chance to address a few of the key issues facing all of us today.

More than 85,000 young people have entered the Air Force during the past twelve months. They join for a variety of reasons, but we know their basic motivation today is the outstanding technical training they seek and receive. Of course there are also elements of patriotism and a certain enthusiasm for the opportunity to display battlefield heroics, and we have an obligation to sustain and reinforce these important ideals that provide motivation.

But we also recognize that the present economic situation leads many to our doors, and we can't ignore the fact that they expect to be compensated in a variety of ways. Feeling good about service to your country is only part of the reward. Adequate pay and benefits go a long way toward getting and keeping the number and kind of people we need.

"Bud" Andrews is the seventh man to hold USAF's highest enlisted post.

Personnel Issues

The issues of pay, retention, and quality of life have been great concerns to our military leaders, and we have voiced those concerns to Congress. The last pay package didn't just happen; a lot of hard work went into it at every stage. It was discussed and argued before it was forwarded to the House and Senate, and had to be defended once it got there. Our senior leaders felt the package was important. Evidently Congress agreed, voting the highest pay raise for military members since 1949. Enlisted personnel received raises of ten to seventeen percent, depending on rank. Increases were also made in a variety of other programs, including incentive pays, enlistment bonuses, and permanent change of station reimbursements.

We are enjoying progress in other "people programs" too. Although money is tight, we are still working to improve dormitories and child- and youth-care centers. Also, the Air Force is increasing emphasis on programs that improve the quality of life for our families.

Air Force family life is changing and we must become aware of the new demands being placed on our family relationships. Unless we understand how Air Force families are being influenced by these demands, we will not be able to meet the needs of this primary support system on which our Air Force members depend. Two out of three Air Force members today are either married or single parents.

Families are not just dependents of Air Force members. They are a vital part of the mission support system on which the Air Force depends. Family well-being is more important than ever be-

fore in promoting personal and job satisfaction. The number of two-military member families is also increasing; today there are more than 21,000 couples in uniform. The Air Force has made an effort to assign married couples together, and this program has worked quite well over the past few years—so well, in fact, that personnel officials are concerned they may not be able to meet expectations of the growing number of military men and women. But whatever the make-up of the family, many families seem to want a balance between family independence and recognition of their Air Force commitments.

Chief Master Sergeant Andrews: "Again during the coming year, the main focus will remain on the Air Force's most important element—its people."

That recognition is important. The Air Force places strong emphasis on recognition through formal awards and ratings, but recognition doesn't stop there. We are recognized by others, too. A prime example is the Twelve Outstanding Airmen of the Year, honored annually by the Air Force Association. These twelve individuals are a "yeasty" group, rich with qualities that have made them rise above their peers. They represent the Air Force from their own major commands, separate operating agencies, and reserve forces. They are highly capable, competent, dedicated, and patriotic people who are willing to serve. They deserve this recognition, as do the thousands of other NCOs who receive official and unofficial accolades day after day.

Role of the NCO

NCOs, as a group, are receiving more recognition now. New responsibilities and roles are emerging, and some of our jobs are changing. I think it's for the best. NCOs are increasingly taking on more complicated and responsible jobs. As an example, we now have senior NCOs as Commandants of our NCO Leadership schools and academies.

As professionals, we should be proud of our growing roles. This pride should show itself in the way we act, and in the way we look. Personal appearance is a continuing concern of our senior leaders and, most important, the public. Of special concern to the public is our ability to provide a credible national defense. We must put our best foot forward to instill public faith and confidence in the Air Force. Our professional image is accepted as a measure of our ability, and our willingness, to fight.

The taxpayers don't pay us out of generosity. We are expected to earn our compensation in many ways: by accepting our assignments, anywhere, anytime; by leaving our families when the Air Force needs us to; by doing the jobs we are trained and told to do; and, most of all, by being ready to fight, be shot at, even give our lives, under circumstances over which we will have little or no control.

Americans, I believe, want our military services, and our country, dedicated to the true reason we have sworn allegiance to this wonderful nation—to preserve and protect our freedom. Ask yourself: Are we where we should be? Are our roles, status, and positions as NCOs in today's Air Force at the highest levels? I'm convinced we have those qualities that will permit us to be what we want and need to be, if we don't allow a negative attitude to creep in and overtake us. We NCOs need to motivate our people. Counsel them, train them, and, above all, set an example they can be proud of.

We must seek and assume greater responsibilities. The days of just filling the squares are over—we have to go beyond that. Our emphasis must be on leadership and management. We must learn and study the long-standing principles of each. Because our profession is not just a business, we are not just managers. We are leaders, and must know and command that unquantifiable essence that managers only suspect exists—human will.

Leadership cannot exist without effective, two-way communication. Lower-ranking members need to tell their supervisors what is going on. The supervisors need to tell the senior NCOs, who must tell the junior officers and have them pass on the information to the senior officers. The information must flow the other way, too, from the senior officers to the junior airmen. This process is the key to accomplishing the Air Force mission, as well as other objectives.

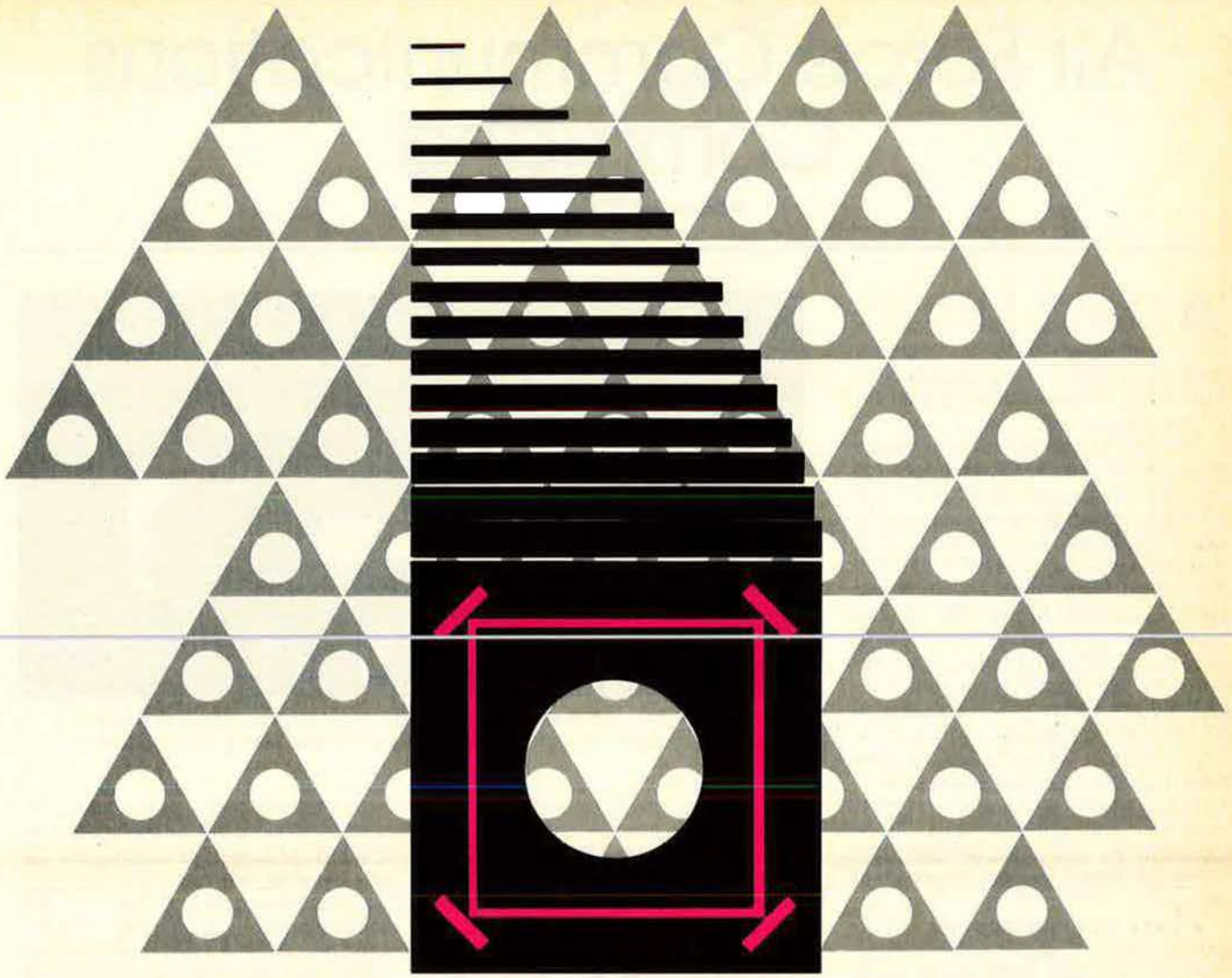
Meeting the Challenges

Unfortunately, some of our NCOs are still afraid of turning off younger people simply by enforcing discipline or setting an example of excellence in performance, bearing, and attitude. The task of securing freedom belongs to each and every one of us, but it's not easy. The news media today tell us that the threat to our nation is increasing, and they sometimes question the ability of our military forces to keep our country at peace. There are dues to be paid, and we must be willing to acknowledge them. I ask this important question that must be answered by each and every one of us—are we willing to pay those dues? Our weakness invites conflict—our preparedness prevents war.

I believe we are ready and willing to pay those dues. In the past year, when there was a need to help, the Air Force responded. We helped keep air traffic moving smoothly during a civilian air traffic controllers' strike, rescued hotel fire victims from balconies and, almost overnight, constructed a camp to house 10,000 Cuban refugees immigrating to the United States. Also, Air Force people assisted during the greatest flying event of the year—the two orbital flights of Space Shuttle *Columbia*. It only carried a crew of two, but hundreds of Air Force specialists assisted in this historic event.

We are a strong and proud force. We have a great many challenges before us, and, as we rise to meet them, we will be recognized. Again, during the coming year, the main focus will remain on the Air Force's most important element—its people. ■

CMSAF Arthur L. "Bud" Andrews is the seventh Chief Master Sergeant of the Air Force. From Boston, Mass., he enlisted in the Air Force in 1953. Starting as a security policeman, he became a First Sergeant in 1965. Serving as a First Sergeant until 1977, he then became Senior Enlisted Advisor at Electronics Systems Division, then moved to SEA at Air Force Systems Command in May 1978. He held that post until assuming his present job in August 1981.



Litton's square RLG leapfrogs 10 years

The MRASM/Tomahawk II selection and contract spotlights Litton's astounding achievement in Ring Laser Gyro technology.

By addressing RLG accuracy versus size from a fundamental point of view, Litton scientists abandoned a 10-year triangle mindset. By using a square rather than a triangular configuration, mirror performance was enhanced and pathlength increased for a given volume. This concept, combined with Litton's superior mirror technology, provides unprecedented performance.

Accuracy achieved in flight proved the concept correct, and these gyros are now in production for military and commercial applications.

The square RLG is the latest in our long line of continuing successes which began in the early fifties when we pioneered Inertial Navigation for manned aircraft. Since then we have delivered over 17,000 inertial systems for aircraft, cruise missile, shipboard and land applications.

Litton success in the Inertial Navigation field has earned world-wide acclaim. It is a Litton inertial navigation system in the U.S. Government cruise missiles, the ALCM, SLCM, and GLCM, that contributes directly to their excellent performance.

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Litton **GUIDANCE & CONTROL SYSTEMS**
5500 Canoga Avenue, Woodland Hills, California 91365

Air Force Communications Command

A MAJOR COMMAND

"A PAST of Pride—A Future to Fulfill"—Air Force Communications Command's twentieth anniversary theme characterizes the accomplishments and initiatives of the command during the past year.

Just a month into its third decade as a major command, AFCC stepped into the national spotlight when command air traffic controllers were deployed to assist the Federal Aviation Administration in the aftermath of the Professional Air Traffic Controllers Organization (PATCO) strike in August 1981. By deploying controllers from eighty bases and taking calculated management actions, the command continued to support fully Air Force flying activities while lending expertise to the FAA. From a high of 488 people at sixty-five FAA locations, that deployed force is being gradually withdrawn and most controllers will be returned to Air Force duties by the end of September 1982.

AFCC's overall mission responsibilities are:

- **Base communications,** which range from telephone and message centers to on-base radio nets at about 130 bases;
- **Inter-base communications** links via radio, cable, and satellite; including nearly half of the Defense Communications System, which serves all military activities;
- **Air traffic services** from 119 control towers, 148 radar facilities, and nearly 300 other navigational and landing aids; plus evaluation of these facilities with a total of six specially equipped C-140 and T-39 aircraft;
- **Data automation services** including the acquisition and evaluation of computer systems and maintenance and enhancement of the software for many common user programs;
- **Engineering and installation** of communications, air traffic services, weather, and other electronic equipment including replacement, retrofit, and on-site depot-level maintenance actions; and
- **Maintenance and evaluation** of existing and new communications, air traffic, data automation, weather, intrusion detection, and radar systems.

These mission activities are directed from command headquarters at Scott AFB, Ill., through six Divisions, an Engineering and Installation Center, and nine data automation units. AFCC's more than 42,000 military and 7,000 civilian employees are based in twenty-one foreign countries and island possessions, and in every state except Vermont. Some 15,000 AFCC-gained Air National Guard and Air Force Reserve people swell the command's total force size to more than 64,000.

AFCC people often find their homes on remote mountaintops. These domes are typical of those used for high-frequency radio and tropospheric scatter systems.

While the command operates principally from fixed facilities, its combat communications units are trained, equipped, and prepared to deploy both communications and air traffic services systems. Mobile data automation assets are also available.

About seventy-five percent of the command mobile communications capability and better than half of the electronic installation people are members of the National Guard. A 1981 realignment of Guard and Reserve Forces in 111 communications flights brought a new wartime mission, including deployment to overseas collocated operating bases to operate and to main-

Maj. Gen. Robert F. McCarthy, Commander, AFCC.

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

tain prepositioned tactical equipment.

Being the Air Force's most widely dispersed command—some 430 locations with literally thousands of small work centers—brings with it a range of special people challenges that receive top priority. Functional managers join with personnel planners to assess the impact of changes in equipment and procedures that relate to people, including more than one-third of the command based overseas, with 2,400 at unaccompanied tour locations. Key issues are seeking the best balance of overseas and Stateside assignments (nearly twenty percent of the enlisted people are in imbalanced career fields) and spreading overseas and TDY-intensive jobs equitably. Special attention goes to equipment upgrades that reduce the number of people required at isolated radio relay and satellite sites, and initiatives that will upgrade work, living, and recreation conditions.

At the same time, the command has a variety of programs under way or planned to improve customer service. Heading the list are two telephone upgrade initiatives—one to improve government-owned facilities and the second involving facilities (principally in the US) leased from commercial concerns.

In message centers, more optical character reader equipment and a program to provide automated writer-to-reader services at eight bases will boost efficiency. The command has also married a multiyear program to replace base level and supply computer systems with a comm center enhancement program. The objective is to replace bulky punched cards with magnetic tape. Command data automation units are also enlarging their advisory services, which can be used by other Air Force activities that are planning and using new computer systems.

An extensive program that brings the accuracy and efficiency of digital technology to the links between bases is well under way in Europe and planned for Pacific facilities. In addition, an interim secure voice improvement program continues to add subscribers.

In the air traffic services area, a new radar simulator is providing more realistic training for air traffic controllers, and more than half of the 100 programmed solid-state instrument landing systems are installed and operating. A major program to upgrade radar approach control facilities also continues, with special emphasis on precision approach radars.

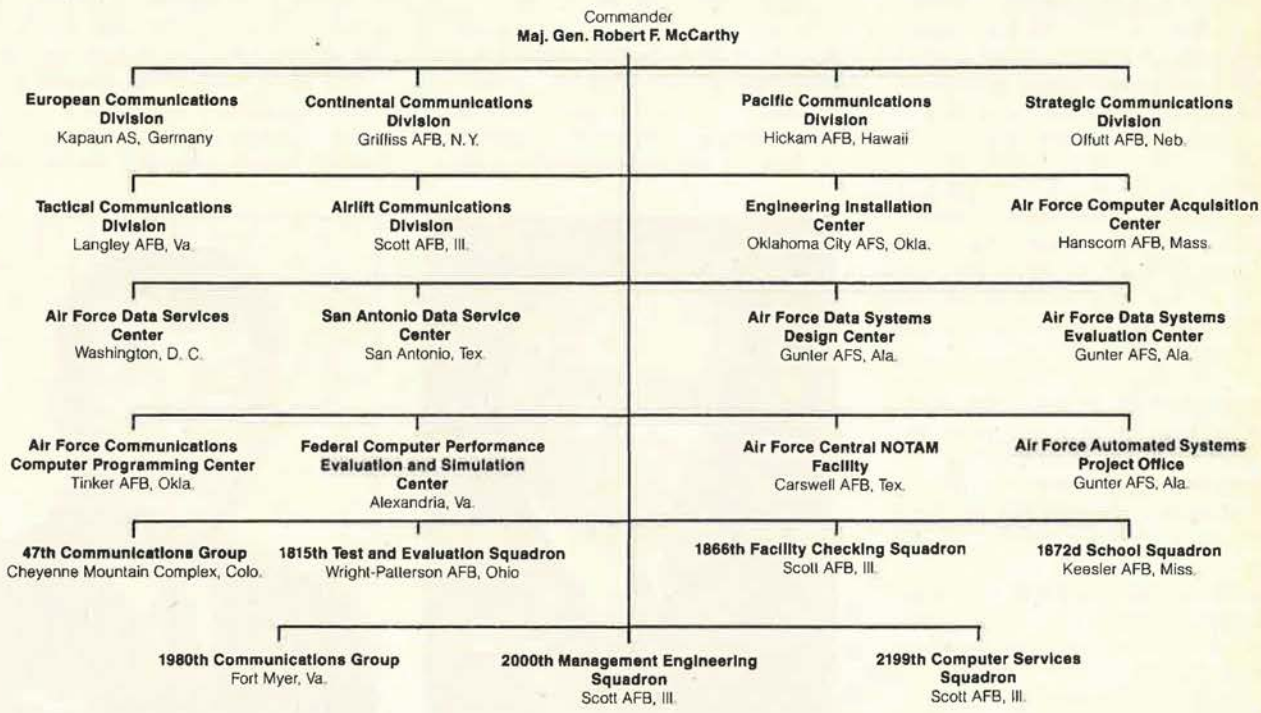
During the budget process, top-level attention is given to spotlighting the synergism between comm, automatic data processing, and air traffic services and the major weapon systems they support, such as the GLCM and MX. Much of the orchestration of these new programs is handled by people assigned and directed by the Engineering and Installation Center. These people spend more than half their work time in a temporary duty status, engineering and installing communications and electronics systems around the world.

Upgrade programs also cut across the full range of mobile equipment and include van-mounted quick reaction comm packages and mobile satellite terminals. A new family of triservice mobile comm equipment is also on the horizon. In addition, heavy emphasis is being placed on a series of readiness initiatives aimed at improving the command's ability to sustain service and restore communications services facilities damaged or disrupted in combat.

The mission of AFCC is spelled out in the command motto—"Providing the Reins of Command." Meeting that motto means providing the synergistic communications, air traffic services, and data automation links that underpin management of day-to-day operations in peacetime, and supplying commanders with the means to direct the delivery of the Air Force's wartime product—firepower on target. ■

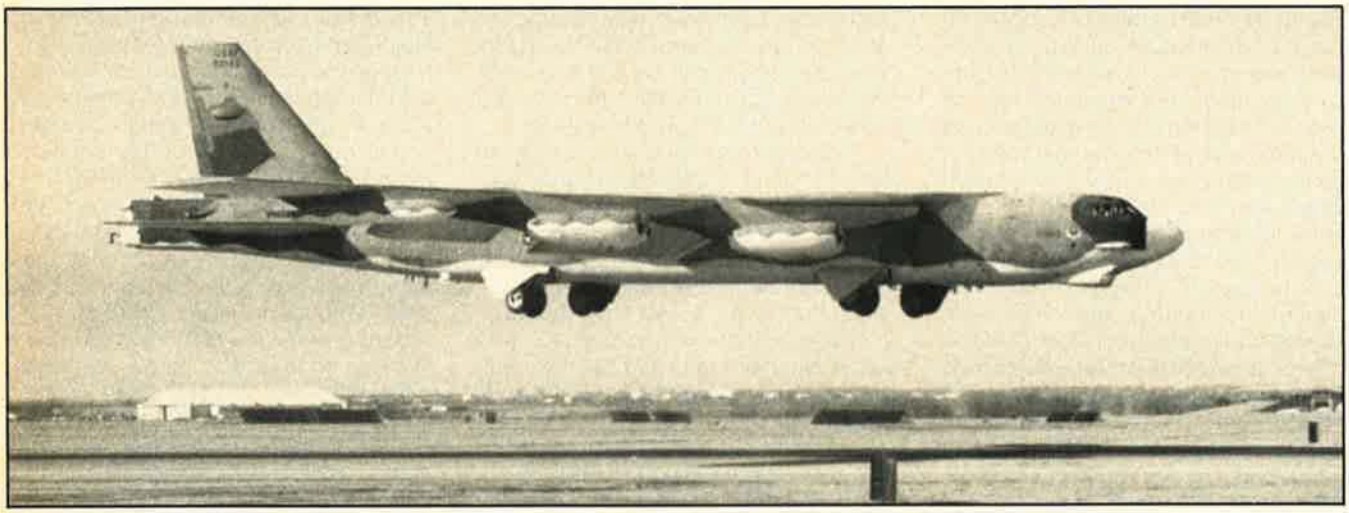
AIR FORCE COMMUNICATIONS COMMAND

Headquarters, Scott AFB, Ill.



Air Force Logistics Command

A MAJOR COMMAND



The first B-52G modified at AFLC's Oklahoma City Air Logistics Center takes off from Tinker AFB, Okla., for its home base at Griffiss AFB, N. Y. The modified B-52G has the new Offensive Avionics System and Cruise Missile integration.

AIR Force Logistics Command has one basic product—combat readiness.

All of the command's efforts in 1981 were directed toward that end—providing a higher level of readiness and sustainability to the Air Force's operating units and more than sixty foreign allies.

Under the leadership of Gen. James P. Mullins, who assumed command August 1, 1981, AFLC's 90,000 people worked daily on myriad projects—each of which is designed ultimately to enhance combat readiness and provide security for this country and the free world.

AFLC's field units—the air logistics centers (ALCs)—play the key "hands-on" role in this vital effort. They maintain, modify, repair, refurbish, and supply all of the Air Force's aerospace weapon systems, subsystems, and support equipment.

This support involves enormous amounts of money. AFLC's financial program this year will amount to more than $37 billion. Its assets total $76 billion. Operations and maintenance will exceed $5 billion. Foreign Military Sales (FMS) funds will top the $16 billion mark.

Major combat readiness initiatives were either begun or continued in 1981.

Two of the command's Air Logistics Centers have extensive programs under way to modify late models of the B-52 aircraft to enhance their effectiveness, until the new B-1B aircraft enters the inventory later in this decade.

Oklahoma City ALC (Tinker AFB) delivered the first B-52Gs modified for the Offensive Avionics System (OAS) and the Air-Launched Cruise Missile (ALCM). Some forty "G" model aircraft are scheduled to go through the Tinker AFB shops each year until all have the system, which will enhance the accuracy of the navigation systems and integrate them with the ALCM.

In the meantime, the San Antonio ALC (Kelly AFB, Tex.) received the first B-52H for addition of the OAS. The modification, one of the largest ever undertaken by federal employees, has one of the nation's highest defense priorities.

Management responsibility for the C-5 wing modification program transferred from Aeronautical Systems Division to the San Antonio ALC in 1981. The largest modification program ever managed by the Texas center covers fabrication and installation of new wings for the C-5 fleet at a cost of $1.2 billion.

At AFLC's Warner Robins ALC (Robins AFB, Ga.), the final contract for "stretching" the C-141 fleet was let in 1981. With thirty-three remaining aircraft covered by this option, the program remains ahead of schedule and under cost. By mid-1982, the last of the

Gen. James P. Mullins, Commander, AFLC.

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

The Erector-Set-like structure allows work to be done on the radome of an E-3A Sentry aircraft at the AFLC Oklahoma City Air Logistics Center. The Center has worldwide logistics management responsibility for the E-3A as well as the -135 series and the B-52 fleet. It also has been designated logistics manager for the new B-1B.

270 aircraft in the fleet will have been delivered to the using commands. Completion of this AFLC project will provide the Air Force with greatly upgraded airlift capability—again enhancing readiness and sustainability.

Reengining of KC-135 aircraft, using engines from used Boeing 707 commercial aircraft, is a high priority at Oklahoma City ALC. The 707s are stripped of their engines and other components, which are then refurbished for use on KC-135s. The JT3D engine from the 707s provides about sixty percent decrease in noise, ninety percent decrease in smoke, greater fuel economy, and enhanced aircraft efficiency. A total of eighteen KC-135s will be modified by June 1982. Follow-on programs call for an additional twenty-eight aircraft to be modified.

At AFLC's Ogden ALC (Hill AFB, Utah), key production figures were at record levels during 1981. F-4 aircraft production totaled 223 units, Minuteman missile production was 105 units, and 113 F-16 aircraft were modified earlier than programmed.

Working with the Department of Energy, Department of Defense, and other federal agencies, three AFLC bases began a significant new program to test the efficiency and effectiveness of electric vehicles. Wright-Patterson, McClellan AFB, Calif., and Kelly received prototype electric-powered vehicles for a four-year series of trials. These tests will gather data on cost, performance, and reduction in petroleum use to determine the feasibility of electric vehicle usage throughout the entire federal government.

AFLC's International Logistic Center, headquartered at Wright-Patterson AFB, managed $12.7 billion in FMS cases in 1981. More than sixty allied nations depended on AFLC for materiel and services ranging from entire airfield complexes to participation in the Air Force's supply system for spare parts and services.

At Sacramento ALC (McClellan AFB), 1981 saw the establishment of a West Coast Consolidation Containerization Point (CCP). The CCP receives material by truck and rail from some 350 Air Force suppliers and combines these in large van-type vehicles for shipment to the port of Oakland. From there they are shipped to Air Force activities in the Pacific Region (Hawaii, Guam, the Philippines, Korea, and Japan, including Okinawa). An East Coast CCP is located at AFLC's Robins AFB. ■

The Air Force's largest transport, the C-5A Galaxy, undergoes maintenance at AFLC's San Antonio Air Logistics Center, Kelly AFB, Tex. The San Antonio ALC this year assumed management of the C-5A rewing project.

AIR FORCE LOGISTICS COMMAND

Headquarters, Wright-Patterson AFB, Ohio

Commander
Gen. James P. Mullins

- **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
- **Air Force Contract Maintenance Center** — Wright-Patterson AFB, Ohio
- **2750th Air Base Wing** — Wright-Patterson AFB, Ohio

Air Force Systems Command

A MAJOR COMMAND

THE primary mission of Air Force Systems Command (AFSC) is to advance aerospace technology; apply it to operational aerospace systems development and improvement; and acquire qualitatively superior, cost-effective, and logistically supportable aerospace systems.

AFSC designs, constructs, and purchases weapons and equipment for Air Force operational and support commands. Primary emphasis is given to aeronautical, space, electronic, missile, and armament systems.

The command has approximately 53,000 people, nearly half civilian, thirty percent enlisted, and twenty percent officer. The nature of its research, development, test, and acquisition mission makes AFSC the Air Force's major employer of scientists and engineers.

Systems Command will manage approximately $26.1 billion in FY '82. Of this amount, $20.8 billion goes for procurement of aircraft ($7.2), missiles ($2.5), and other equipment ($1.5); research, development, test, and evaluation (RDT&E) ($8.4); operations and maintenance ($0.7); and military construction ($0.5). The remaining $5.3 billion includes foreign military sales ($4.0), reimbursables ($0.8), and military pay ($0.5). AFSC accounts for a large portion of the total Air Force budget, although comprising only 6.5 percent of the people at 103 installations worldwide.

The command currently administers more than 42,000 active contracts totaling some $110 billion. Included are approximately 3,000 contracts involving $16.7 billion in foreign military sales programs.

A command initiative to promote the use of multiyear procurement reached a significant milestone with the signing of the long-lead contract for the F-16 multiyear buy—expected to save the government a third of a billion dollars during the next four years. The agreement will lead to production of 480 F-16 fighter aircraft between FY '82 and FY '85.

Systems Command is also extensively involved in the MX, B-1B, C³I, and conventional force upgrade programs. Gen. Robert T. Marsh, AFSC Commander, stressed the importance of getting these programs started off right by emphasizing to the command and industry the need to capitalize on past lessons and apply disciplined management from the outset.

A new office was recently established at Hq. AFSC and charged with finding and evaluating aggressive, high-payoff concepts with the potential for quantum increases in the Air Force's operational capability. The New Concept and Initiatives Office will promote innovative ideas and concept development with the goal of revitalizing both long-term planning and concept development throughout the command.

Following are significant research and development or systems acquisition milestones recorded by AFSC during the past year:

- Initially, at least forty MX missiles will be deployed in existing Minuteman silos, with the first flight of ten missiles scheduled to be operational in late 1986. Meanwhile, an R&D effort has been initiated to determine the best long-term basing option. This effort will culminate in a recommendation submitted to Congress by July 1, 1983.
- The Air Force awarded two contracts worth more than $2.2 billion for full-scale development and production of the B-1B bomber.
- Various AFSC units supported the first two Space Shuttle launches and recoveries with precision tracking radar, weather, telemetry, optical, range safety, and computer support.
- Command Control Communications and Intelligence (C³I) has assumed a central role in modern warfare. The President identified several areas needing immediate attention: radars and satellites used for warning, command centers to direct US strategic forces during nuclear attack, and a vigorous and comprehensive R&D program to develop systems that would endure for a significant period following nuclear attack. AFSC is working to provide a strong C³I program.
- A fixed-price contract for full-scale development of the Advanced Medium-Range Air-to-Air Missile (AMRAAM) was awarded in December 1981. Last summer, the first guided launch of the AMRAAM was successful against an aerial target at the White Sands Missile Range, N. M. Flights of the full-scale development missiles will be conducted beginning early in 1984.
- The first production contract for the Air Force's GBU-15 cruciform wing weapon was awarded. The GBU-15 is a television-guided air-to-surface bomb with a 2,000-pound, general-purpose warhead.
- A contract was awarded for the follow-on purchase of 480 air-launched cruise missiles (ALCMs).
- The feasibility of using the GE F101 Derivative Fighter Engine (DFE) as an alternative for fighter aircraft applications was successfully demonstrated in both the Air Force F-16 and Navy F-14 aircraft during eighty-three flights. The F101 DFE program will transition to full-

Gen. Robert T. Marsh, Commander, AFSC.

CMSgt. Robert H. Williamson, Senior Enlisted Advisor, AFSC.

scale development during FY '82 and undergo qualification testing during FY '83 and FY '84.

- The AGM-65D imaging infrared (IIR) Maverick missile successfully completed its first launches during night and daytime missions. The missile was launched from an F-4 Phantom against a nonoperating tank and impacted squarely on target. In later tests, Maverick missiles fired from A-10 close air support aircraft against multiple targets hit the target vehicles exactly as planned.
- The Air Force's first production EF-111A tactical jamming system (TJS) aircraft was rolled out last summer. This modification of the twin-engine, two-seat F-111A incorporates advanced avionics, including the sophisticated ALQ-99E tactical jamming system.
- "Cobra Judy," the seaborne phased-array radar aboard the USNS *Observation Island*, began its shakedown cruises. The radar system gathers data on foreign strategic ballistic missile tests.
- Wind-tunnel testing of a conceptual fighter aircraft for the 1990s was completed. The futuristic "dash" fighter would be designed to maneuver well at supersonic velocities to escape following close-combat maneuvers. A "dash" fighter is one of many fighter aircraft concepts being studied for the Advanced Tactical Fighter (ATF). ATF may be the Air Force's next-generation fighter aircraft and is expected to be operational in the mid-1990s.
- AFSC accepted delivery of the first Defense Satellite Communications Systems phase-three military communications satellite known as DCSC III. DCSC III is a new communications spacecraft with improved survivability features and electronically maneuverable, multibeam antennas.
- The Joint Tactical Information Distribution Systems (JTIDS) was successful in its first battlefield test. JTIDS is designed to transfer vast amounts of data among ground and airborne command and control centers without delay.

A guided bomb unit (GBU-24) launched from an F-4 fighter at a range of 2.5 miles is guided to a hit on a truck target moving at ten miles per hour during tests at Eglin AFB, Fla.

The AFSC laboratories pursue an integrated, focused program in research, exploratory development, and advanced technology demonstration. Each has a concrete role in the overall acquisition process. Following are some of the significant results during the past year:

- The Low-Altitude Dispenser (LAD) performed well during flight tests. Designed to disperse a wide variety of submunitions with pinpoint accuracy from Air Force fighter aircraft, LAD will allow fighters to deliver weapons at standoff ranges.
- Developed a lighter and less expensive F-16 canopy that is better able to withstand bird strikes. Now in production, this will save $175 million in life-cycle costs and provide invaluable aircrew protection.
- Developed portable electro-luminescent lighting panels for austere airfield lighting that lower power consumption and reduce glare and halo, which often disorient pilots during landing.
- Proved the performance of molded inertial sensors costing one-third as much as conventional machined components. The projected savings in tactical missile guidance units alone totals more than $25 million.
- Developed a technique using existing satellite signals for precise geodetic surveys of missile launch sites in one-tenth the time of previous methods. This technique has important potential for improving offensive ability against enemy missile sites.
- Developed high-density ALCM jet fuel to allow a fifteen percent range improvement.
- Developed fiber-reinforced composite materials ready for next-generation aircraft that reduce structure weight by ten to thirty percent. ■

AIR FORCE SYSTEMS COMMAND

Headquarters, Andrews AFB, Md.

Commander
Gen. Robert T. Marsh

- **Air Force Contract Management Division** — Kirtland AFB, N. M.
- **Aerospace Medical Division** — Brooks AFB, Tex.
- **Foreign Technology Division** — Wright-Patterson AFB, Ohio
- **Air Force Systems Command Laboratories** — (various locations)
- **Air Force Flight Test Center** — Edwards AFB, Calif.
- **Arnold Engineering Development Center** — Arnold AFS, Tenn.
- **Aeronautical Systems Division** — Wright-Patterson AFB, Ohio
- **Armament Division** — Eglin AFB, Fla.
- **Space Division** — Los Angeles AFS, Calif.
- **Ballistic Missile Office** — Norton AFB, Calif.
- **Electronic Systems Division** — Hanscom AFB, Mass.
- **Space and Missile Test Organization** — Vandenberg AFB, Calif.
- **Western Space and Missile Center** — Vandenberg AFB, Calif.
- **Eastern Space and Missile Center** — Patrick AFB, Fla.

Air Training Command

A MAJOR COMMAND

AS ITS name implies, Air Training Command's (ATC) primary mission is training—all initial Air Force flying, basic military, and technical training, as well as professional military, undergraduate, graduate, and continuing education. From its headquarters at historic Randolph AFB, Tex., ATC is also responsible for Air Force recruiting and precommissioning programs through its Officer Training School and Air Force Reserve Officers' Training Corps.

Air Training Command is the free world's largest training-education complex, operating on a budget of $2.6 billion for all appropriations ($944 million in Operations and Maintenance funds) with $3.7 billion in assets. Its force numbers more than 100,000 people, including permanent party, students, and civilian employees. The command operates fifteen installations. Six of these house technical training organizations; six provide undergraduate pilot training; and one—Mather AFB, Calif.—offers basic and advanced navigator training. Pilot instructor training is conducted at Randolph AFB, and the command's educational facilities are principally located at Maxwell AFB, Ala. Survival training is conducted in Washington state, Alaska, and Florida.

More than ninety-five percent of the 70,000 enlisted men and women who completed basic military training at Lackland AFB, Tex., last year also received technical training in a variety of skills at one of ATC's technical training organizations. In all, the technical training centers of the command and the USAF School of Health Care Services at Sheppard AFB, Tex., conducted more than 2,900 resident and nonresident courses, producing more than 140,000 graduates. Another 144,000 completed courses at ATC's ninety field training detachments and operating locations worldwide.

In addition, more than 5,000 airmen from fifty-six allied nations received technical and professional military training, valued in excess of $196 million in 1981. Some 1,900 foreign students graduated from the Defense Language Institute's English Language Center at Lackland.

In FY '81 ATC trained 1,729 pilots, 749 navigators, 143 foreign pilots, and twenty foreign navigators. More than 190 women who were trained as pilots and navigators in ATC programs over the years are now serving on active duty; 110 more are training.

Interservice navigation training produced 215 US Navy and Marine Corps graduates, and nearly 10,000 Air Force crew members received survival training in 1981.

While flying approximately twenty percent of the Air Force's total flying hours last year, ATC experienced less than six percent of Air Force class A and B aircraft mishaps—a flying safety record of 1.1 mishaps per 100,000 flying hours. The command flies the T-37B, T-38A, T-41A, T-43A, and the UV-18B aircraft.

In the field of professional military education, ATC's Air University (AU) at Maxwell AFB, Ala., oversees the Air War College, Air Command and Staff College, Squadron Officer School, Airpower Research Institute, Senior Noncommissioned Officer Academy, Leadership and Management Development Center, Extension Course Institute, and the Air Force Institute of Technology.

Last year, Air War College, Air Command and Staff College, Squadron Officer School, and the Senior NCO Academy graduated 4,017 officers and 1,164 NCOs, plus tens of thousands more who completed courses via nonresident seminars and correspondence programs. The Air Training Command's NCO Academy, NCO Orientation and Supervisor Courses, and NCO Leadership Schools also prepared more than 6,600 NCOs for increased leadership responsibilities.

The Extension Course Institute (ECI), the world's largest correspondence school, provided more than 370 professional, specialized, and career development courses worldwide to personnel in all branches of service. During 1981, approximately 284,000 students enrolled in ECI courses, while 164,000 completed course requirements.

In 1981, 571 officers earned graduate degrees through the Air Force Institute of Technology. Approximately 21,000 completed professional continuing education programs. Under the Health Professions Scholarship Program, 434 health-care professionals received degrees and 205 medical officers completed advanced degree and residency programs.

The Community College of the Air Force (CCAF), which offers college-level educational opportunities to enlisted men and women, continued to flourish. At the end of 1981, active registrations stood at more than 140,000 with new enrollments averaging 1,000 a month. During the year, Associate in Applied Science degrees were awarded to 4,291 men and women who successfully completed prescribed curricula.

The Civil Air Patrol (CAP), USAF's 60,000-member volunteer auxiliary organization, received advice and assistance through Hq. CAP-USAF located at Maxwell AFB. In 1981, CAP accumulated 17,878 flying hours, flew 1,160 search missions, located 660 search objects, and was credited with saving fifty lives, plus an additional twenty-seven joint saves.

Gen. Thomas M. Ryan, Jr., Commander, ATC.

CMSgt. Frank T. Guidas, Jr., Senior Enlisted Advisor, ATC.

ATC is involved in three "new" programs. The first is the Euro-NATO Joint Jet Pilot Training (ENJJPT) program at Sheppard AFB. After years of negotiation and planning, the program became operational in October 1981. Designed to train NATO pilots on a cost-shared, joint basis, more than 130 foreign student pilots plus 110 USAF pilots and ninety-six instructor pilot trainees will graduate from the program the first year.

The second, the Next-Generation Trainer (NGT) program, is the acquisition of an aircraft to replace the T-37 primary trainer. Training in the NGT is scheduled to begin in FY '87.

The third new program is Specialized Undergraduate Pilot Training (SUPT), commonly referred to as the "dual-track" program. Under SUPT, student pilots, upon completion of primary flight training, will enter one of two specialized tracks. They will concentrate on developing either tactical (fighter/attack/reconnaissance) skills in the T-38, or multiengine (tanker/transport/bomber) skills in the tanker-transport-bomber (TTB) trainer. Plans are to purchase a suitable TTB trainer so SUPT can begin in FY '86. An off-the-shelf business jet aircraft will most likely be selected to satisfy ATC's TTB requirements. The new "dual-track" training concept is designed to improve graduate quality and produce a more cost-effective pilot training program. ■

Recruiting for Quality

United States Air Force Recruiting Service, headquartered at Randolph AFB, Tex., continued to recruit quality enlistees, a prime Air Force objective.

Air Force recruiters signed up more than 85,400 people during FY '81. Included were 76,918 enlisted personnel without prior service, of whom 87.6 percent possessed high school diplomas, the highest percentage since 1977. Another 4,207 prior military service people were recruited and entered the Air Force.

Also recruited were 1,081 health professionals and 3,233 college graduates for Officer Training School.

Under the Recruiter Helper Program, some 2,726 volunteer first-term airmen played a part in more than 3,500 enlistments in 1981.

Recruiting Service has a headquarters staff that assists and monitors the activities of five recruiting groups, thirty-five recruiting squadrons, and approximately 1,200 recruiting offices. Some 2,000 recruiters are assigned geographically throughout the fifty states, Puerto Rico, and Guam. Because of the large numbers of Americans living overseas, recruiters are also located in West Germany, England, Spain, and the Philippines.

AIR TRAINING COMMAND

Headquarters, Randolph AFB, Tex.

Commander
Gen. Thomas M. Ryan, Jr.

Technical Training Center
Lowry AFB, Colo.

3320th Correction and Rehabilitation Squadron

Technical Training Center
Chanute AFB, Ill.

Technical Training Center
Keesler AFB, Miss.

USAF Occupational Measurement Center
Randolph AFB, Tex.

Undergraduate Pilot Training

14th Flying Training Wing
Columbus AFB, Miss.

47th Flying Training Wing
Laughlin AFB, Tex.

64th Flying Training Wing
Reese AFB, Tex.

71st Flying Training Wing
Vance AFB, Okla.

80th Flying Training Wing
Sheppard AFB, Tex.

82d Flying Training Wing
Williams AFB, Ariz.

Foreign Military Training Affairs Group
Randolph AFB, Tex.

Navigator Training
323d Flying Training Wing
Mather AFB, Calif.

Technical Training Center
Sheppard AFB, Tex.

USAF School of Health Care Sciences

Air Force Military Training Center
Lackland AFB, Tex.

Basic Military Training School, USAF
USAF Technical Training School
Defense Language Institute English Language Center**

Community College of the Air Force*
Maxwell AFB, Ala.

3480th Technical Training Wing
Goodfellow AFB, Tex.

Pilot Instructor Training
12th Flying Training Wing
Randolph AFB, Tex.

San Antonio Real Property Maintenance Agency

San Antonio Contracting Center

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

Officer Training School, USAF
Lackland AFB, Tex.

Air University
Maxwell AFB, Ala.

Air War College
Air Command and Staff College
Squadron Officer School
Leadership and Management Development Center
Academic Instructor and Foreign Officer School
Airpower Research Institute
Hq. Civil Air Patrol-USAF
Air Force Reserve Officer Training Corps
Air University Library

(at Gunter AFS, Ala.)
Logistics Management Center
Extension Course Institute
Senior NCO Academy

(at Wright-Patterson AFB, Ohio)
Air Force Institute of Technology

3636th Combat Crew Training Wing* (Survival)

Eielson AFB, Alaska*
Nellis AFB, Nev.*
3612th Combat Crew Training Squadron*
(Fairchild AFB, Wash.)
3613th Combat Crew Training Squadron*
(Homestead AFB, Fla.)
3614th Combat Crew Training Squadron*
(Fairchild AFB, Wash.)

USAF Recruiting Service
Randolph AFB, Tex.

Recruiting Groups:

3501st — Hanscom AFB, Mass.
3503d — Robins AFB, Ga.
3504th — Lackland AFB, Tex.
3505th — Chanute AFB, Ill.
3506th — Mather AFB, Calif.

*Tenant Unit
**DoD Executive Agent

Alaskan Air Command

A MAJOR COMMAND

An F-4E of the 21st Tactical Fighter Wing is framed by the Chugach Mountains as it perches on the flightline at Elmendorf AFB, adjacent to Anchorage, Alaska.

ALASKA's military significance and strategic location have been recognized for many years. Alaska lies across the Great Circle routes connecting the Orient with Europe and North America.

Alaska is an ideal location to refuel aircraft flying polar routes. Air Force installations in Alaska are closer to the Orient and Europe than are many bases in the continental United States. Money spent in Alaska does not contribute to the national balance-of-payments deficit, nor are there problems with currency fluctuations and international use rights.

Looking at Alaska on a globe yields another important fact: the US and the Soviet Union are next-door neighbors. At the Bering Strait the two major land masses are separated by only forty-four miles. In the middle of the Strait, the islands of Big Diomede (USSR) and Little Diomede (US) are only two miles apart. During the winter it is possible to walk from one island to the other, and it's conceivable to walk at times from one land mass to the other.

Alaska is not always a land of ice and snow, but the men and women of AAC contend with harsh winters to fulfill their mission: training and employing combat-ready tactical air forces to preserve the national sovereignty of the US. The hardships and difficulties imposed by the environment, coupled with Alaska's vast 586,000 square miles (one-fifth the size of the continental US), actually add to military capabilities as means are developed to use the environmental factors to advantage. Alaska offers some of the best and most unrestricted airspace available for air combat training and a true Arctic environment for training military forces. Major exercises are held in Alaska every two years, in addition to frequent local exercises.

The AAC Commander is the coordinating authority for all joint military administrative and logistical matters in Alaska and is the military point of contact for the state. In addition, he serves as Commander, Alaskan North American Aerospace Defense Command/ Aerospace Defense Command Region. In the event of a natural disaster, emergency, or hostilities other than air defense, or when directed by the Joint Chiefs of Staff, the AAC Commander becomes the Commander, Joint Task Force Alaska.

Lt. Gen. Lynwood E. Clark, Commander, AAC.

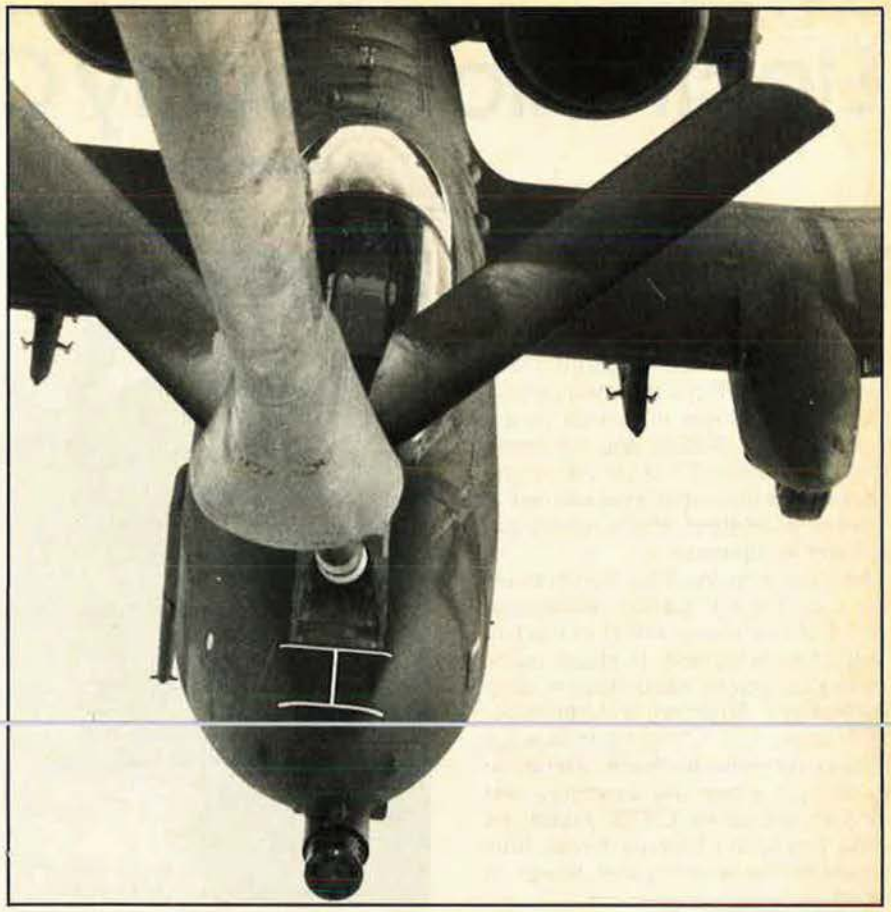
CMSgt. Jimmie B. Lavender, Senior Enlisted Advisor, AAC.

AAC people are assigned to three main bases, thirteen aircraft control and warning (AC&W) squadron locations, and two forward operating bases. The main bases are Elmendorf AFB, adjacent to Anchorage; Eielson AFB, near Fairbanks; and Shemya AFB, near the tip of the Aleutian Islands. The AC&W squadrons operate radar sites scattered throughout Alaska. Galena and King Salmon Airports are forward operating bases of AAC's 21st Tactical Fighter Wing. AAC also provides administrative and logistical support for SAC units at Shemya AFB and Clear AFS.

AAC is headquartered at Elmendorf AFB, along with the 21st TFW. The wing's 43d Tactical Fighter Squadron is converting from F-4E Phantom II aircraft to the F-15 Eagle. In addition, the 21st TFW's 5021st Tactical Operations Squadron flies the T-33 Shooting Star. The 21st Combat Support Group is the host unit for the base.

Major tenant units at Elmendorf include MAC's 616th Military Airlift Group and its 17th Tactical Airlift Squadron, equipped with C-130s; and the 71st Aerospace Rescue and Recovery Squadron, equipped with HC-130s and HH-3 helicopters. Elmendorf is also home for the Air Force Arctic Broadcasting Squadron, providing radio programming for men and women at Eielson AFB and AAC's remote radar sites, as well as other military units in the state. Other tenants include the 1931st Communications Group and the 6981st Electronic Security Squadron.

AAC operates the Elmendorf Rescue Coordination Center. The RCC coordinates search-and-rescue efforts involving aircraft and people from all military services in the state, plus many civil agencies. Since its inception in October 1961, the RCC has recorded more than 3,585 saves.



An A-10 en route to assignment with Alaskan Air Command takes a last drink of fuel from a SAC KC-135 tanker on the last leg of its long flight to Eielson AFB.

Eielson AFB is headquarters for the 343d Composite Wing and its 18th Tactical Fighter Squadron, equipped with A-10 Thunderbolt IIs for close air support of ground forces in Alaska. The 343d Combat Support Group is Eielson's host unit, and SAC's 6th Strategic Wing is a major tenant, operating KC-135 and RC-135 aircraft.

As the strategic importance of Alaska increases, so will the mission of the people of the Alaskan Air Command—providing "Top Cover for America." ■

ALASKAN AIR COMMAND

Headquarters, Elmendorf AFB, Alaska

Electronic Security Command

A MAJOR COMMAND

NOW in its third year of service, the 12,000-member Electronic Security Command (ESC) is tasked to support all USAF operational elements conducting command control and communications countermeasures—C³CM. As manager of myriad operations security (OPSEC) and electronic combat activities, ESC's contribution to the Air Force mission is a key element of success in modern, electronically dependent air operations.

According to the ESC Commander, Maj. Gen. Doyle E. Larson, technological advances incorporated in modern weapon systems have, in recent years, introduced new vulnerabilities in communications, detection, and other electronic systems. ESC's task is to seek out and exploit these electronic "chinks" in an enemy's armor and weaponry, and conduct disruptive C³CM operations while protecting friendly forces from similar enemy jamming and deception activities.

"We have yet to fully employ C³CM strategies to attack hostile command and control capabilities," said General Larson. "If these electronics can be successfully disrupted or manipulated, we can seriously degrade the opponent's ability to maneuver, resupply, and coordinate his efforts. An otherwise supremely effective force could, quite conceivably, be reduced to a mass of confused, undirectable hardware—making easy targets for USAF strike or interceptor aircraft."

Since many USAF aircraft have also acquired an acute dependence on highly developed electronics, they have inherited the associated weaknesses. ESC strives to protect US assets from hostile electronics exploitation through the Air Force OPSEC program.

As part of OPSEC, ESC actively tests Air Force equipment—from electric typewriters to Air Force One—for stray electronic emissions. These errant signals can be monitored by anyone with the proper equipment—possibly compromising classified or privileged information. In addition to testing electronic gear, communications security (COMSEC) teams frequently play the adversary role by monitoring military communications to uncover poor security practices and other leaks. In addition, ESC specialists flying on aircraft of other major air commands operate sophisticated electronic equipment designed to provide Air Force commanders with timely indications of electronic vulnerabilities of vital command control and communications facilities.

A task force director from Electronic Security Command conducts a desert staff meeting at a Comfy Sword jamming and deception van during a field exercise in west Texas.

While working to monitor and stress Air Force electronic systems and communications for security shortcomings, ESC must keep wartime electronic combat procedures razor-sharp. As part of this readiness training, command units take part in a multitude of major military exercises each year, such as PACAF's Cope Thunder and Team Spirit, TAC's Red Flag/Green Flag/Blue Flag, SAC's Global Shield,

Maj. Gen. Doyle E. Larson, Commander, ESC.

CMSgt. Jarry Keaton, Senior Enlisted Advisor, ESC.

Data from a Red Flag exercise are analyzed with a minicomputer-based system called Advanced Electronic Warfare Evaluation Display System (AEWEDS).

and NATO's Cold Fire/Autumn Forge. During these exercises, ESC provides a wide range of C³CM support, including operations security, jamming, and deception, which provides a hostile electronic warfare (EW) environment similar to what US forces would encounter during actual combat. By operating under these realistic EW conditions, battle commanders and supporting units learn how to operate under electronic attack.

Besides conducting electronic combat operations, ESC exercise participants provide secure communications between Air Force commanders and their units, as well as exploiting "opposing" electronic systems. During such operations, ESC, in effect, defends against itself.

ESC provides C³CM support in a variety of situations, requiring an array of specialized equipment. Prominent among this hardware is Comfy Sword—a recently developed series of highly mobile, self-contained jamming and deception vans. During exercise Border Star and again in Cold Fire, Comfy Sword received high praise from exercise officials for providing realistic C³CM training.

Closely supporting the cutting edge of ESC operations are the Air Force Electronic Warfare Center (AFEWC) and the Air Force Cryptologic Support Center (AFCSC). Both Centers, subordinate to ESC, are located with command headquarters on Security Hill at Kelly AFB, Tex. AFEWC acts as the primary electronic combat support activity for the Air Force, analyzing and reporting on EW systems worldwide to keep senior decision-makers informed on electronic combat readiness. AFCSC actively supports the OPSEC mission by conducting the Air Force COMSEC education program, managing Air Force cryptologic equipment, providing and distributing call signs and codes, and serving as the primary Air Force support activity for all Air Force COMSEC needs.

A vital ESC C³CM support mission is to prepare key senior officers to conduct electronic combat operations. In 1981, the command supported the Tactical Air Warfare Center in developing a C³CM Battle Manager's Course. More than sixty tactical commanders and operations officers are expected to attend the TAWC/ESC course sessions during 1982.

Electronic Security Command also took the initiative in 1981 to recognize its top performers, through an expanded worldwide competition among technicians, operators, and support personnel. This annual competition, Project Comfy Olympics, evaluated top technicians in fifteen different operational and support specialties. Finalists met at command headquarters in November for a final oral competition to determine gold, silver, and bronze medal winners.

Comfy Olympics and other ESC recognition programs spotlight and hone the vital skills of ESC's prized enlisted force—without which the command's high-technology tools would be useless. The success of ESC's mission has always been—and will continue to be—dependent on its people worldwide. ■

ELECTRONIC SECURITY COMMAND

Headquarters, San Antonio, Tex.

Commander
Maj. Gen. Doyle E. Larson

Electronic Security, Pacific
Hq. Hickam AFB, Hawaii

- 6903d Electronic Security Group, Osan AB, Korea
- 6920th Electronic Security Group, Misawa AB, Japan
- 6922d Electronic Security Squadron, Clark AB, Philippines
- 6924th Electronic Security Squadron, Wheeler AFB, Hawaii
- 6981st Electronic Security Squadron, Elmendorf AFB, Alaska
- 6990th Electronic Security Group, Kadena AB, Japan

Electronic Security, Strategic
Hq. Offutt AFB, Neb.

- 6949th Electronic Security Squadron, Offutt AFB, Neb.
- 6985th Electronic Security Squadron, Eielson AFB, Alaska

Electronic Security, Tactical
Hq. Langley AFB, Va.

- Det. 1, Eglin AFB, Fla.
- OL-HL, Hurlburt Field, Fla.
- Det. 2, Davis-Monthan AFB, Ariz.
- OL-TB, Bergstrom AFB, Tex.
- Det. 3, Nellis AFB, Nev.
- OL-TS, Shaw AFB, S.C.
- OL-TT, Tinker AFB, Okla.

Electronic Security, Europe
Hq. Ramstein AB, Germany

- 6910th Electronic Security Wing, Lindsey AS, Germany
- 6911th Electronic Security Squadron, Hahn AB, Germany
- 6913th Electronic Security Squadron, Augsburg, Germany
- 6918th Electronic Security Squadron, Sembach AB, Germany
- 6912th Electronic Security Group, Tempelhof Airport, Berlin
- 6916th Electronic Security Squadron, Hellenikon AB, Greece
- 6917th Electronic Security Group, San Vito AS, Italy
- 6931st Electronic Security Squadron, Iraklion AS, Crete, Greece
- 6950th Electronic Security Group, RAF Chicksands, UK
- 6952d Electronic Security Squadron, RAF Alconbury, UK
- 6988th Electronic Security Squadron, RAF Mildenhall, UK

DIRECT REPORTING UNITS

Air Force Electronic Warfare Center
Hq. San Antonio, Tex.

6940th Electronic Security Wing
Hq. Fort George G. Meade, Md.

- 6947th Electronic Security Squadron, Homestead AFB, Fla.
- 6994th Electronic Security Squadron, Fort George G. Meade, Md.

Air Force Cryptologic Support Center
Hq. San Antonio, Tex.

6960th Electronic Security Wing
Hq. San Antonio, Tex.

- 6906th Electronic Security Squadron
- 6948th Electronic Security Squadron
- 6993d Electronic Security Squadron

(All at San Antonio, Tex.)

Military Airlift Command

A MAJOR COMMAND

At McMurdo Station, Antarctica, US Navy support people offload a pallet of supplies from a MAC C-141B. The scene was repeated many times as MAC StarLifters landed "on the ice" in support of Operation Deep Freeze 82.

FROM headquarters at Scott AFB, Ill., the Military Airlift Command (MAC), a specified command, directs 89,000 active-duty military people and civilians as well as almost 1,000 aircraft at more than 300 locations in twenty-four countries. MAC-gained assets of the Air National Guard and Air Force Reserve comprise 53,000 personnel and almost 400 aircraft.

Operating thirteen bases in the United States and controlling US facilities at Lajes in the Azores of Portugal and at Rhein-Main AB, Germany, MAC plays an important role in America's defense strategy. The command, through its vital worldwide missions, is the backbone of mobility for US fighting forces. While training for its wartime role, MAC supports readiness of theater forces and projects the American spirit at home and abroad through its many humanitarian operations.

MAC's major missions include deployment and employment of combat forces and their support equipment, and logistical resupply. In 1981, acting as the executive agent for Department of Defense airlift, MAC moved more than 440,000 tons of cargo and more than 2,200,000 passengers through domestic and overseas passenger and cargo terminals.

MAC's active-duty forces constitute about one-fourth of the capability available to MAC under full mobilization. When mobilized, the Air National Guard and Air Force Reserve provide tactical airlift with C-130 aircraft. Air Force Reserve associate units provide half of the aircrews and a third of the maintenance personnel for C-141 and C-5 aircraft. Additional airlift is provided through the Civil Reserve Air Fleet (CRAF) program to meet contingency and wartime requirements.

The CRAF is a successful thirty-year partnership between the civil air industry and the Department of Defense. With more than 300 civil passenger and cargo aircraft committed to the program, the CRAF is the fastest way to double the nation's military airlift capability for response to a contingency.

MAC has demonstrated many times its capability to support small-scale contingencies. However, the considerable military and civil airlift resources under MAC's direction would not be enough to satisfy the total demands of a major contingency in view of the need to move massive amounts of large, heavy, military equipment on a sustained basis.

Several initiatives are under way to enhance the posture of our airlift forces. For example, the almost completed C-141 "Stretch" program is increasing the bulk cargo capacity of each aircraft by thirty percent and is providing an aerial refueling capability. The first production-stretched StarLifter was delivered to the command in December 1979. The entire program has been ahead of schedule and under cost and will be completed by July of this year.

The C-5 wing modification is designed to strengthen the wings of the C-5 fleet and provide an additional 30,000 flying hours of aircraft service life. The first C-5 was delivered to the modification facility in January 1982, and all C-5s will be modified by mid-1987. This program increases the lift capability and extends the life of the

Gen. James R. Allen, Commander in Chief, MAC.

CMSgt. Harry E. Davis, Senior Enlisted Advisor, MAC.

fleet well into the twenty-first century.

The Air Force has recommended to the Department of Defense that a mix of fifty C-5B and forty-four KC-10 aircraft be procured as quickly as possible to alleviate the serious shortfall in military airlift. This combination of aircraft will cost about $11 billion over the next five years.

MAC 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; worldwide weather reconnaissance; air sampling; drone recovery; Space Shuttle emergency support, and Strategic Air Command missile site support. ARRS flies the HC-130, WC-130, and WC-135 aircraft, as well as various models of the HH-1, HH-3, and HH-53 helicopters. To enhance ARRS capabilities, full-scale engineering and development of the HH-60D "Nighthawk" rescue helicopter is scheduled to begin this year. The HH-60D is a derivative of the US Army UH-60 Blackhawk.

An invaluable by-product of peacetime combat rescue training is ARRS assistance to military and civilians in distress within the United States and abroad. ARRS has saved more than 20,000 lives during its thirty-five-year history.

The executive management agency for search and rescue within the forty-eight continental states, ARRS operates the Air Force Rescue Coordination Center at Scott AFB to coordinate all inland search and rescue using ARRS, Civil Air Patrol, civilian, and other military assets. The Center works closely with state and local agencies and solicits its services of police and sheriff departments as well as the US Coast Guard.

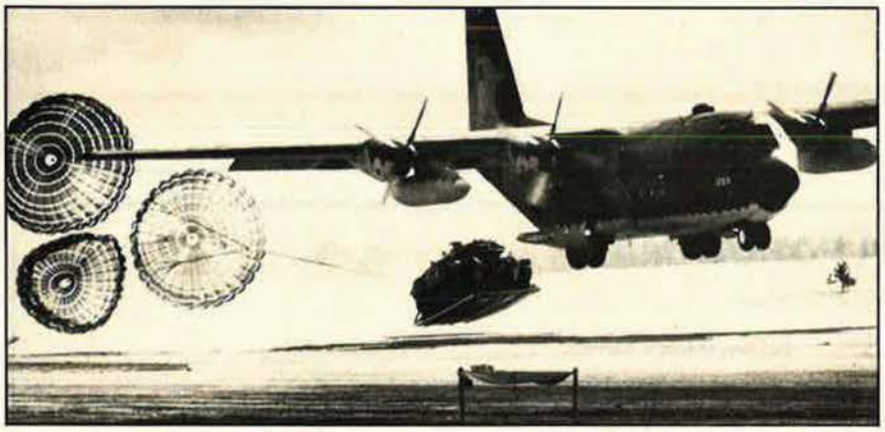
The Air Weather Service (AWS) provides and arranges staff and operational weather support for Air Force and Army units. It enables these units to optimize weapon system effectiveness and helps minimize damage to resources from severe weather. AWS also supports the space program through a series of six solar observing facilities. With ARRS, AWS provides tropical storm and special weather reconnaissance.

The Aerospace Audiovisual Service (AAVS) is the Air Force's single management agency for combat and audiovisual documentation. Headquartered at Norton AFB, Calif., AAVS operates four squadrons with twenty-nine locations around the world. These units provide motion picture, television, and still photographic coverage of Air Force activities. In addition, AAVS produces intracommand training products, provides optical instrumentation and technical documentation of USAF space and missile tests, and manages base audiovisual service centers and regional film libraries throughout MAC and at selected locations in Europe, the Pacific, Alaska, and Central America. It also produces "Air Force Now" films shown monthly to Air Force people around the world, and film clips used in year-round public affairs and community relations programs.

Aeromedical airlift is another important MAC mission. In 1981, MAC aircrews, nurses, and medical technicians provided emergency aeromedical airlift for more than 17,000 airmen, 8,000 soldiers, 11,000 sailors and marines, 14,000 military family members, 17,000 retirees and their families, and 1,000 others, including foreign nationals and civilians.

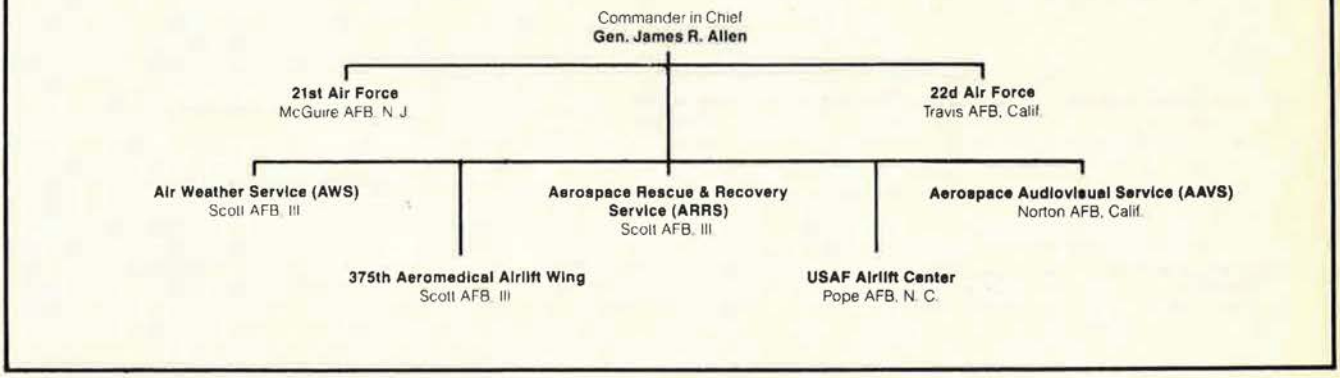
OPERATIONAL AIRCRAFT ASSIGNED TO MAC
(As of January 31, 1982)

TYPE	NUMBER
T/UH-1F/P	27
UH-1N	49
HH-1H	22
C/HH-3	46
C/HH-53	21
C-5	77
C-6A	1
C-9A/C	23
C-12	5
CT-39	113
C-130	259
HC-130H/N/P	28
WC-130E/H	13
WC-135B (incl. C-135B/C)	13
C-137	5
C-140	11
C-141	270
TOTAL	983



A MAC C-130 delivers an Army armored vehicle via the low-altitude parachute extraction system (LAPES) during exercise Gallant Knight 82 at Fort Bragg, N. C.

MILITARY AIRLIFT COMMAND
Headquarters, Scott AFB, Ill.

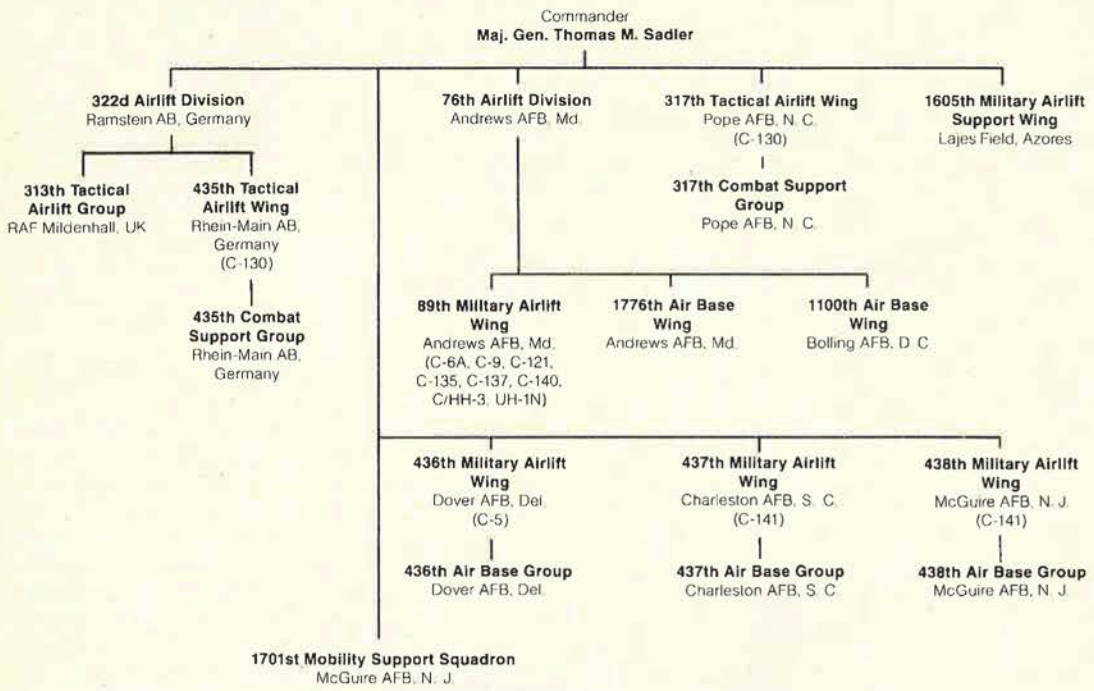


MAC's operational support airlift fleet, composed of CT-39 aircraft, carried more than 90,000 passengers on time-sensitive government missions. Another airlift unit, the 89th Military Airlift Wing, provides airlift for the President, other US government officials, and foreign dignitaries.

MAC has served the nation by keeping pace with increasing demands on airlift. With the capability and reliability of its airlift force, MAC can respond to many challenges around the world. Nonetheless, future enhancements are essential to enable the command to provide national decision-makers an improved foundation upon which to seek peace with freedom. ■

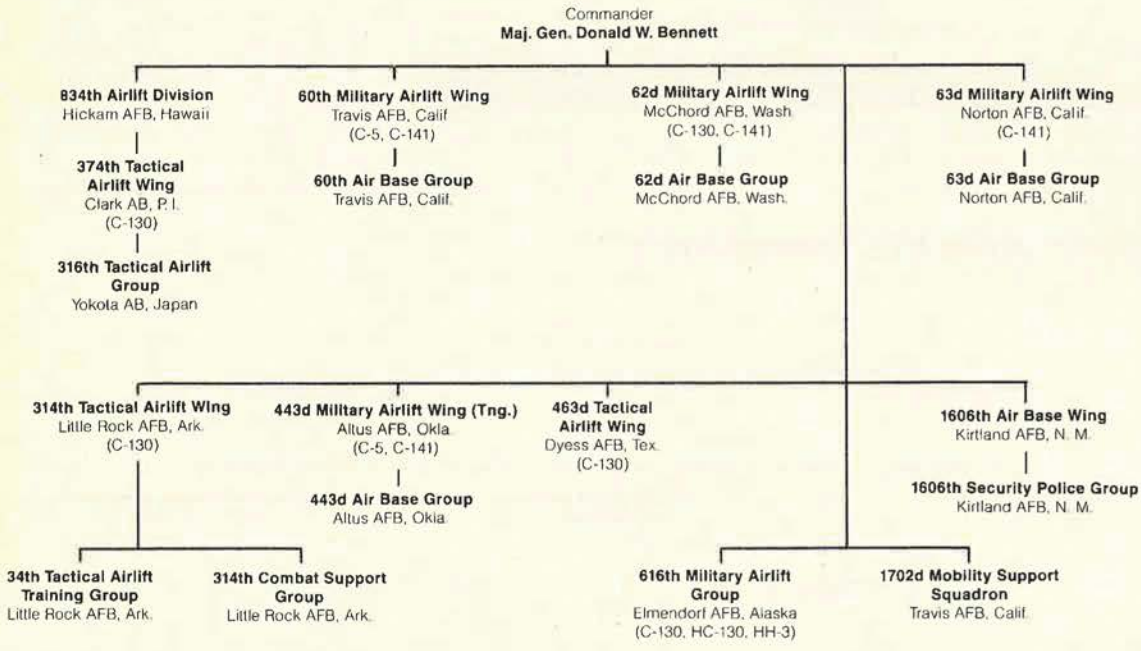
TWENTY-FIRST AIR FORCE (MAC)

Headquarters, McGuire AFB, N. J.



TWENTY-SECOND AIR FORCE (MAC)

Headquarters, Travis AFB, Calif.



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AIL Division Power Managers keep coming up with the right solutions, because we understand the systems' problem. In EW and all other critical areas of systems expertise, the originator is still the innovator. Our ALQ-161 system is one more proof of that leadership.

For further information contact:
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Commack Road, Deer Park, New York 11729

EATON
Advanced Electronics

Pacific Air Forces

A MAJOR COMMAND

F-16 Fighting Falcons of the 8th Tactical Fighter Wing ("Wolfpack"), Kunsan AB, Korea, approach a SAC KC-135 for fuel en route over the Pacific to home station.

PACIFIC Air Forces (PACAF), with headquarters at Hickam AFB, Hawaii, is both a USAF major command and the air component of the unified Pacific Command. PACAF's overall mission is to maintain and provide combat-ready forces; and to plan, conduct, control, and coordinate offensive and defensive air operations in accordance with tasks assigned by the Commander in Chief, Pacific Command (CINCPAC).

Lt. Gen. Arnold W. Braswell, Commander in Chief, Pacific Air Forces (CINCPACAF), has an area of responsibility extending from the west coast of the Americas to the east coast of Africa and from the Arctic to the Antarctic—an area that encompasses more than half the earth's surface and includes some two billion people living under more than thirty-five different flags.

CINCPACAF supports the CINCPAC mission of maintaining security and defending US interests throughout the Pacific region. PACAF also assists in providing military aid to air forces of friendly nations and support for other USAF commands operating in the Pacific area.

As a USAF major air command, PACAF's manpower strength exceeds 34,000 military and civilian operational and support people stationed at ten major bases and more than eighty-seven facilities located principally in Japan, Korea, the Philippines, and Hawaii.

During 1981, major progress was made in the modernization of assigned forces. The 18th Tactical Fighter Wing at Kadena AB, Japan, is fully equipped with three squadrons of F-15C and D aircraft. E-3A airborne warning and control aircraft are now based at Kadena AB, enhancing PACAF's ability to control and integrate tactical air operations.

Lt. Gen. A. W. Braswell, Commander in Chief, PACAF.

CMSgt. James J. Hudson, Senior Enlisted Advisor, PACAF.

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...on the ground

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At Osan AB, Korea, members of the 51st Aircraft Maintenance Squadron don protective chemical warfare gear during an operational readiness exercise.

THE MAJOR UNITS OF PACIFIC AIR FORCES (PACAF)

UNIT	LOCATION	AIRCRAFT
326th Air Division	Wheeler AFB, Hawaii	O-2
15th Air Base Wing	Hickam AFB, Hawaii	EC-135, T-33 (+ ANG F-4C)
FIFTH AIR FORCE HQ., YOKOTA AB, JAPAN		
314th Air Division	Osan AB, Korea	
8th Tactical Fighter Wing	Kunsan AB, Korea	F-16
51st Composite Wing (Tactical)	Osan AB, Korea	F-4E, OV-10
497th Tactical Fighter Squadron	Taegu AB, Korea	F-4E
25th Tactical Fighter Squadron	Suwon AB, Korea	A-10
313th Air Division	Kadena AB, Japan	
18th Tactical Fighter Wing	Kadena AB, Japan	RF-4C, T-39, F-15, E-3A (TAC)
475th Air Base Wing	Yokota AB, Japan	T-39, UH-1
6112th Air Base Wing	Misawa AB, Japan	
6171st Air Base Squadron	Kwang Ju AB, Korea	
THIRTEENTH AIR FORCE HQ., CLARK AB, PHILIPPINES		
3d Tactical Fighter Wing	Clark AB, Philippines	MC-130, F-4E, F-4G, F-5, T-39, T-33

Several major force-modernization programs begun in 1981 were culminated this year. The 8th Tactical Fighter Wing at Kunsan AB, Korea, completed conversion from the F-4D to the F-16 Fighting Falcon. In an associated action, the F-4D squadron at Taegu AB, Korea, converted to F-4E aircraft. In addition, new facilities at Suwon AB are now home for the 25th Tactical Fighter Squadron being equipped with the A-10 Thunderbolt II, providing a greater ground attack capability in the Korean theater. Positioning of these latest Air Force aircraft reaffirms the US commitment to the security of the Republic of Korea and the region's stability.

Further, an overall increase in forward air control capabilities is scheduled for mid-1983. Osan AB, Korea, will receive OA-37 aircraft and the OV-10s currently there will replace O-2s at Wheeler AFB, Hawaii.

PACAF continues to maintain combat readiness through an extensive series of exercises. Team Spirit 82, the free world's largest joint training exercise, is held in the Republic of Korea during February and March. This annual JCS exercise demonstrates PACAF's ability to augment rapidly assigned forces and integrate combat operations with other US and Republic of Korea forces.

Cope Thunder is PACAF's series of realistic tactical air warfare exercises conducted eight times annually at the Crow Valley Range near Clark AB in the Republic of the Philippines. In this exercise series, PACAF and Philippine Air Force aircrews, as well as SAC and US Naval and Marine forces aircraft from throughout the Pacific theater, participate in realistic training in a simulated combat environment.

Last year the Hawaii Air National Guard, equipped with the F-4C, flew in Cope Thunder—exercising the Air Force's total force policy. Further, during 1981, units from the Royal Australian Air Force and the Royal New Zealand Air Force took part—marking the first time third-country air forces participated in Cope Thunder.

Cope North is a joint and combined exercise series with the Japan Air Self-Defense Force. These exercises provide mutually beneficial training in all aspects of air defense, including command and control of airborne fighters conducting Dissimilar Aircraft Combat Tactics (DACT).

In October 1981, six PACAF F-15s from the 18th TFW at Kadena AB and two E-3As made an operational visit to the Southwest Pacific when they deployed to Australia for a USAF/RAAF combined exercise, Kangaroo 81. During a redeployment phase, three of the F-15s made a visit to Singapore.

In a dynamic geopolitical environment, the men and women of PACAF stand ready to protect US national security interests and assist in maintaining peace and stability throughout the 100,000,000-square-mile area of PACAF responsibility. ■

PACIFIC AIR FORCES

Headquarters, Hickam AFB, Hawaii

Strategic Air Command

A MAJOR COMMAND

The two officers of a Minuteman launch crew are located twelve feet apart in the launch control center. A missile can be launched only by order of the National Command Authorities.

THE mission of the Strategic Air Command (SAC) is to contribute to the deterrence of war, particularly nuclear war, by providing ready, flexible, and credible strategic offensive forces that are capable of responding decisively across a spectrum of threats to the vital security interests of the United States.

The SAC force is composed of intercontinential ballistic missiles (ICBMs), manned bombers, aerial tankers, and other aircraft. SAC's ICBM force numbers 1,052 missiles, including 1,000 Minuteman (450 Minuteman IIs and 550 Minuteman IIIs) and fifty-two Titan IIs. The bomber-tanker force has more than 400 operational long-range bombers, including 347 B-52s, sixty-three supersonic FB-111s, and 646 KC-135 aerial tankers. With aerial refueling, the bomber force has global capability. Other aircraft in the SAC inventory include the SR-71, U-2, T-38, E-4, RC-135, EC-135, TR-1, and KC-10.

SAC is a Specified Command made up entirely of Air Force people, reporting directly to the Secretary of Defense through the Joint Chiefs of Staff. The command has approximately 118,000 people at twenty-six SAC bases and at forty-seven other installations where SAC units are tenants.

The nuclear strategy of SAC hinges on the philosophy that the perceived threat of retaliation must be sufficient to deter aggression. As Gen. Bennie L. Davis, SAC Commander in Chief, put it, ". . . No sane man, military or civilian, wants war . . . but, if war is forced upon us, we want the war-fighting capability to set a price on our opponents' objectives that he cannot afford to pay. . . ."

Some of the force modernizations presently under way, or in planning, to help SAC perform its mission are the addition of the Air-Launched Cruise Missile (ALCM), the B-1B bomber and new high-technology aircraft, and the MX missile.

The first ALCM-capable B-52G arrived at Griffiss AFB, N. Y., last August. The first squadron is expected to be operational in December 1982. Eventually, as many as twenty of these small, aircraft-like missiles with highly accurate terrain-contour-matching guidance systems could be carried by a single B-52.

SAC anticipates receiving its first operational B-1B aircraft in October 1985, and achieving an operational capability of fifteen aircraft in October 1986.

About the B-1B and the new advanced technology bomber to follow, General Davis said, "I am pleased with the Administration's decision to develop a two-bomber program to include the B-1 and the new high-technology bomber to replace our aging B-52s. This will help us in the near-term by providing our country a modern weapon system on the ramp while developing a new technology bomber.

"A B-1, with the proper electronic countermeasures, can penetrate enemy defenses into the 1990s. We must start now to develop the new technology bomber and get it into the operational inventory as soon as possible. This technologically advanced bomber

Gen. Bennie L. Davis, Commander in Chief, SAC.

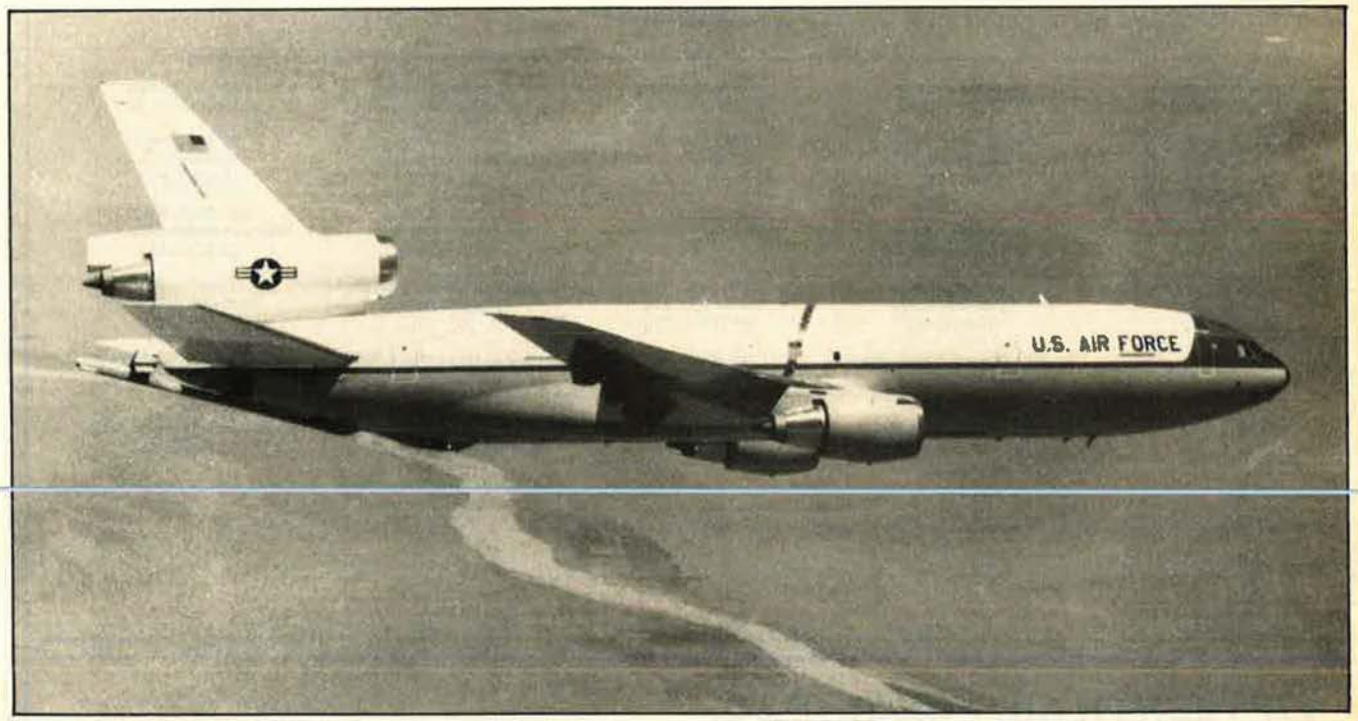
CMSgt. Sam E. Parish, Senior Enlisted Advisor, SAC.

must have the capability to penetrate the projected Soviet defense environment we will face in the twenty-first century."

The growing vulnerability of the ICBM force from increased numbers and improved accuracy of Soviet warheads led to the decision to build the MX missile. General Davis said, "SAC will work to make the system operational as soon as possible. We believe that deploying the MX enhances our deterrent capability and clearly demonstrates to the Soviets our strong national resolve."

During 1981, SAC's 32d Aerial Refueling Squadron at Barksdale AFB, La., received six KC-10As—the military tanker version of the DC-10 wide-body transport. In addition to its primary refueling mission, the cargo compartment of the KC-10A can accommodate seventy-five passengers and 170,000 pounds of cargo. The Air Force has bought sixteen of these aircraft and has asked Congress for funds to buy an additional forty-four during the next five years.

While its mission centers on strategic nuclear matters, SAC also has a significant conventional responsibility. One major conventional role is performed by the Strategic Projection Force (SPF). In November 1981, six B-52 bombers from Minot and Grand Forks AFBs, N. D., flew nonstop to Egypt and back as part of the Rapid Deployment Joint Task Force's (RDJTF) exercise Bright Star 82. The bombers flew low-level missions over an Egyptian training area, each dropping twenty-seven conventional 500-pound bombs during a live firepower demonstration. The thirty-hour-plus flight involved several aerial refuelings by KC-135s from Stateside bases as well as aircraft assigned to the European Tanker Task Force. A SAC EC-135 also joined Bright Star to pro-



The KC-10A Extender operated by the Strategic Air Command provides US forces with increased global mobility. While performing the refueling mission, the KC-10A can also carry up to seventy-five people and 170,000 pounds of cargo.

STRATEGIC AIR COMMAND

Headquarters, Offutt AFB, Neb.

Commander in Chief
Gen. Bennie L. Davis

8th Air Force
Hq. Barksdale AFB, La.

7th Air Division
19th Air Division
40th Air Division
42d Air Division
45th Air Division

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

394th ICBM Test Maintenance Squadron
4000th Aerospace Applications Group
4315th Combat Crew Training Squadron
4392d Aerospace Support Group
2d Communications Squadron
5th Defense Space Communications Squadron

15th Air Force
Hq. March AFB, Calif.

3d Air Division
4th Air Division
12th Air Division
14th Air Division
47th Air Division
57th Air Division

1st Combat Evaluation Group
Barksdale AFB, La.

544th Strategic Intelligence Wing
Offutt AFB, Neb.

3902d Air Base Wing
Offutt AFB, Neb.

vide the RDJTF commander with command control and communication support.

SAC's other conventional missions include B-52s supporting Indian Ocean sea surveillance reconnaissance, using RAAF Darwin, Australia, as a transit base. B-52s also participate in conventional exercises with NATO forces in Europe and the Combined Forces Command in the Republic of Korea. ■

EIGHTH AIR FORCE (SAC)

Headquarters, Barksdale AFB, La.

Commander
Lt. Gen. Robert T. Herres

7th Air Division
Hq. Ramstein AB, Germany

306th Strategic Wing*
RAF Mildenhall, UK
TUSLOG Det. 8, Turkey
11th Strategic Group
RAF Fairford, UK

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/KC-10)

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)

6th Missile Warning Squadron
Otis AFB, Mass.

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 Group
Grissom AFB, Ind.
(KC-135)

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

4684th Air Base Group
Sondrestrom AB, Greenland

12th Missile Warning Group
Thule AB, Greenland

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)

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

20th Missile Warning Squadron*
Eglin AFB, Fla.

*Tenant Units

FIFTEENTH AIR FORCE (SAC)

Headquarters, March AFB, Calif.

Commander
Lt. Gen. John J. Murphy

3d Air Division
Hq. Andersen AFB, Guam

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

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

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

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

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

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

46th Aerospace Defense Wing
Peterson AFB, Colo.

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
Beale AFB, Calif.
(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)

7th Missile Warning Squadron
Beale AFB, Calif.

47th Air Division
Fairchild AFB, Wash.

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

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

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

13th Missile Warning Squadron
Clear AFS, Alaska

16th Surveillance Squadron
Shemya AFB, Alaska

57th Air Division
Minot AFB, N.D.

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

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

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

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

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

*Tenant Units

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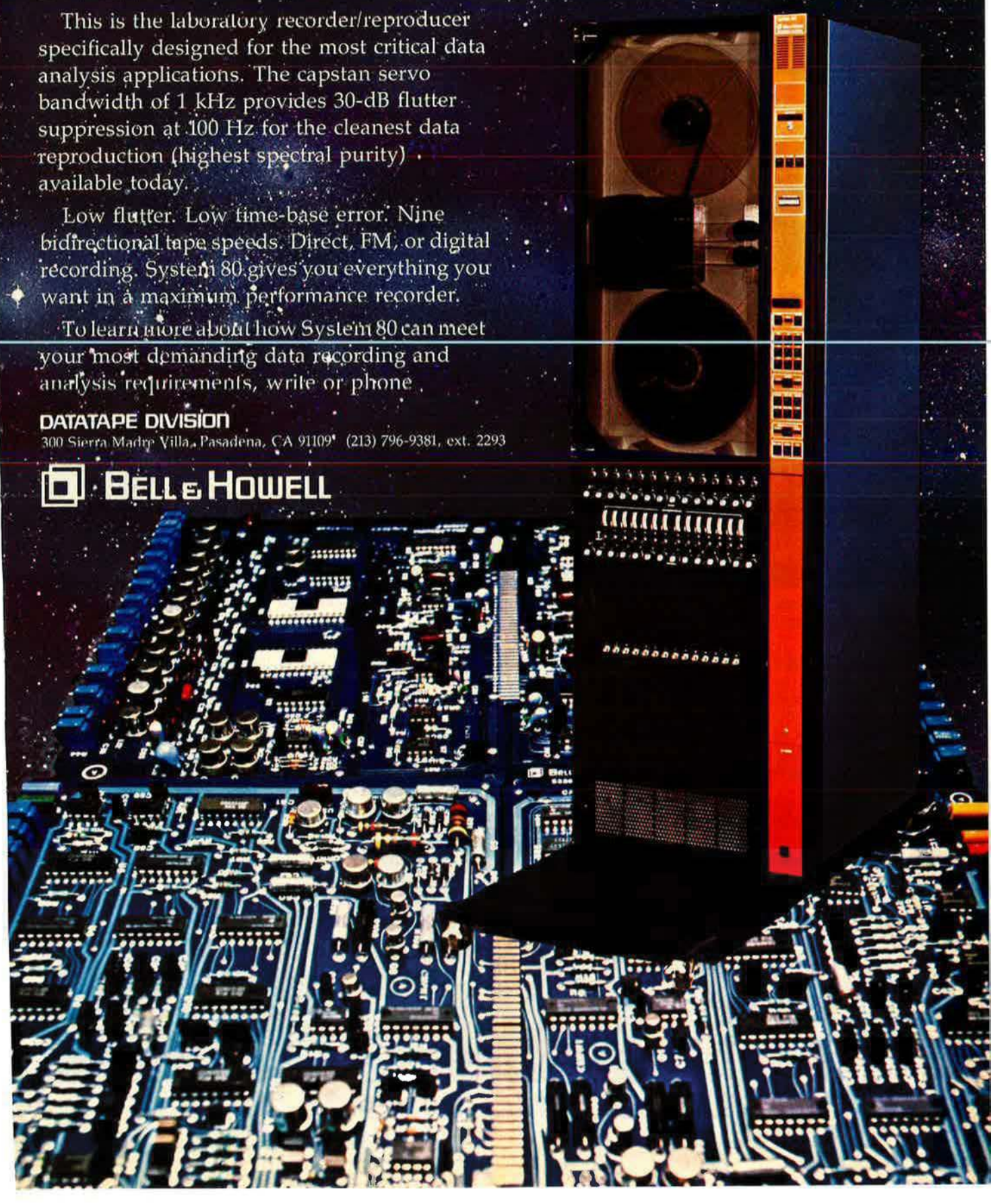

Tactical Air Command

A MAJOR COMMAND

Shark-nosed A-10 Thunderbolt IIs of Tactical Air Command parked on the ramp at Nellis AFB, Nev., during the Gunsmoke 81 tactical gunnery competition.

THE mission of Tactical Air Command (TAC) is to organize, train, equip, and maintain combat-ready tactical forces capable of rapid deployment and employment, and air defense forces ready to meet the challenges of peacetime air sovereignty and wartime air defense.

Realistic training for operational, maintenance, munitions, and support personnel is the key to TAC's success. Units consistently sharpen their abilities to mobilize, deploy, and sustain the combat capability necessary to destroy enemy air and ground resources and provide close-air support to friendly ground forces.

Air Defense forces based in the US and Iceland get realistic training on a daily basis, as they intercept aircraft of unknown type and origin, including Soviet "Bear" reconnaissance bombers approaching US airspace and in the Greenland-Iceland-United Kingdom gap. Several unique TAC units also train daily to perform the roles of tactical air reconnaissance, electronic warfare, and special operations.

TAC serves as the Air Force component of the US Readiness Command (REDCOM) and, when activated, of the Atlantic Command (LANTCOM). As

Gen. W. L. Creech, Commander, TAC.

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

REDCOM air forces, TAC performs tactical fighter, reconnaissance, electronic combat, and special operations during worldwide contingencies. When activated as US Air Force Atlantic, under the unified Atlantic Command, TAC conducts air defense and is the airspace control authority.

Strategic air defense forces are provided to the Commander in Chief, North American Aerospace Defense Command (CINCNORAD) by TAC. Air Defense TAC (ADTAC), with headquarters at Langley AFB, Va., maintains personnel, equipment, aircraft, and munitions to secure North America's air sovereignty and provides for early warning, attack assessment, and damage limitation from airborne threats.

In its active forces, TAC has more than 110,000 people and almost 2,500 aircraft. When mobilized, 61,000 members of Air National Guard and Air Force Reserve units will be assigned to TAC.

These resources are organized under two numbered air forces, plus ADTAC and four direct reporting units:

The Ninth Air Force, headquartered at Shaw AFB, S. C., operates eleven wings performing tactical fighter training, reconnaissance, special operations, and air control missions. The Ninth Air Force Commander commands all US Air Forces when activated under the Rapid Deployment Joint Task Force (RDJTF).

The Twelfth Air Force at Bergstrom AFB, Tex., has four air divisions and thirteen wings performing tactical fighter, training, and air control missions, as well as electronic combat missions with F-4G Wild Weasel, EF-111A, and EC-130 aircraft.

ADTAC maintains five air defense divisions and oversees operation of the USAF Air Defense Weapons Center at Tyndall AFB, Fla., the Air Force's centralized location for the operational technical aspects of air defense.

Air Forces Iceland (AFI), under the

TACTICAL AIR COMMAND

Headquarters, Langley AFB, Va.

Commander
Gen. W. L. Creech

9th Air Force
Hq. Shaw AFB, S. C.
7 tactical fighter wings
2 tactical training wings
1 special operations wing
1 tactical air control wing

12th Air Force
Hq. Bergstrom AFB, Tex.
4 air divisions
7 tactical fighter wings
4 tactical training wings
1 tactical reconnaissance wing
1 tactical air control wing

Air Defense Forces, TAC
Hq. Langley AFB, Va.
5 air divisions
USAF Air Defense Weapons Center
Air Forces Iceland

USAF Southern Air Division
Hq. Howard AFB, Panama
1 composite wing (O-2, UH-1N)
Inter-American Air Forces Academy

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, Fla.

552d Airborne Warning & Control Wing
Tinker AFB, Okla.
(E-3A, EC-135, EC-130)

USAF Tactical Fighter Weapons Center
Hq. Nellis AFB, Nev.

554th Operations Support Wing
Nellis AFB, Nev.
554th Range Group

57th Fighter Weapons Wing
Nellis AFB, Nev.
(F-15, F-16, F-111, A-10, F-4, F-5)
USAF Fighter Weapons School
Red Flag Training Group
Thunderbirds

NINTH AIR FORCE (TAC)

Headquarters, Shaw AFB, S. C.

Commander
Lt. Gen. L. D. Welch

1st Tactical Fighter Wing
Langley AFB, Va.
(F-15, EC-135, UH-1)

363d Tactical Fighter Wing
Shaw AFB, S. C.
(RF-4C, F-16)

507th Tactical Air Control Wing
Shaw AFB, S. C.
(O-2, CH-3)

23d Tactical Fighter Wing
England AFB, La.
(A-10)

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

56th Tactical Training Wing
MacDill AFB, Fla.
(F-16, UH-1)

354th Tactical Fighter Wing
Myrtle Beach AFB, S. C.
(A-10)

31st Tactical Training Wing
Homestead AFB, Fla.
(F-4D)

33d Tactical Fighter Wing
Eglin AFB, Fla.
(F-15)

347th Tactical Fighter Wing
Moody AFB, Ga.
(F-4E)

1st Special Operations Wing
Hurlburt Field, Fla.
(CH-3, UH-1, MC/AC-130)

USAF Special Operations School
Hurlburt Field, Fla.

operational control of the Commander in Chief Atlantic, receives day-to-day support from ADTAC. Located at Keflavik NAS, AFI uses F-4Es, E-3A Airborne Warning and Control System aircraft, and ground-based radar to guard Iceland against air attack.

A unique ADTAC responsibility involves support of the Distant Early Warning (DEW) Line—a system of ground-based radar sites stretching from Alaska to Greenland. ADTAC's DEW Systems Office, located at Peterson AFB, Colo., executes day-to-day responsibilities for this mission.

TAC's US Air Force Southern Air Division (USAFSO), Howard AB, Panama, is the air arm of the joint US Southern Command in Latin America. USAFSO provides air defense of the Panama Canal, works to help train Latin American air forces, provides air support for joint training exercises with Latin American military forces, and operates search and rescue activities in the region.

USAF Tactical Air Warfare Center, Eglin AFB, Fla., develops, tests, and applies new concepts, doctrines, tactics, electronic combat aids, and weapons designed for tactical air forces. USAFTAWC manages TAC's Weapons System Evaluation Program to determine combat capabilities of air-to-air missiles, aircraft systems, and aircrews. USAFTAWC provides training in tactical and command control communications and intelligence.

USAF Tactical Fighter Weapons Center (USAFTFWC), Nellis AFB, Nev., conducts an advanced school for teaching and applying tactical air concepts, doctrine, and tactics. USAFTFWC also conducts operational testing and evaluation of new equipment and munitions designed for tactical fighter operations. The USAF Aerial Demonstration Team, the Thunderbirds, is a USAFTFWC unit.

The 552d Airborne Warning and Control Wing, Tinker AFB, Okla., operates the EC-135, EC-130E, EC-130H, and E-3A Sentry AWACS aircraft. The wing maintains squadrons at Tinker; Kadena AB, Okinawa, Japan; Keflavik, Iceland; Davis-Monthan AFB, Ariz.; and Keesler AFB, Miss.

An airborne command post, the EC-135 directs overseas fighter deployments. The two versions of the C-130 have distinct missions: one is an airborne battlefield command and control center, and the other counters an enemy's command control and communications network.

The E-3A AWACS provides all-altitude radar surveillance and warning, control of friendly fighters, and airborne battle management. E-3As have been deployed to several worldwide locations in response to international crises and to participate in exercises.

Four AWACS aircraft and elements of the ground Tactical Air Control System (TACS) have been deployed to Saudi Arabia since September 1980 where, along with ground command and control units, they augment Saudi air defense systems. Since arriving in Saudi Arabia, E-3A crews have established an on-station mission effectiveness rate of 97.8 percent.

TWELFTH AIR FORCE (TAC)

Headquarters, Bergstrom AFB, Tex.

DEPUTY COMMANDER FOR AIR DEFENSE (TAC)

Headquarters, Langley AFB, Va.

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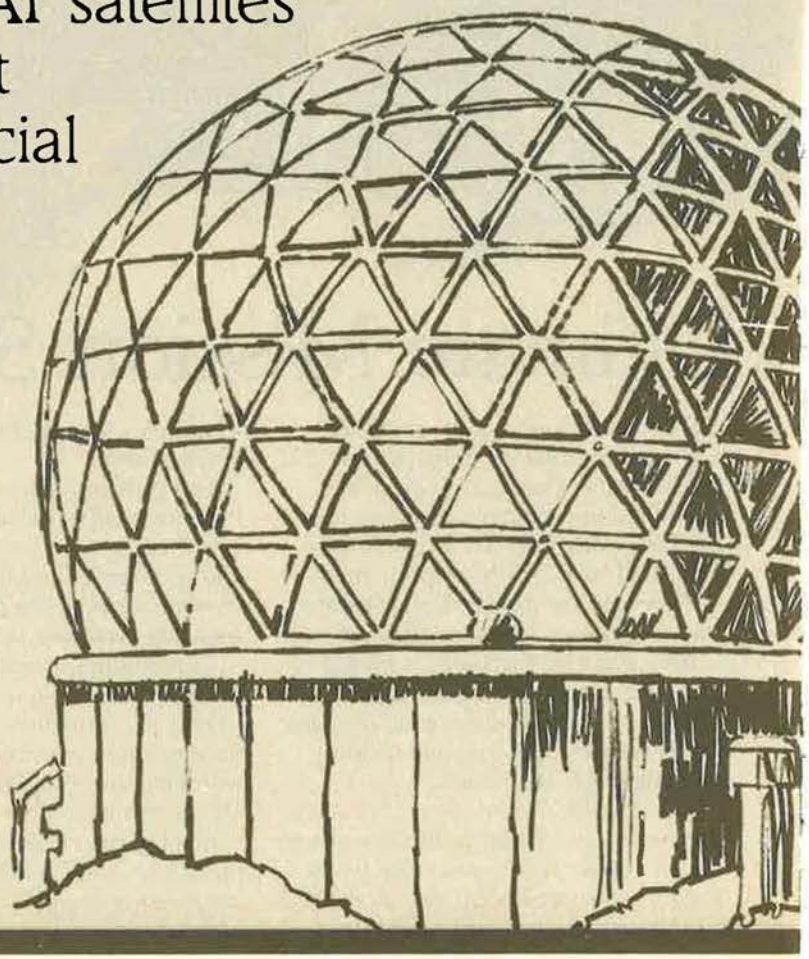

now the USAF Satellite Control Facility. And since 1965, we've provided primary system support to NORAD's Cheyenne Mountain Space Defense Facility.

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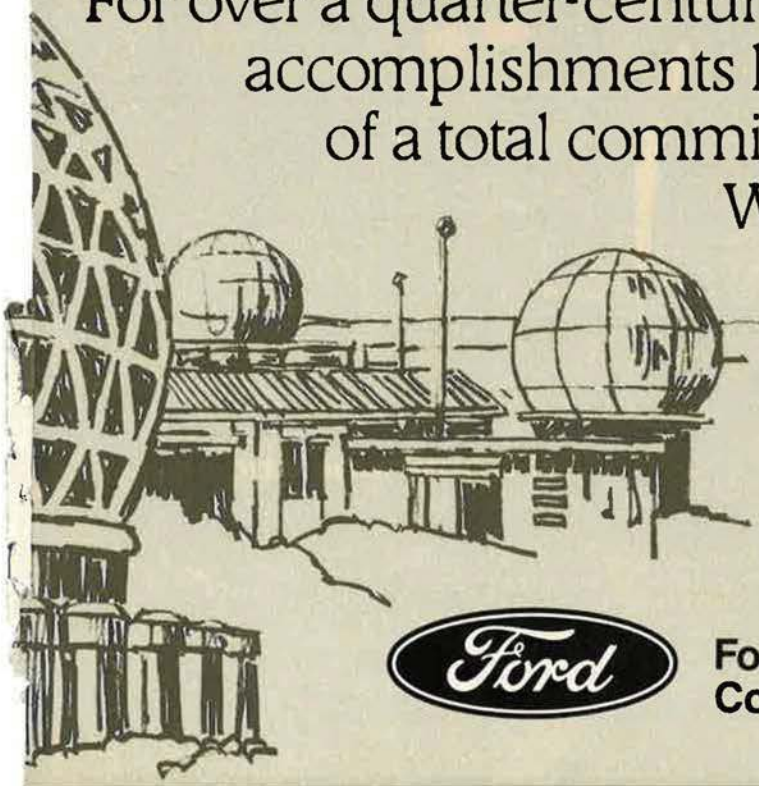

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ıducts training exercises,
:ployments, and partici-
nt exercises. A series of
rams provides simulated
ning under well-controlled,
ılistic, conditions.

lag—tactical fighter exer-
ıellis AFB. These exercises
ews training against simulat-
/ ground and air opposition.
as 250 aircraft fly up to 3,500
uring each six-week exercise.

er Flag—has two major ele-
WARSKIL (Wartime Skill) and
e Augmentee Program. WAR-
ains TAC personnel working in
ombat-essential career fields to
ent law enforcement, air base
d defense, construction, and
al service functions during con-
Base Augmentation Programs pro-
the transportation support neces-
to ensure that TAC forces deploy
dly and efficiently.

Gold Flag—improves the quality
quantity of training for aircrews by
reasing aircraft utilization rates. The
aduated Combat Capability concept
efines capabilities and proficiency
vels, and allocates sorties to meet the
equirements. Air combat training also
ncludes missions against dissimilar
aircraft from Army, Navy, allied, and
other Air Force units.

- **Black Flag**—develops programs and concepts to ensure aircraft maintenance units are trained and organized to operate on a wartime basis so they can more easily adapt to the high-performance levels required in conflict.
- **Green Flag**—focuses on coordinating and increasing the electronic combat capabilities of the tactical air forces.
- **Checkered Flag**—provides unit preparation for wartime operations from overseas bases. Under Checkered Flag, every TAC fighter squadron is assigned to an overseas wartime base and air defense interceptor squadrons are assigned wartime alert locations in the US and Canada. Unit leaders visit their assigned bases yearly, and the units deploy to and train from their assigned bases.

There was an overall sortie increase for TAC aircraft in FY '81 over FY '80—raising fighter sortie increases to fifty-four percent above the low point in mid-1978. At the same time, TAC's overall aircraft accident rate decreased in 1981.

TAC units conducted twenty-seven deployments during the past year. The F-16 Fighting Falcon demonstrated its significant capabilities in deployments to Egypt for Bright Star, and to Korea, Norway, Hawaii, and the UK.

The Air Force tradition of tactical fighter competition was renewed at Nellis AFB in September 1981 under TAC leadership. Named "Gunsmoke 1981," the meet featured tactical aircrews and planes from the Pacific Air Forces, the US Air Forces in Europe, Alaskan Air Command, the Air National Guard, the Air Force Reserve, and TAC in tactical gunnery and bombing competition.

The Gunsmoke series is scheduled to be held at Nellis AFB every other year, alternating years with TAC's William Tell Air Defense Competition. Besides giving Air Force leaders a chance to evaluate training quality, these programs enhance esprit among tactical and air defense air and ground crews throughout the Air Force.

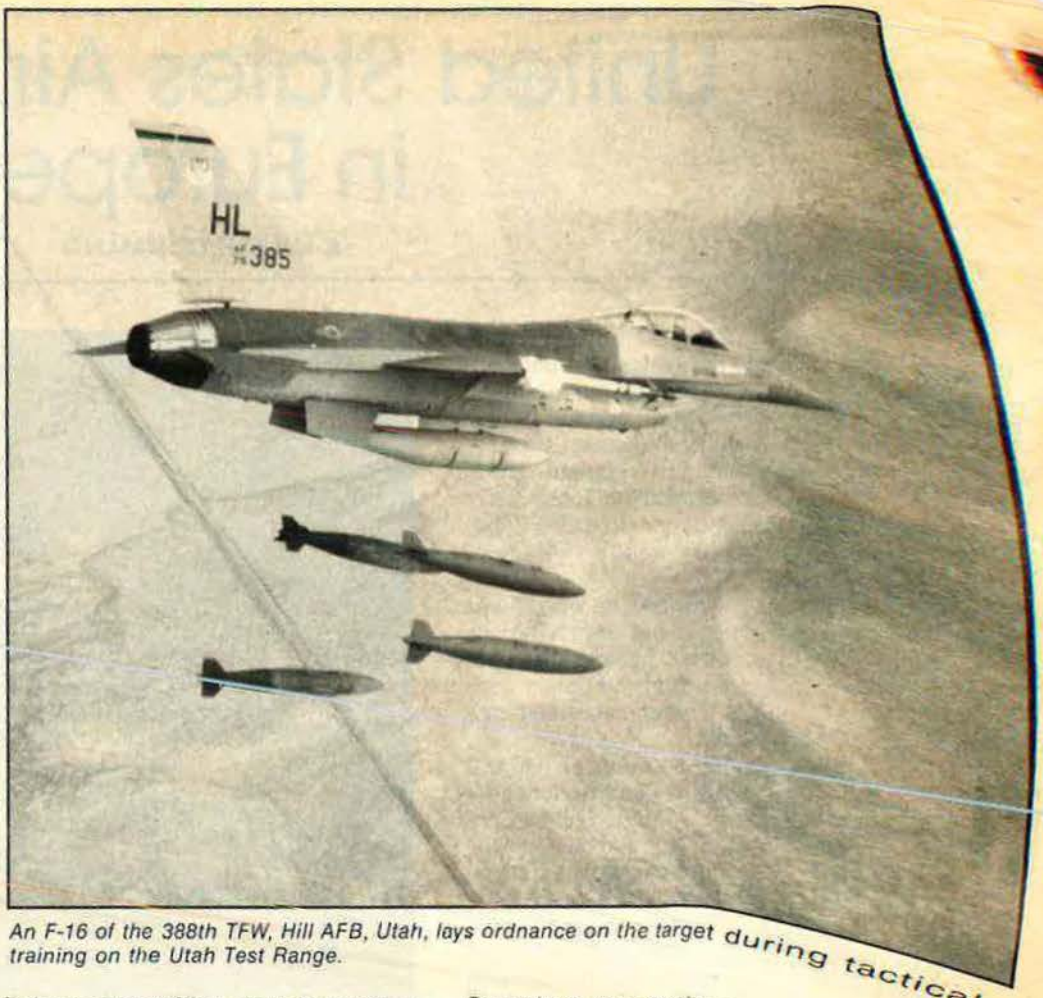
New starts in TAC over the past year include the first of two EF-111A aircraft delivered to the 388th Electronic Combat Squadron, Mountain Home AFB, Idaho, in November 1981. This squadron will train crews to operate the EF-111A and will maintain a combat-ready force. The EF-111 is packed with sophisticated jamming equipment designed to counter enemy detection and tracking systems, thus increasing the survivability of aircrews and aircraft in heavily defended areas.

The 868th Tactical Missile Training Squadron was activated at Davis-Monthan AFB in July 1981. This squadron will train crews to man the ground-launched cruise missile scheduled for deployment to Europe in 1983.

TAC also began testing the Combat Oriented Supply Organization (COSO) concept at three bases in 1981. COSO is a decentralized supply system designed to complement the Combat Oriented Maintenance Organization (COMO). The goal was to improve sortie production by simplifying the supply process, and test results have been superb. The majority of aircraft parts being ordered are now delivered to maintenance specialists within fifteen minutes.

Like the COMO before it, COSO will operate the same way in peacetime as in war, thus getting the supply system ready and able to support the very high sortie rates required of fighters in combat. Also, COSO creates a beneficial partnership between the maintenance and supply communities by giving supply a prominent and highly visible position on the sortie production team.

And, finally, the Tactical Air Command is also a trainer of allied military forces. In 1981, TAC trained 260 foreign aircrew members and 571 other foreign military students. ■



An F-16 of the 388th TFW, Hill AFB, Utah, lays ordnance on the target during tactical training on the Utah Test Range.

United States Air Forces in Europe

A MAJOR COMMAND

UNITED States Air Forces in Europe (USAFE) maintains as major objectives: war readiness capabilities, the means to sustain combat operations, survivability of resources essential to the conduct of combat operations, and modernization. These are of special significance to USAFE because of the command's "front-line" position.

Major steps toward its objectives have been made. But improving the command's combat posture and people-oriented programs requires continual attention, redefinition, and new initiatives.

Gen. Charles A. Gabriel, USAFE Commander in Chief and Commander of the six-nation Allied Air Forces Central Europe (AAFCE), summed up the importance of USAFE and its attraction to Air Force members in a recent interview; "This is where the action is. USAFE is a dynamic command—we have an interesting and demanding mission and it's growing. This is an exciting place to be. People who come here can expect to be challenged."

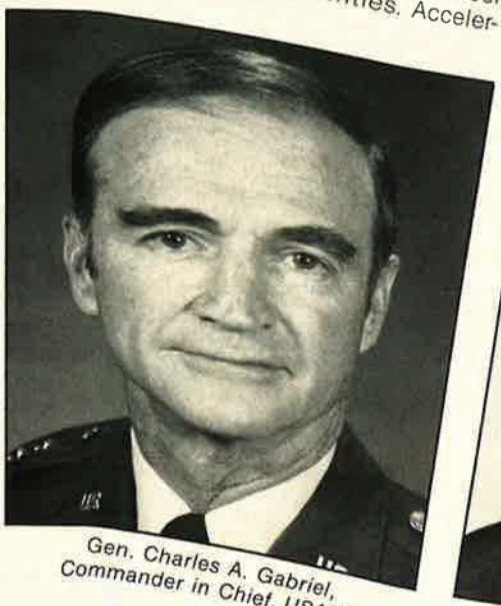
USAFE is unique, operating in an area of responsibility totaling 7,000,000 square miles, more than twice the size of the continental United States. It has three numbered air forces with thirteen wings and thirty-five operational squadrons flying more than 700 tactical aircraft.

Within USAFE's area of responsibility, some 57,000 Air Force members are assigned, along with 60,000 dependents and another 23,000 personnel with their 27,000 dependents from other major commands stationed in thirty-three countries.

People-related issues have been receiving much attention in USAFE, highlighting the fact that the command's leadership views its members, and their families, as its most important resource and asset. Readiness and survivability ultimately depend on the people who must maintain and operate the combat and support equipment and machinery.

During 1981, more than 800 family housing units and 1,250 dormitory spaces were added to the inventory. Scheduled for construction during 1982 are more than 400 family units, 1,200 dormitory spaces, and a number of transient lodging facilities. Accelerated housing projects in Turkey are high on the list of improvements under way

An RF-4E based at RAF Alconbury, United Kingdom, flies air combat tactics with an F-5E of USAFE's 527th Aggressor Squadron.



Gen. Charles A. Gabriel, Commander in Chief, USAFE.

CMSgt. Billy P. Cecil, Senior Enlisted Advisor, USAFE.

in the command's southeastern flank.

Modernization of the command's aircraft continued during 1981 with conversion to the F-15C/D models and F-16s entering the USAFE inventory.

In early 1984, USAFE will be equipped with EF-111 aircraft, representing a radical modernization in USAFE's electronic warfare capability and resulting in improved survivability of USAFE's tactical aircraft. The command's F-111F aircraft are now equipped with PAVE TACK, an electro-optical target designator system.

Ground-launched cruise missiles (GLCMs) are programmed to join the force, with the first flight to be based at RAF Greenham Common, UK. The second GLCM base will be at Comiso, Sicily, Italy.

These modernization programs, along with continued improvements to the command's fleet of F-4s and A-10s and participation in many NATO exercises, are key elements in the command's readiness posture. Conversion to the production-oriented maintenance organization for more effective response to wartime sortie tasking of USAFE's fighter units is another readiness improvement.

Maintenance crews have added to the flexibility of USAFE and AAFCE by expanding their ability to cross-service allied fighter aircraft. Addition of the F-16 to the inventory will greatly enhance interoperability.

To secure the environment for storage, maintenance, launch, and recovery of aircraft, USAFE security police adopted the distributed area defense concept, which integrates CONUS-based security police and host nation forces with the in-place security police squadrons for air base defense operations.

Realistic training of aircrews and ground support personnel is continual. Training for all personnel is done in full chemical warfare protection suits. Aircrews train on a daily basis with allied air and ground forces. This mutual training benefits interoperability and standardization throughout NATO. In addition, aircrews train with USAFE's F-5E Aggressor Squadron and fly dissimilar air combat tactics on the air combat maneuvering instrumentation range. They also train with surface-to-air missile simulators and against sophisticated radar bombing sites. USAFE aircrews regularly exercise from Norway to the Mediterranean with their NATO counterparts and exchange tactics through the AAFCE tactical leadership program.

USAFE is proud of its role as the USAF's in-place NATO representative. ■

THE MAJOR OPERATING UNITS OF USAFE

UNIT	LOCATION	AIRCRAFT/MISSION
	England	
10th Tac Recon Wing	RAF Alconbury	RF-4, F-5
20th Tac Fighter Wing	RAF Upper Heyford	F-111
48th Tac Fighter Wing	RAF Lakenheath	F-111
81st Tac Fighter Wing	RAF Bentwaters/Woodbridge	A-10, MAC rescue HC-130, HH-53
513th Tac Airlift Wing	RAF Mildenhall	MAC rotational C-130 SAC rotational KC-135
Det. 1, 10th Tac Recon Wing	RAF Wethersfield	Support civil engineer heavy repair squadron
7020th Air Base Group	RAF Fairford	SAC rotational KC-135
7273d Air Base Group	RAF Greenham Common	Support GLCM
7274th Air Base Group	RAF Chicksands	Support and communications
	Spain	
401st Tac Fighter Wing	Torrejon AB	F-4
406th Tac Fighter Trng. Wing	Zaragoza AB	Tactical range support weapons training school SAC rotational KC-135
	Italy	
40th Tactical Group	Aviano AB	Rotational USAFE aircraft
7275th Air Base Group	San Vito AS	Support and communications
	Turkey	
Hq. TUSLOG	Ankara AS	Command and logistical management
Det. 10, TUSLOG	Incirlik AB	Rotational USAFE aircraft
Det. 118, TUSLOG	Izmir	Support of NATO units
	Greece	
7206th Air Base Group	Hellenikon AB	Support and communications
7276th Air Base Group	Iraklion AS, Crete	Support and communications
	The Netherlands	
32d Tac Fighter Squadron	Camp New Amsterdam	F-15
	Germany	
26th Tac Recon Wing	Zweibrücken AB	RF-4
36th Tac Fighter Wing	Bitburg AB	F-15
50th Tac Fighter Wing	Hahn AB	F-4, F-16
52d Tac Fighter Wing	Spangdahlem AB	F-4
86th Tac Fighter Wing	Ramstein AB	F-4, MAC UH-1, T-39, C-140, C-12
600th Tac Control Group	Hessisch-Oldendorf AS	Command control communications
601st Tac Control Wing	Sembach AB	Command control communications, forward air control, OV-10, CH-53
7100th Air Base Group	Lindsey AS	Command control communications
7350th Air Base Group	Tempelhof Central Airport Berlin	Support and communications
435th Tac Airlift Wing (MAC)	Rhein-Main AB	MAC, C-9, C-130

UNITED STATES AIR FORCES IN EUROPE

Headquarters, Ramstein AB, Germany

Air Force Accounting and Finance Center

THE Air Force Accounting and Finance Center (AFAFC) at Lowry AFB, Colo., provides technical guidance and assistance to the worldwide network of about 130 Air Force Accounting and Finance Offices (AFOs). The Center provides accounting reports to Air Force managers, Office of the Secretary of Defense, Congress, and other federal departments, and operates centralized functions to pay all military personnel as well as billing, collecting, and trust-fund accounting for all DoD foreign military affairs.

The magnitude of AFAFC's mission is apparent when considering the number of people and amount of money involved in its operation. The Center's sixty officers, 190 enlisted people, and 2,000 civilians pay more than 1,200,000 USAF people, including the active force, Air Force Reserve, Air National Guard, retired members, and annuitants.

The Center accounts for all money appropriated to the Air Force by Congress—more than $60 billion in FY '82—and prepares reports on the use of these funds for financial managers throughout the government. AFAFC, through the Security Assistance Accounting Center (SAAC), also keeps the Pentagon and Congress informed of the financial status of the DoD Foreign Military Sales program and bills the countries to which sales are made.

In 1981, AFAFC established new programs, continued to improve existing financial management systems, and planned future actions to meet the needs of the Center's many customers. A few of the recent initiatives are:

- Expanded the retiree toll-free telephone line service to Alaska and Hawaii. Along with the CONUS service installed earlier, this provides prompt, personalized service to the more than 500,000 retirees and annuitants.
- Assigned retired pay experts to five accounting and finance offices—Bolling, McClellan, MacDill, McChord, and Randolph AFBs—to provide better service to the retiree and annuitant population. The program will be expanded during 1982.
- Continued to expand the remote inquiry network to provide immediate access to the AFAFC computer for active-duty, retired, Reserve, and Air National Guard units. When completed in 1982, all 112 active-duty AFOs plus twenty-one Reserve and ninety-one National Guard units will be connected electronically to the AFAFC computer.
- Tested minicomputers and other state-of-the-art office equipment at the Accounting and Finance Office of the Future in order to automate base-level accounting and finance procedures. AFAFC experts at this office, collocated with the Lowry AFB Accounting and Finance Office, have also identified regulatory and procedural changes to eliminate unnecessary tasks at base-level offices.
- Restructured the quality assurance program to reward outstanding Accounting and Finance Offices, and improve communications throughout the accounting and finance network to ensure greater awareness of trends, problem areas, and recommended solutions.
- Installed a mobilization recall system that interfaces with the different pay systems for active-duty, Air Force Reserve, and retired members. This system improves pay service to the mobilized or recalled forces and reduces the impact of these events on the AFAFC workload.
- Continued the application of SURE-PAY techniques to military allotments and civilian payroll.
- Strengthened the Personnel Financial Management Program (PFMP) to help Air Force people manage their personal financial affairs. AFAFC will continue to assist the base PFMP manager with articles, pamphlets, and ideas.
- Established a Comptroller Support Directorate to provide the Air Force Comptroller with data relating to comptroller plans, econometric modeling, economic analysis, budget policy and procedures, cost factors, and cost-estimating relationships.
- Delegated the authority to the bases for dependency determination to provide better, faster service to Air Force people.
- Expanded teleprocessing support to around-the-clock operation to the worldwide network.
- Obtained authority from the Office of the Secretary of Defense to delegate approval of automatic teller machines for base credit unions to bases and commanders. This will accelerate and simplify the credit unions' provision of improved financial services.

The Air Force Accounting and Finance Center is continually working on ways to improve efficiency, productivity, and service to our customers—Air Force people.

AFAFC people take pride in providing today's Air Force with the best in modern financial management. ■

Brig. Gen. D. Lynn Rans, Commander, AFAFC.

CMSgt. Donald E. Lindemann, Senior Enlisted Advisor, AFAFC.

Air Force Audit Agency

THE Air Force Audit Agency (AFAA), a separate operating agency headquartered at Norton AFB, Calif., provides all levels of Air Force management with independent, objective, and constructive evaluations of the econo-

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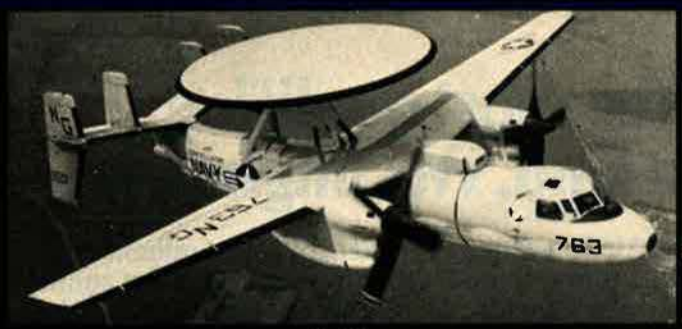

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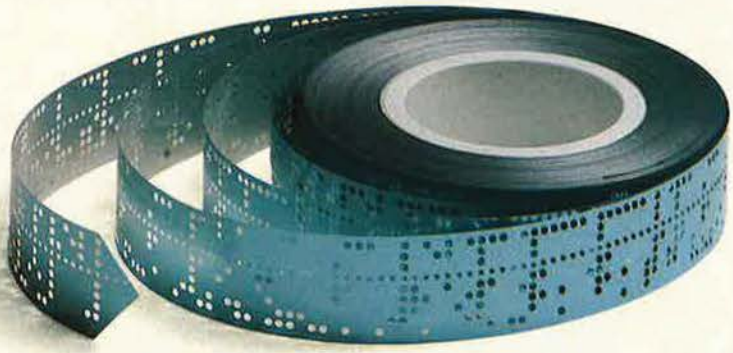

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To implement the MATE concept fully, DATSA needs the best combination of management skills, reliable cost controls and logistics support planning. That combination is Westinghouse ILS.

Westinghouse Integrated Logistics Support Divisions

my, effectiveness, and efficiency with which managerial responsibilities (financial, operational, and support) are carried out.

Mr. J. H. Stolarow, The Auditor General of the Air Force, reports to the Secretary of the Air Force and has direct access to the Chief of Staff. This enables the AFAA to be independent of the activities and functions it audits. The Assistant Secretary of the Air Force (Financial Management) provides technical guidance and supervision on audit policy and management matters. Col. Robert D. Reid, The Deputy Auditor General, is principal assistant to The Auditor General and also serves as the Commander, AFAA. The Assistant Auditor General, stationed in the Pentagon, acts for The Auditor General by performing those AFAA functions that cannot be economically performed by Agency personnel located outside the Pentagon.

The AFAA is comprised of four staff directorates (Operations, Plans, Personnel, and Support Services), and the following three line directorates:

- **The Acquisition and Logistics Directorate,** located at Wright-Patterson AFB, Ohio, directs the development and management of audits relating to supply, maintenance, acquisitions, and weapon systems. This directorate also manages and supervises installation-level audit work of eleven area audit offices located at Air Force Logistics Command and Air Force Systems Command installations.
- **The Forces and Support Management Directorate,** located at Norton AFB, directs the development and management of audits relating to personnel and training, comptroller, automatic data processing, force readiness, and other support functions.
- **The Field Activities Directorate,** also at Norton AFB, manages installation-level audit work at seventy area audit offices located on major Air Force installations. Supervision of the seventy offices is exercised through five geographic region offices located at Langley AFB, Va. (Eastern), Offutt AFB, Neb. (Central), McClellan AFB, Calif. (Western), Hickam AFB, Hawaii (Pacific), and Ramstein AB, Germany (European).

The Agency has two basic procedures for reporting audit results to Air Force management. Audit reports containing the overall results of centrally directed audit efforts, *i.e.*, audits performed concurrently at several locations, are addressed to top major command and air staff management levels. Fifty-seven such reports were issued in FY '81. Reports of audits containing results of installation-level audits are addressed to local commanders. More than 1,800 installation-level reports were issued in FY '81.

The Agency employs more than 1,000 people—approximately seventy-five percent of whom are civilians. Ninety-seven percent of the auditors have at least one college degree, forty percent also have graduate degrees, and forty-two percent are certified public accountants, internal auditors, or information system auditors. ■

Jerome Stolarow, Auditor General, AFAA.

Col. Robert D. Reid, Commander, AFAA.

Air Force Commissary Service

THE Air Force Commissary Service (AFCOMS), a separate operating agency with headquarters at Kelly AFB, Tex., was activated in January 1976, and assumed operational control of USAF commissaries the following October.

AFCOMS is governed by a Board of Directors responsible to the Air Force Chief of Staff and is comprised of Air Force general 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.

Under the command of Maj. Gen. George C. Lynch, the Air Force Commissary Service is manned by approximately 10,000 civilian and 700 military personnel who operate 136 commissaries and 117 troop issue and subsistence functions in CONUS and overseas. Total sales in FY '81 exceeded $1.9 billion.

Commissaries are managed through fifteen Stateside complexes and two overseas regions—European and Pacific (including Far East, Alaska, and Hawaii).

AFCOMS's primary mission is to support the troop issue and subsistence program—purchasing and providing food for all authorized Air Force appropriated fund dining facilities. AFCOMS also seeks to reduce commissary operating costs, provide authorized patrons with food and household items at the lowest practical cost, and maintain a reliable, efficient management system. As required by law, it generates sufficient earnings through the surcharge program to pay such operating expenses as bags, meat trays, utilities in the CONUS, operating equipment, and construction costs.

AFCOMS patrons began paying a four-percent surcharge at the checkout counter in 1976. Since then, more than $200 million has been spent on new store construction and rehabilitation. During FY '81, eight new stores were opened, and, by FY '85, nearly $100 million more will be spent at Air Force installations around the world. New or renovated stores have better lighting, heating, and refrigeration, wider aisles,

more shelf space, and better traffic flow. They reflect the latest in state-of-the-art design and equipment. Whenever possible, delicatessens and bakeries are built into the new stores.

Data automation, electronic cash registers, and electronic scales are other recent improvements. Scanning is now being tested for possible future implementation. Another ongoing program involves continuous training of commissary employees in administrative, technical, professional, and managerial skills.

The Commissary Service continues to provide its patrons with an average twenty-five percent savings. This is verified with market-basket surveys that compare commissary prices with local supermarket prices.

Some of the improved services AFCOMS provides include more frequent vendor deliveries to reduce inventories and automated systems for reports, inventory control, and accounts payable. The agency also works with local and national vendors on special offers, discounts, and sales promotions.

Close coordination is maintained with the Air Force Auditor and the Office of Special Investigations to reduce the potential for fraud, waste, and abuse.

AFCOMS has contributed toward customer savings through a vigorous Patron Savings Program. In 1981, such imaginative programs as anniversary sales, manager sales, mandatory stockage, and Best Buy sections saved shoppers more than $37.6 million in addition to the normal twenty-five percent savings. AFCOMS patrons also saved extra food dollars using cents-off coupons. Air Force commissaries redeemed 50,000,000 vendor coupons in 1981, valued at more than $10 million.

AFCOMS operates for the good of the commissary patron under the motto: "We Serve Where You Serve." ■

Maj. Gen. George C. Lynch, Commander, AFCOMS.

CMSgt. Fred Dickinson, Senior Enlisted Advisor, AFCOMS.

Air Force Engineering and Services Center

THE Air Force Engineering and Services Center (AFESC) focuses on eight daily worldwide concerns of the Air Force: readiness and contingency operations, facility energy, environmental planning, fire protection, installation operations and maintenance, food service, billeting, and civil engineering research and development.

Headquartered at Tyndall AFB, Fla., AFESC develops policy in support of the Directorate of Engineering and Services at Hq. USAF, and, as a separate operating agency, assists all commands and their installations in engineering and services.

The number-one priority at AFESC is building a better Air Force through service, research, and assistance. By providing expertise with its many traveling teams and its staff at the headquarters and around the world, AFESC helps solve many problems and plans for Air Force engineering and services needs of the future.

Most of AFESC's 850 people are at the headquarters; the rest are stationed at numerous operating locations, at regional civil engineering offices in Atlanta, Dallas, and San Francisco, and with the MX regional civil engineering office at Norton AFB, Calif.

AFESC blends research and development, engineering, planning, and management with the working knowledge that gets engineering and services jobs done.

Last year, AFESC headquarters and its traveling teams:

- Initiated a program to provide independent cost analyses for selected multiyear construction projects.
- Coordinated seventy-six deployments of base engineer emergency

Col. Ernest D. Strait, Commander, AFESC.

CMSgt. Robert J. Zahorchak, Senior Enlisted Advisor, AFESC.

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"Teamwork is the answer—teamwork and confidence."

—Col. George L. Jones, USAF, Korea, March 29th, 1953

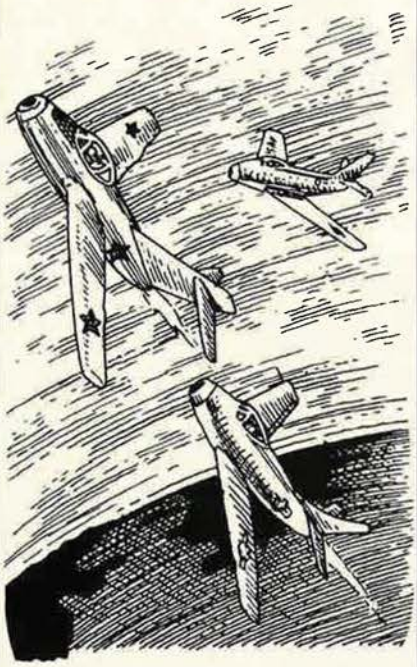
Although they didn't think of it that way, Col. George Jones and Maj. Wendel Brady were nearing the end of a test program in the skies over North Korea.

For two years they and other pilots had been proving the ability of the United States Air Force, in its first wartime operation as a separate branch of service, to carry out its mission. Also they had been proving and perfecting the jet fighter, never before in action jet-to-jet, and new combat techniques to go with it.

But on that day they were about to fall back on an old, tried-and-true technique, one that would make all the other tests prove positive.

With Maj. Brady as wingman, Col. Jones had no trouble finding a target 43,000 feet up in "MiG Alley," and began to close for the kill. The MiG had a wingman, too, but each time he tried to shoot Col. Jones off his leader's tail he found himself in front of Maj. Brady's guns, and banked away.

From 800 feet Col. Jones opened fire, and was suddenly blinded by a cloud of debris, smoke, and oil from the MiG. At the same time he lost power in his engine, and dived to break the compressor stall. At 20,000 feet he regained power and leveled off. Peering through the few clear spots on his oil-drenched canopy, he found Maj. Brady still with him. By radio he learned that the MiG wingman had made repeated passes at him before breaking off. If not for Maj. Brady's protection, he would have been a sitting duck.



Heading for home, Col. Jones thought over and over: "Teamwork is the answer—teamwork and confidence."

It still is. Today Air Force teamwork and confidence are indispensable contributors to the security of our nation and the entire Western World.

★ ★ ★ ★ ★

force teams, as well as deploying more than 500 active and reserve force engineering people to support more than 100 facility improvement projects all over the world.

- Began a program to adapt a complex energy analysis computer for use in analyzing buildings and determining cost-effective energy-conservation alterations.
- Finished the design of the ground-launched cruise missile shelter.
- Evaluated airfield pavements at more than fifty US and allied air bases, as part of its program to provide expertise and guidance for the design, construction, and maintenance of all Air Force runways, taxiways, and other pavements.
- Developed runway roughness criteria for F-4, A-10, and C-141 aircraft that define the repair quality needed for these aircraft to operate from bomb-damaged runways.
- Developed the historic preservation program, which will protect historic sites found on USAF bases.
- Initiated a hazardous-waste-management program for AF installations.
- Validated the use of rock overlays for existing hardened shelters that provide survivability from direct hits by conventional weapons.
- Completed work on the environmental chemistry of hydrazine missile fuels in air, ground, and water environments in support of the F-16, Titan II, and Space Shuttle systems.
- Tested a new field feeding facility, which requires fewer people to erect, maintain, and operate.
- Began a test on automating billeting reservations to ascertain possible benefits of Air Force-wide application.
- Performed evaluations that reduce the plume visibility criteria for the new C-130 turboprop engine, saving $17 million in the reengineering program.

AFESC continually develops initiatives to improve the daily operation of the Air Force. ■

Air Force Inspection and Safety Center

THE Air Force Inspection and Safety Center (AFISC) at Norton AFB, Calif., provides the Secretary of the Air Force, the Chief of Staff, and major command and separate operating agency commanders with an assessment of Air Force fighting capability and resource management effectiveness. Maj. Gen. Harry Falls, Jr., commands AFISC and is also the Deputy Inspector General for Inspection and Safety, Hq. USAF.

AFISC has an assigned work force of 374 military and 138 civilians, representing seventy Air Force specialties. It is divided into four directorates and two offices.

- **The Directorate of Inspection** determines operational readiness status within the major commands by monitoring their Operational Readiness Inspection (ORI) reports and by conducting Over-the-Shoulder Inspections of command IG teams during ORIs. The Directorate also evaluates the effectiveness and efficiency of Air Force management systems through Functional Management Inspections (FMIs) and System Acquisition Management Inspections (SAMIs). FMIs evaluate the management of well-defined Air Force activities and programs, while SAMIs are more specialized inspections involving the review of all aspects of new weapon-systems acquisition. In addition, the Directorate conducts the USAF Inspection School to train all newly assigned Air Force, major command, and separate operating agency inspectors.
- **The Directorate of Aerospace Safety** develops and monitors USAF mishap prevention programs in all areas of flight, ground, missile, and explosives safety. The Directorate also administers the mishap-reporting system established by DoD, and studies mishap trends to identify areas with a high payoff in prevention. In addition, the Directorate manages the USAF Safety Awards Program. Directorate personnel design, plan, and develop resources for safety education programs, including university-level safety courses, and publish *Flying Safety, Driver* and *Maintenance* magazines, and the *USAF Safety Journal.*
- **The Directorate of Nuclear Surety** at Kirtland AFB, N. M., plans, develops, directs, and evaluates the Air Force Nuclear Surety Program and makes recommendations to improve nuclear surety and the management of nuclear resources. The Directorate also publishes the quarterly *USAF Nuclear Surety Journal,* which disseminates nuclear safety, security, and inspection information.
- **The Directorate of Medical Inspection** plans and conducts an Air Force and Air Reserve Forces medical inspection program to ensure efficient and effective management of health-care resources. 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 action.
- **The Office of the Assistant for Inquiries and Complaints** processes cases referred to the Air Force Inspector General for resolution and has functional responsibility for operation of the IG Computerized Complaints Data Collection System. This office serves as the focal point within the Air Force for determining the releasability, under the Freedom of Information and Privacy Acts, of

Maj. Gen. Harry Falls, Jr., Commander, AFISC.

CMSgt. Thomas J. Feeney, Senior Enlisted Advisor, AFISC.

investigations and inquiries requested or conducted as the result of involvement by the IG.

• **The Office of Management Support** manages manpower, personnel, budget, data automation, and administrative services for the Center and monitors major command and Air Force inspection schedules and activities. ■

Air Force Intelligence Service

THE mission of Air Force Intelligence Service (AFIS) is to provide intelligence services and information to Hq. USAF and Air Force commanders worldwide.

The amended National Security Act of 1947 authorizes the Air Force to collect, evaluate, correlate, and disseminate departmental intelligence. Department of Defense directives call for the Air Force to provide an organization capable of furnishing adequate, timely, and reliable intelligence for DoD use. The Air Force Intelligence Service was established on June 27, 1972, as a separate operating agency with headquarters in Washington, D. C., to provide specialized services to Hq. USAF and Air Force commanders.

AFIS supports USAF planning and combat operations, responding to changing intelligence requirements. Its activities include:

• **Operational Intelligence Directorate** 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. The directorate provides experts on targeting, weapons, photo research, geodesy, and cartography; serves as the Department of the Air Force contact with the Defense Mapping Agency; provides intelligence support of electronic warfare activities; 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 Directorate** oversees the worldwide Air Force Special Security Office and Special Activities Office and ensures compliance with security policies that cover special intelligence and intelligence telecommunications.

• **Intelligence Data Management Directorate** plans, coordinates, and exercises managerial control of worldwide Air Force systems for handling intelligence data.

• **Attaché Affairs Directorate** supports the Defense Attaché System and monitors all matters concerning Air Force participation in that program.

• **Intelligence Reserve Forces Directorate** manages the AFIS Intelligence Reserve program. Responsibilities include recruitment, administration, readiness training, and operational utilization of more than 1,200 assigned and attached mobilization augmentees in support of peacetime and contingency mission requirements.

• **Soviet Affairs Directorate** conducts the Air Force's Soviet Awareness Program, consisting of the "Soviet Military Thought and Studies in Communist Affairs" books series, *Soviet Press Selected Translations* periodical, internal publications, the Soviet Military Power Week, Soviet Awareness Team, and the Soviet Military Literature Research facility.

• **Evasion and Escape/Prisoner of War Matters Directorate** provides centralized management and cohesive direction to all aspects of intelligence support of evasion and escape/prisoner of war matters, and is the action office for DoD code-of-conduct training.

• **Air Force Special Activities Center** provides centralized management of all Air Force activities involved in the collection of information from human resources. Major subordinate units are located in the European and Pacific theaters.

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 Air Force Reserve intelligence people. ■

Brig. Gen. Schuyler Bissell, Commander, AFIS.

CMSgt. William H. Strickland, Senior Enlisted Advisor, AFIS.

Air Force Legal Services Center

THE Air Force Legal Services Center (AFLSC) was established in 1978 as part of The Judge Advocate General's Department. Maj. Gen. Thomas B. Bruton, The Judge Advocate General, is the Air Force's chief military legal officer and commander of AFLSC.

Of the nearly 3,000 people in The Judge Advocate General's Department, 388 military and 162 civilians are assigned to the Center. They are stationed in Washington, D. C., as well as at virtually every Air Force base worldwide. The Center provides independent and specialized services in the areas of mil-

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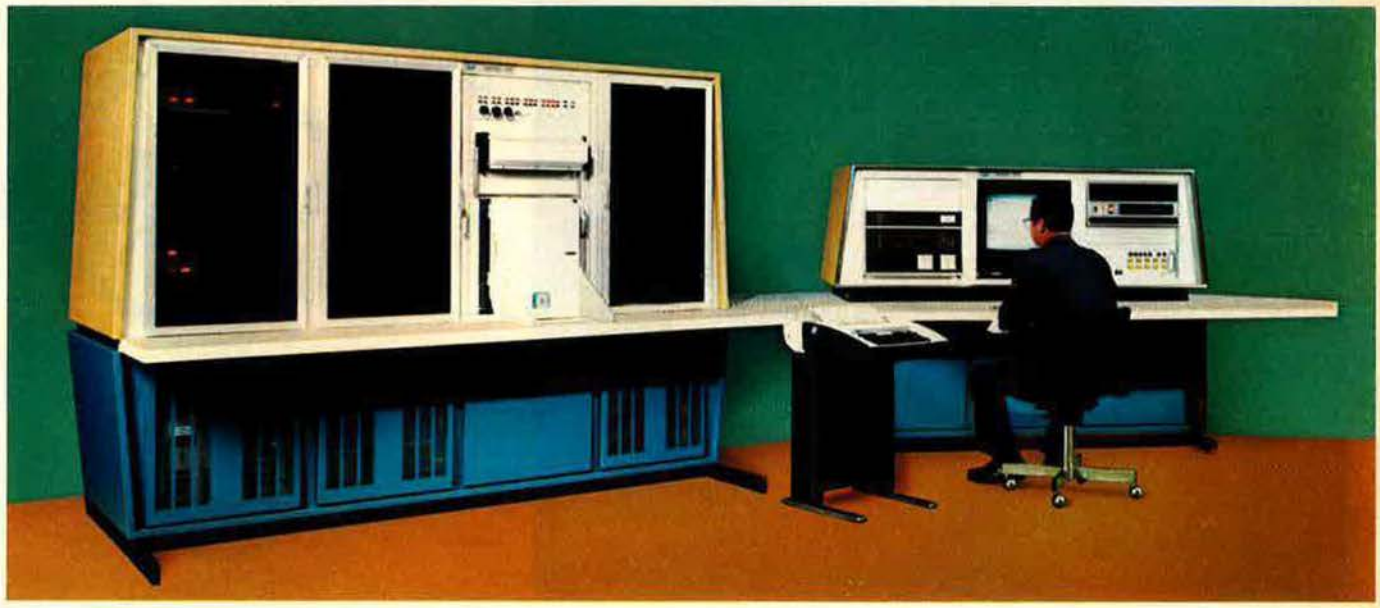

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LT. COLONEL DON GASAWAY,
U.S.A.F., B.S.C. Retired, military hearing conservationist.

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itary justice, claims, litigation, and preventive law.

A large number of the Center's people are involved in the administration of military justice, which included more than 1,800 courts-martial in 1981. All military judges and defense counsels are assigned to the Center to ensure independence from local commanders. Attorneys at the Center also perform post-trial appellate and clemency actions, including representation before the Air Force Court of Military Review and the US Court of Military Appeals. The Center is also an element of the Air Staff, providing legal advice on regulations, responding to congressional inquiries, and participating in numerous activities in the Washington area.

The Center also supervises Air Force claims activities and manages Air Force civil litigation. More than 129,000 claims actions, totaling almost $48 million, were completed in 1981. In addition, Center personnel actively assisted the Department of Justice in litigating more than 2,200 Air Force lawsuits. The outcome of these cases involving aviation and environmental law, medical malpractice, general torts, the Freedom of Information Act, procurement, tax and utilities, and military personnel issues invariably impacts on Air Force operations and personnel management.

Through the Central Labor Law Office at Randolph AFB, Tex., the Center provides advice on labor law questions and represents the Air Force in a variety of hearings. Also, the Center's Patents Division controls all Air Force invention, patent, copyright, and trademark activities—including managing the Air Force inventory of more than 3,100 active patents.

The Center also supervises the Air Force Preventive Law and Legal Assistance Program, which in 1981 advised more than 500,000 clients in more than 1,100,000 different personal civil matters. The Center's Preventive Law and Legal Assistance Office, located in the Pentagon, is the legal assistance office for people assigned to Hq. USAF. The office also provides Air Force representatives to the Armed Services Individual Income Tax Council and the Armed Forces Tax Group.

Computers play an important role in the modern practice of law. Computers track claims with CAMP, the Claims Administrative Management Program, and monitor military justice activity with AMJAMS, the Automated Military Justice Analysis and Management System. The Center is the DoD executive agency for FLITE (Federal Legal Information Through Electronics), which provides computerized research of case law and precedent, including Comptroller General decisions and Air Force administrative regulations.

AFLSC is a part of the world's largest law firm—The Judge Advocate General's Department. Through the Center, commanders and other Air Force members benefit from ready access to legal counsel in several specialized areas of the law. ■

Maj. Gen. Thomas G. Bruton, Commander, AFLSC.

CMSgt. Thomas R. Castleman, Senior Enlisted Advisor, AFLSC.

Air Force Manpower and Personnel Center

THE Air Force Manpower and Personnel Center (AFMPC) manages "people" programs that affect the lives of more than a half million Air Force men and women. The AFMPC mission is concisely stated in the Center's motto: "Responsive to the Mission—Sensitive to the People."

Highly trained, motivated, and dedicated people are essential to readiness, and AFMPC's primary mission is to support the Air Force's combat forces. Within the parameters of that basic objective, AFMPC tries to respond to the individual needs of Air Force people—individuals with personal and career goals or with particular personal hardships or children who require specialized medical attention.

AFMPC is a separate operating agency, located at Randolph AFB, Tex. The Commander also serves as Assistant DCS, Manpower and Personnel for Military Personnel, Hq. USAF. More than 2,200 military and civilians at the Center implement the personnel policies and programs developed at Air Staff level.

Though the Center's responsibilities cover a broad spectrum of activities in personnel management and quality of life issues, AFMPC is synonymous with assignments for many Air Force people. The assignments of all Air Force military personnel through the grade of colonel are conducted at the Center. Assignment teams of functionally qualified personnel officers and NCOs strive to balance Air Force requirements and the needs of people.

Selection boards are always in progress at the Center, ranging from promotion boards for officers and senior and chief master sergeants, to school selection boards, to selection of the Twelve Outstanding Airmen of the Year. AFMPC also administers the Weighted Airman Promotion System, Stripes to Exceptional Performers, and the E-4 Below-the-Zone promotion programs.

AFMPC's role in the lives of Air Force people extends to reenlistments, separations and retirements, casualty reporting and survivor assistance, mortuary affairs, awards and decorations, physical fitness, dress and personal appearance, the Air Force Suggestion Program, the Air Force Assistance Fund, and Voting Assistance. The Center works closely with Air Force Recruit-

ing Service and Air Training Command to assess the numbers and types of people the Air Force needs and to train these individuals in areas that best match Air Force requirements with individual preferences.

Retention of quality Air Force people is one of the Center's most important tasks. A number of pay, compensation, and retention initiatives over the last few years were conceived or supported by reports, analyses, and visits to the field conducted by Center personnel. Initiatives, such as Command Days, which focus on command-unique personnel issues, and a problem-solving orientation to base visits by the Personnel Management Team have significantly contributed to a better understanding of personnel issues, on both an individual and an Air Force-wide basis.

The quality of Air Force life is a major retention factor, and the Center provides central management for morale, welfare, and recreation activities that include open messes, libraries, sports programs, youth programs, arts, crafts, hobbies, and child-care centers. This year, a long-range MWR program called "Life—Be In It," was instituted to increase participation in a wide range of leisure and recreational activities.

The entire personnel network is tied together in a worldwide computer system providing current information on practically any personnel action, twenty-four hours a day. The Center recently completed the development, test, and delivery of mobile, minicomputer personnel support vans to provide essential computer support of units deployed on contingency operations.

The Office of Civilian Personnel Operations and the Air Force Management Engineering Agency are administratively assigned to AFMPC, although these activities receive technical guidance and direction from the Directorate of Civilian Personnel (AF/MPC) and the Directorate of Manpower and Organization (AF/MPM) at Hq. USAF in Washington, D. C.

AFMPC will continue to develop and administer people programs in the interest of enhancing the quality of life for Air Force members and their families, while supporting the manpower needs of the Air Force. ■

Maj. Gen. Kenneth L. Peek, Jr., Commander, AFMPC.

CMSgt. W. D. Humphries, Senior Enlisted Advisor, AFMPC.

Air Force Medical Service Center

THE Air Force Medical Service Center (AFMSC) is a separate operating agency with headquarters at Brooks AFB, Tex. The Center was established July 1, 1978, and became operational on October 1 of that year. Brig. Gen. Donald B. Wagner, the AFMSC Commander, also serves as Deputy Surgeon General for Operations and as Chief of the Medical Service Corps.

AFMSC assists the Air Force Surgeon General in developing policies and practices concerning routine and emergency 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 two directorates and the Medical Service Corps Chief's Office. The Health Care Support Directorate is the larger of the two in AFMSC. It develops plans and procedures to ensure that needed medical facilities are available; that required medical supplies and material are provided; that patient affairs, including medical records and statistics, are properly managed; and that information management systems are developed and are implemented.

The other directorate, Professional Services Directorate, is involved in pro-

Brig. Gen. Donald B. Wagner, Commander, AFMSC.

CMSgt. Paul F. Greenwood, Senior Enlisted Advisor, AFMSC.

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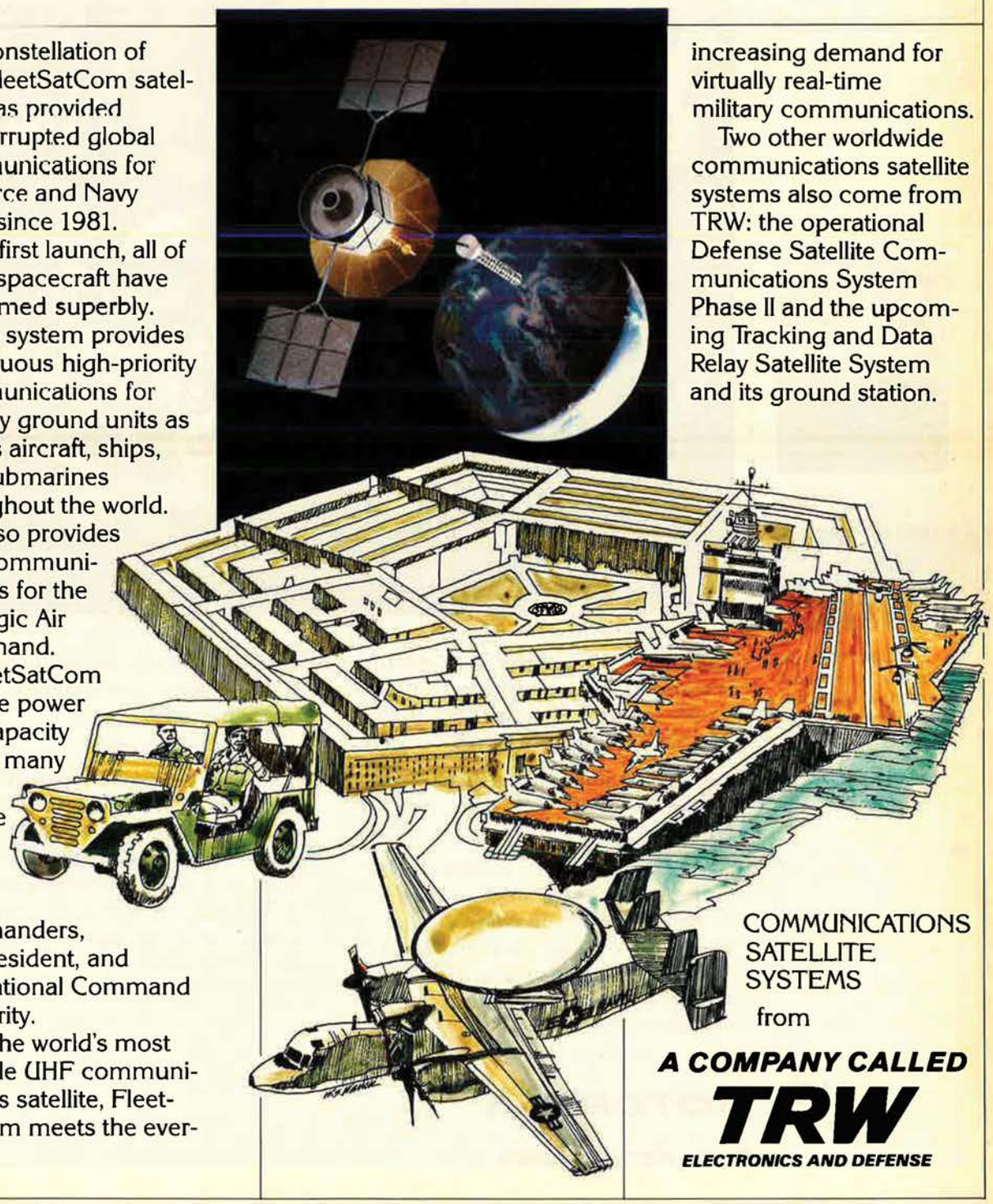

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grams associated with the practice of medicine in the Air Force—including clinical, flight, and preventive medicine, and professional specialties associated with these areas.

This Directorate is also responsible for the USAF Radioisotope Committee, which coordinates all administrative and regulatory aspects of licensing, possession, use, storage, handling, and disposal of all radioactive material in the Air Force. This committee also acts as the Air Force point of contact with the United States Nuclear Regulatory Commission on licensing matters.

Within the Professional Service Directorate is the Consumer Health Education Division, which was relocated from Sheppard AFB, Tex., in February 1981. This division works primarily in three areas of health education: community, outpatient, and inpatient.

The Medical Service Corps (MSC) Chief is responsible for developing policy and advising the Surgeon General on MSC matters—including career development, monitoring, and progression, and professional education. The Medical Service Corps, one of five corps of the Medical Service, has total responsibility for the medical facilities, medical logistics programs, and administrative support of Air Force Medical Service activities.

AFMSC is directly involved on a daily basis with the Air Force Surgeon General, other Air Staff directorates, major commands, and other federal agencies. A continuing interchange is required as policy and practices for medical support are developed and implemented. ■

Air Force Office of Security Police

THE Air Force Office of Security Police (AFOSP) at Kirtland AFB, N. M., was established as a separate operating agency on September 1, 1979. The Commander, Col. (Brig. Gen. selectee) P. Neal Scheidel, also serves as the Air Force Chief of Security Police. In both capacities, he is responsible to The Inspector General, USAF. A staff of thirty-three officers, sixteen enlisted, and eighteen civilians is assigned to Kirtland; an additional forty-five people are part of the Air Force Security Clearance Office, an operating location in Washington, D. C.

AFOSP develops and documents the operational policy, criteria, and standards for security of Air Force resources and classified information and monitors implementation. AFOSP also implements Air Force IG-approved programs, including: the security of operational combat resources (aircraft, missiles, nuclear and nonnuclear munitions); Presidential aircraft security; protection of vital C^3 facilities; air base defense; management of security police personnel and training; systems and equipment programs; information, personnel, industrial, and wartime information security programs; maintenance of law and order; prisoner rehabilitation and corrections programs; vehicle traffic management; the military working dog program; and a technology division looking to the future.

AFOSP accomplishments during the past year include:

- Participation in efforts to develop and program the first totally underground munitions storage facility.
- The Peacekeeper 80 effort to improve the quality of life of all security police reaped positive benefits during 1981. This program will continue to receive keen attention during 1982.
- A new Fire Team Organization Structure, consisting of a leader and three members, was implemented worldwide during 1981. It provides the opportunity to "grow" leaders at the earliest opportunity. Results have been very encouraging.
- AFOSP continued its aggressive support of the development, acquisition, and deployment of electronic intrusion detection equipment and associated subsystems for protecting nuclear weapons, alert aircraft, and other priority resources. A candidate radio has been tentatively identified to provide state-of-the-art communications for police forces engaged in weapon system security and air base defense.
- AFOSP successfully deployed the Peacekeeper armored response vehicle to support security forces and is currently developing other specialized security and air base defense vehicles.
- AFOSP sponsored a security police combat competition called Peacekeeper Challenge, designed to test and train security police in their wartime specialties. The Royal Air Force Regiment, Air Force Reserve, Air National Guard, and ten major commands participated in this week-long competition.
- The National Crime Prevention Institute at the University of Louisville graduated its first class of security policemen, and AFOSP joined with the Army to conduct antishoplifting, crime reporting, and rape-prevention campaigns to increase crime-prevention awareness among Air Force members.
- The increased use throughout DoD of military dogs able to detect drugs and explosives resulted in a revised Air Force military working dog training program that improved the capabilities of all the services and other federal agencies.
- AFOSP received the William H. Spurgeon III Award from the Boy Scouts of America for support of Law Enforcement Exploring.

Col. (Brig. Gen. selectee) P. Neal Scheidel, Commander, AFOSP.

CMSgt. Robert J. McLaurine, Senior Enlisted Advisor, AFOSP.

• AFOSP launched an effort to revalidate all Air Force personnel security investigation requirements. This ensures the minimum number of actions are submitted to Defense Investigative Service so that people can be put to work in a shorter period of time.

• AFOSP has now become the central production agency for security education material resulting in significant cost savings to the Air Force. During this past year, AFOSP published the first "Security Manager's Guide," for use Air Force-wide.

In 1982, AFOSP will continue to expand its use of the Multiple Integrated Laser Engagement System (MILES) in security police training to simulate, as closely as possible, actual small-arms combat. Providing realistic training for ground combat, the MILES will significantly enhance the defense of war-making resources. Also, new Air Base Defense courses will be coming on line to increase the effectiveness of the Air Force's ground combat force. In FY '82, major emphasis is being placed on senior officer and senior NCO courses. Mid-level officer and NCO courses will be stressed in FY '83. As the Air Force develops its own combat training programs, it will rely less on US Army courses. ■

Air Force Office of Special Investigations

A NEW motto, "AFOSI: Helping Protect a Great Way of Life," underscores the Air Force Office of Special Investigations' support of USAF commanders worldwide, with approximately 2,150 special agents and support people backed up by nearly 350 Reservists.

Rigorously selected volunteers attend a thirteen-week basic course at the US Air Force Special Investigations Academy at Bolling AFB, D. C. Agents normally return at least once later in their careers for advanced training. Within their ranks are specialists in forensic sciences, technical services, polygraph, criminal, fraud, counterintelligence, counterterrorism, and protective services. Many agents also bring expertise from their previous Air Force specialties. This, together with cooperation from thousands of non-AFOSI people worldwide, has helped AFOSI give commanders new insights into protecting Air Force people, property, and financial resources.

Fraud, waste, and abuse (FW&A) perpetrated against the government by employees and contractors have come in for special attention, responding to White House emphasis. Special agents travel as members of Air Force Inspector General teams which have briefed key Air Force people around the world. AFOSI also helped develop the *Indicators Handbook* to give commanders and functional managers more insight into ways of preventing FW&A.

AFOSI regularly cooperates with other law-enforcement agencies. Successful investigations included an examination of abuses to the Federal Employees Compensation Act; a joint AFOSI/FBI bank robbery investigation that led to the arrest of two airmen and recovery of $47,000; and a joint operation with the New Jersey State Police that resolved twenty-nine burglaries in which Air Force people had lost $88,000 worth of personal belongings.

A significant undercover operation neutralized a well-entrenched theft ring of local nationals and USAF personnel overseas that had been manipulating shipping and control documents. As reported to national media by the Pentagon, until stopped, this theft ring had been responsible for the loss of $4 to $6 million worth of government property each year.

Because of the potential for computer-related crime in the Air Force, AFOSI computer experts are developing a new Computer Crime Investigative Assistance Program, and are expanding the array of methodologies available for using computers as investigative tools. As a collateral service, AFOSI analytical reports give commanders "lessons learned" from investigations.

A number of terrorist groups targeted the US military during 1981. Consequently, AFOSI mobile assistance teams were sent to Europe, the Middle East, and elsewhere to provide specialized protection and antiterrorism services to Air Force commanders. Further, counterintelligence officers are being assigned by AFOSI as advisors to the staffs of several major commands.

This operational diversity exerts a heavy drain on AFOSI resources and demands extensive hours of overtime. AFOSI's need for special agents has fortunately been met, in part, by an aggressive recruiting program, resulting in a seventy percent higher selection rate than previously experienced during the tough screening process. AFOSI's CBPO at Bolling AFB received the Gerrit D. Foster, Jr., Outstanding CBPO Achievement Award for this recruiting effort and for a variety of other significant achievements.

The significance of AFOSI's endeavors was well stated in a 1948 all-command letter signed by then-Chief of Staff Gen. Hoyt S. Vandenberg, who wrote that the newly formed OSI would "provide a new and more complete service to assist you in carrying out the responsibilities of command." Today it is no longer a prediction, but a fact. ■

Col. Richard S. Beyea, Jr., Commander, AFOSI.

CMSgt. Donald O. Goodman, Senior Enlisted Advisor, AFOSI.

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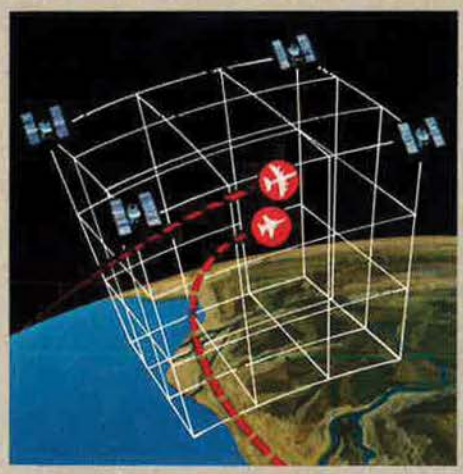

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The procedure is simple: the user receives and processes the time and position signals from the GPS constellation of satellites to obtain current position, velocity and GPS time. An operator enters the desired waypoint into a Navstar computer. Pilot's steering display has cross-track, vertical track, and time-to-go / distance-to-go needles which visually direct the pilots to the waypoint.

GPS will be an important asset to U.S. and NATO air force commanders for other reasons as well. Greater accuracy for precision weapons delivery, target acquisition, barebase recovery, air interdiction and close air suport, to name only a few.

Commanders will also lock into a common reference grid worldwide.

DoD's Navstar Global Positioning System (GPS) provides continuous and worldwide navigation and more accurate target acquisition. Navstar delivers. Space Operations / Integration and Satellite Systems Division, North American Space Operations—builders of the Navstar GPS satellites.

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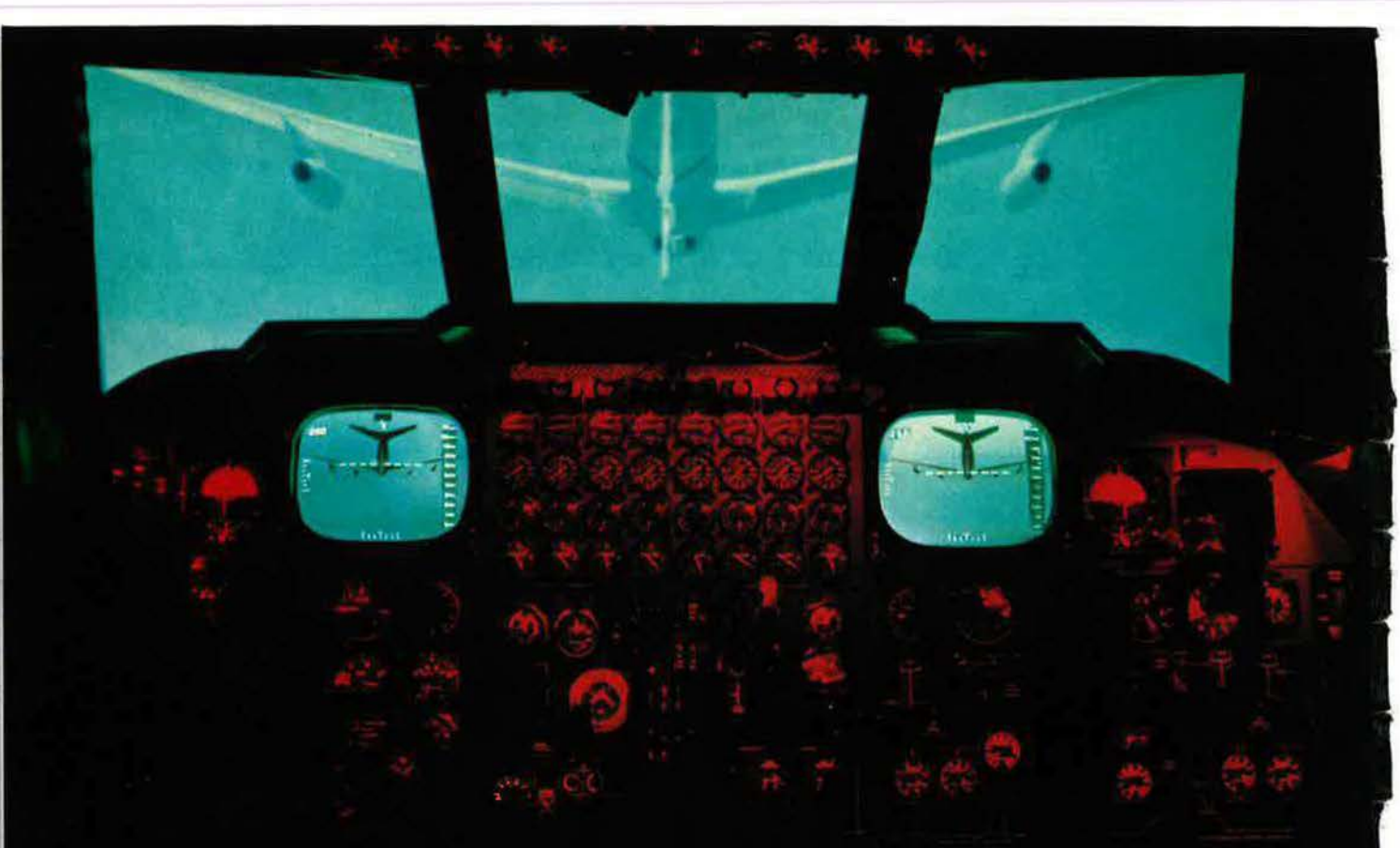

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The B-1B can achieve maximum effectiveness only if its crews are as technologically advanced as this new long range combat aircraft.

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Air Force Service Information and News Center

THE Air Force Service Information and News Center (AFSINC), with headquarters at Kelly AFB, Tex., was activated June 1, 1978. The Air Force Hometown News Center, formerly at Tinker AFB, Okla., joined the Center in June 1979; and the Army Hometown News Center, previously at Kansas City, Mo., joined in October 1980. The Center's American Forces Radio and Television Division became a directorate in 1980. In 1981 the Orientation Group, United States Air Force, was assigned to the Center for support purposes.

The Center's job is to help inform Air Force members and the public about Air Force missions, aerospace systems, people, and activities. The Center provides information products and services—print and broadcast media—to Air Force members, their families, civilian employees, and commanders and their public affairs specialists. It also provides news of the achievements of individual soldiers and airmen to news media nationwide. AFSINC, as a separate operating agency, is responsible to the Department of the Air Force through the Director of Public Affairs in the Office of the Secretary of the Air Force.

In 1981, the Center's managers capitalized on media, computers, and improved equipment to advance Army and Air Force public affairs objectives in a time of shrinking budgets. Printed products and expanded television coverage were used to maintain high morale and raise the quality of life in the Air Force community. American Forces Radio and Television Service television programming for people in overseas areas was expanded to boost the morale of people serving far from home and to keep Air Force people in touch with events back home.

The needs and concerns of the family are receiving renewed emphasis from Air Force leadership. Using the products and programs it produces and manages, the Center plays a key role in family communications. The Take-Home News Clipsheet is a new product designed specifically to keep Air Force families informed. It will carry articles on topics of interest to Air Force families and be distributed monthly to public affairs offices for use in their local family support programs.

Keeping within the government-wide reduction of costs, efficiency was increased. The Center installed modernized postal equipment that greatly increased output per worker, while reducing bulk mailing costs.

In 1981, the Air Force Orientation Group was assigned to the Center for administrative support. The group, which creates and displays exhibits about Air Force life and weapon systems, remains at Gentile Defense Electronics Supply Center, Ohio, and continues to report operationally to the Director of Public Affairs, Office of the Secretary of the Air Force. The Air Force public affairs units in Chicago, Los Angeles, and New York continue to receive budgetary and human resources support from AFSINC and also report to the Director of Public Affairs.

The Center has five directorates.

• **The Directorate of Internal Information** provides products and services to keep Air Force people informed about Air Force, Department of Defense, and national policies, decisions, and actions. It also provides consultant services to aid Air Force program managers in developing information plans on matters of Air Force-wide interest. Printed products include *Airman* magazine, the Air Force Policy Letter for Commanders, Air Force News Service releases for base newspapers, and the Take-Home News Clipsheet. Audiovisual products include *Air Force Now* film series, Air Force Weekly radio news for the American Forces Radio and Television Service, and the Lithograph series. To assist Air Force public affairs offices, the directorate publishes biographies of general officers and high-ranking civilians; and fact sheets, speech inserts, aerospace speeches, foldouts, slide briefings, and articles on Air Force subjects. It also manages the Air Force's base newspaper program and monitors the Commander's Call program.

• **The Directorate of Army and Air Force Hometown News** provides stories about activities of Army and Air Force people to their hometown newspapers and broadcast media. The program reports accomplishments and activities of service members from throughout the Army and the Air Force. Individual recognition given by these stories hikes morale, stimulates interest in service activities, and helps recruiting. An Army television team and an Air Force radio branch provide specialized broadcast interviews for their respective services to commercial radio and television stations. Hometown news releases make it possible for Army and Air Force people to receive public recognition for their accomplishments and retain their identities in their hometown communities. The releases also keep the public abreast of Army and Air Force activities, engender citizen support, and enhance local recruiting efforts.

• **The Directorate of American Forces Radio and Television** manages and operationally controls all Air

Col. Roger L. Williams, Commander, AFSINC.

CMSgt. Louis M. Nicolucci, Senior Enlisted Advisor, AFSINC.

Force broadcast outlets in Europe, Alaska, Greenland, the Middle East, and the Pacific area. The directorate coordinates with Department of Defense and other military departments on matters of joint interest and is also the point of contact for Air Force activities seeking counsel on Air Force radio and television matters.

• **The Directorate of Administration** handles the Center's administrative matters. It also is responsible for reproduction of the Center's information products through in-house, local base, or commercial printing. These products, along with some material provided by the Department of Defense's American Forces Information Service, are distributed worldwide. Photocomposition is provided by the directorate's word-processing center for many of the Center's information products.

• **The Directorate of Special Staff** was formed in August 1981 to consolidate the Center's support functions. It manages the Center's worldwide resources that include a multimillion dollar budget, personnel, and equipment. The Special Staff is also responsible for the Center's plans and programs, social actions, and education and training. It administers the Individual Mobilization Augmentee program of AFRES personnel assigned to the Center and its metropolitan operating locations.

As of January 31, 1982, the Center was authorized about 685 military and 185 civilian personnel for a total strength of 870. ■

Air Force Test and Evaluation Center

SINCE weapons were first introduced into battle thousands of years ago, some form of the question "How will it work in the field?" has been asked. The Air Force Test and Evaluation Center (AFTEC), which was established in 1974 in response to DoD and congressional desires for each military service to have an independent operational test and evaluation (OT&E) organization, provides answers to such a question.

AFTEC, a separate operating agency, manages the Air Force-wide OT&E program and is the principal USAF agency furnishing OT&E information to the Air Force Chief of Staff. Through its independent channels, AFTEC plans, directs, controls, evaluates, and reports on OT&E and recommends OT&E policy. AFTEC plays a key role in the acquisition process by providing decision-makers with essential information on the operational performance and supportability of new systems.

Essentially, AFTEC seeks to determine how well systems proposed for Air Force procurement meet the needs of the personnel who will use and maintain them. Additionally, follow-on testing helps the Air Force verify the operational characteristics of systems.

The Center has approximately 500 people assigned to the Kirtland AFB, N. M., headquarters, three permanently established detachments, and field test teams at designated test sites. The headquarters staff primarily designs tests, prepares pretest documentation (including test plans), monitors the activities of field test teams, assists in data analysis and evaluation, and prepares formal test and evaluation reports.

Each AFTEC test team includes personnel from AFTEC, various operating commands that will use the specific system being tested (such as Military Airlift Command, Strategic Air Command, Tactical Air Command), and supporting commands (such as Air Force Logistics Command and Air Training Command). More than 1,000 people from these commands are normally assigned to AFTEC test teams at any specific time.

To support personnel at selected test sites, AFTEC has established permanent detachments at Kapaun AS, Germany, Eglin AFB, Fla., and Nellis AFB, Nev. Additionally, twenty-one AFTEC operating locations (OLs) have been established at individual testing sites. For example, the OL at Dugway Proving Ground, Utah, serves as the AFTEC test team for the ground-launched cruise missile, and the OL at Kennedy Space Center, Fla., serves as the AFTEC test team for the Space Transportation System.

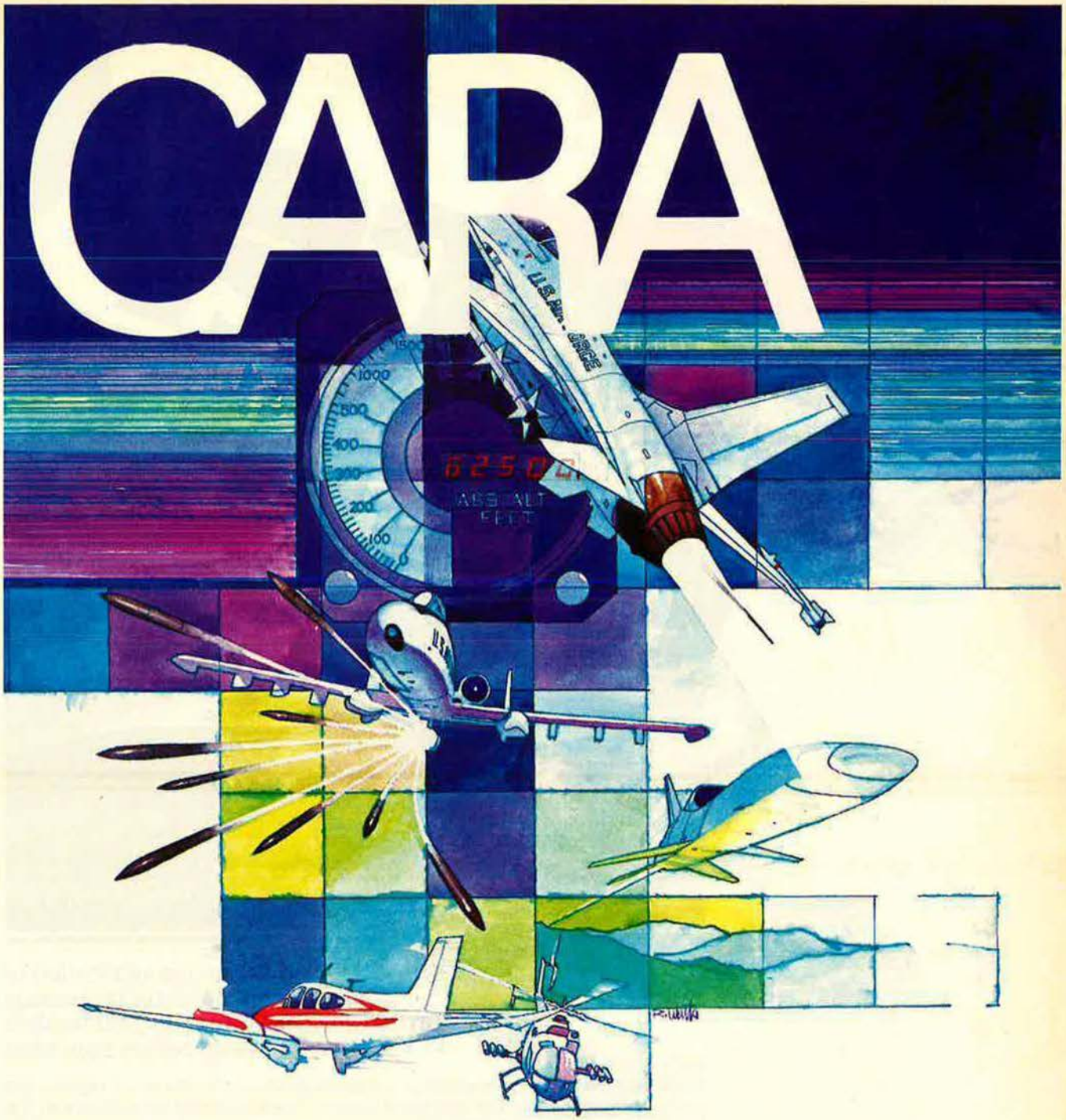
AFTEC initial operational test and evaluation (IOT&E) is conducted under conditions that are as realistic as possible to estimate the operational performance and supportability of a system, while concurrently identifying deficiencies or needed modifications. Follow-on operational test and evaluation (FOT&E) is designed to refine assessments made in IOT&E and to verify the capabilities of production items that are normally fully operational.

Typically, AFTEC is involved in planning, conducting, or reporting OT&E on approximately 100 different systems at any given time. In the past year, a number of major systems were tested in the field. Among them were the F-16, the B-52 offensive avionics system, the C-5A wing modification, the EF-111A, and the over-the-horizon backscatter radar.

AFTEC will continue to test a wide variety of systems during the coming year, including the low-level laser-guided bomb, the medium-range air-to-surface missile, the KC-135R, the Navstar global positioning system, and

Maj. Gen. Wayne E. Whitlatch, Commander, AFTEC.

CMSgt. Raymond F. Enright, Senior Enlisted Advisor, AFTEC.



Gould has a new generation altimeter designed to meet USAF specs with performance and logistics support to spare.

When you build a better altimeter, you'd better back it up with the logistics support it deserves. The NavCom Systems Division of Gould Inc. has done that for aircraft and missile applications worldwide.

Our new generation radar altimeter design combines high performance and flexibility, readily permitting the implementation of A-J, LPI, power management and nuclear hardening. We also place a high priority on simplicity of design, stressing all solid-state reliability and superior maintainability.

NavCom Systems Division is a long-time leader in altimeter technologies, and has produced systems for military and general aviation based on all three generic altimeter techniques — non-coherent pulsed, coherent pulsed doppler and FM/CW.

With NavCom airborne TACANs, TACAN beacons, communication systems and altimetry systems operational all around the globe, the support services so vital to the CARA (Combined Altitude Radar Altimeter) program are in place and functioning now.

For more about the altimeter system that brings performance and logistics support up to a whole new plane of efficiency, talk to Gould Inc., NavCom Systems Division, 4323 Arden Drive, El Monte, California 91731 (213) 442-0123 TWX: 910-587-3428

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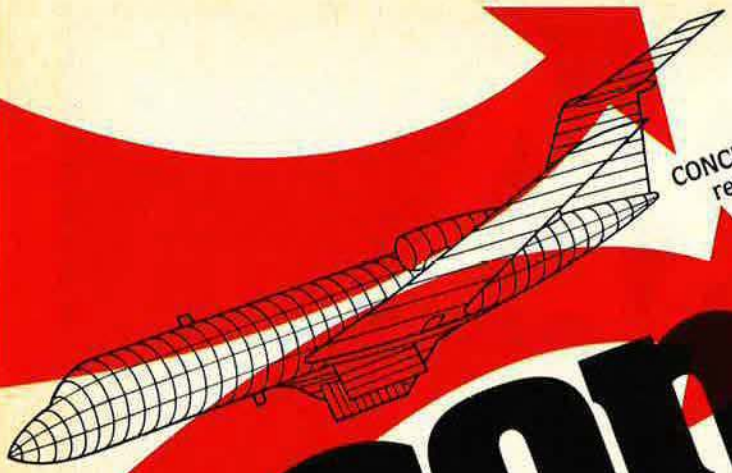


CONCEPT: A space shuttle that reenters and lands safely.

concept reality

REALITY: Grumman Data Systems proved an altered aircraft can behave like the space shuttle. Test after test verified ...it's a GO!

By unique application of sophisticated computer technology, Grumman Data Systems proved feasible what had never before been tried.

Early in the '70s, NASA needed to find out whether a powerless space shuttle could reenter the earth's atmosphere under complete control. The task called for special test systems and equipment installed in an aircraft converted to fly as the shuttle. How would reentry stresses affect the aircraft's functioning? The pilot's performance? ☐ Grumman Data Systems found out. We devised a series of automated test systems that accurately predetermined, in perfectly simulated flight, the shuttle's performance through descent and landing. And the pilot's ability to control the powerless craft smoothly and safely. ☐ Result: NASA pilots conditioned and ready far in advance for the realities of shuttle reentry flight. ☐ Today's demanding production and performance pressures in any industry make Grumman a great partner to have for instant answers to complex questions. The entire emphasis is on data acquisition and analysis systems, born in the aerospace industry, designed to keep your program working at peak efficiency. To find out more about Grumman Automated Test Systems, including facilities management, consulting, software systems, or complete turn-key systems, contact **GRUMMAN DATA SYSTEMS CORPORATION at 150 Crossways Park West, Woodbury, L.I., NY 11797. Telephone (516) 349-5111 or 1600 Wilson Blvd., Arlington, VA 22209. Telephone (703) 528-5900.**

GRUMMAN

the Inertial Upper Stage pathfinder test vehicle, a part of the Space Transportation System.

The results gained from AFTEC test programs help provide Air Force and DoD officials with solid answers to questions about how new Air Force systems can be used and maintained under operational conditions. ■

Air Force Academy

WITH the graduation of the Class of '82, the Air Force Academy will have some 11,000 graduates serving on active duty in the Air Force.

Since graduation of the first class in June 1959, Academy graduates have pursued successful Air Force careers as pilots, navigators, engineers, maintenance officers, and, above all, as leaders. It isn't surprising to those who know the Academy and the type of people it commissions that a Class of 1959 graduate has been selected to command a Space Shuttle mission, or that a lieutenant colonel from the Class of '66 has served as a special assistant to the Chairman of the Joint Chiefs of Staff, or that two graduates are Vietnam War aces.

Today's Academy graduates on active duty practice a commitment to excellence that was the cornerstone of the academic and military training they received at the Academy.

Some 12,000 young men and women seek entry to the Academy each year. Of these, about 1,500 are appointed to the Academy. These selectees have several common traits: they are intelligent, aggressive, and accustomed to winning. Ninety percent rank in the top quarter of their high school classes and eighty percent have earned high school athletic letters. They are people who can successfully complete the Academy program and contribute to our efforts to make a good Air Force better.

Not all of them do make it through the four-year program, but those who are graduated and commissioned annually provide the Air Force with a corps of professional military officers. Of the Academy's 14,500 graduates to receive Air Force commissions, 9,227 have entered pilot training, 924 entered navigator training, and 276 entered helicopter pilot training. The remainder entered a wide spectrum of support career areas, primarily in engineering, scientific, and technical duties.

Following Basic Cadet Training, new cadets enter the Cadet Wing and receive a four-year balanced program of military studies, academics, and athletics. All cadets graduate with a Bachelor of Science degree, and all participate in either intramural or intercollegiate sports. They take part in military training programs that include parachuting, sailplaning, T-43 navigator orientation, and T-41 pilot orientation.

The tightly woven military, academic, and physical training program is designed with one goal: to develop career officers and leaders. Visits to bases and units bring cadets in contact with the operational Air Force and provide an opportunity to learn first-hand about the mission of flying and support units. Through interaction with officers and NCOs at the working level, they develop a strong identity with the Air Force that enables them to perform their duties as new second lieutenants better.

Cadets learn, grow, and mature through the teaching and examples set by officer instructors and staff at the Academy. The Academy recruits top officers, people who have participated in today's Air Force operations and have an understanding of technology, as well as the moral and ethical issues, that can be shared with Academy cadets.

This experience provides a historical base for cadets. According to Maj. Gen. Robert E. Kelley, Academy Superintendent, "Our challenge is more than to educate and train cadets. We must prepare them to be able to solve problems that at this time don't exist or don't seem to exist, because no one has thought of them yet."

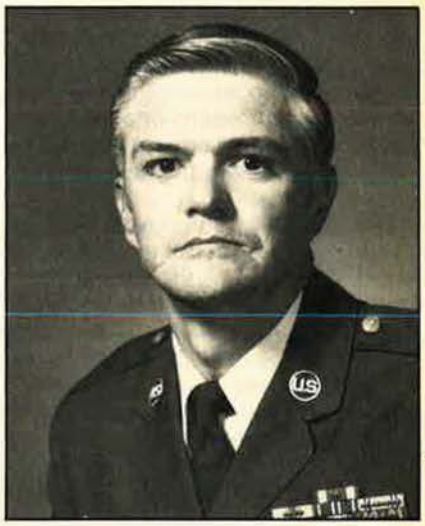
More than ninety-five percent of the Academy's instructors are Air Force officers. These experienced professionals are the people best qualified to provide the instruction that will enable Academy graduates to shape the Air Force's future.

The Academy continues to meet the challenge of providing the Air Force with a highly capable and motivated cadre of career officers. The knowledge gained and sacrifices made as cadets have had a profound effect on many subsequent careers. Fifteen graduates have received the Air Force Cross, 193 the Silver Star, and fifty-eight the Legion of Merit. Two graduates have been selected for promotion to major general, and twelve have been promoted or selected for promotion to the rank of brigadier general.

The 122 graduates who have been killed in action have made the ultimate sacrifice. Thirty-one graduates are repatriated prisoners of war, and three are listed as missing in action.

The Academy is much more than a leading college or university. It is our professional school—a national resource. In the decades ahead, Academy graduates will lead the advancement of air and aerospace power toward new horizons within the earth's atmosphere—and far beyond. ■

Maj. Gen. Robert E. Kelley, Superintendent, USAFA.



CMSgt. Larry L. Vance, Senior Enlisted Advisor, USAFA.

Aerospace Defense Center

ADC personnel help man this NORAD Missile Warning Center. It is the control center for a worldwide network that supplies information on all missile launches.

THE Aerospace Defense Center (ADC), established at Colorado Springs, Colo., on December 1, 1979, supplies Air Force staff support to the binational United States-Canadian North American Aerospace Defense Command (NORAD) and to the US Aerospace Defense Command (ADCOM), a specified command.

ADC is commanded by Gen. James V. Hartinger, who is also Commander in Chief of NORAD and ADCOM, with operational control of the forces made available by United States services and Canadian Forces for aerospace defense of North America. The growing strategic importance of that mission has resulted in the recent upgrading of the CINCNORAD/ADCOM position to four stars and the Canadian Deputy CINCNORAD position to three stars.

One of ADC's primary responsibilities is management of the underground NORAD Cheyenne Mountain Complex, from which General Hartinger exercises operational control of his forces performing three assigned missions: air defense, space defense, and missile warning.

The NORAD Command Post in Cheyenne Mountain is the nerve center and is supported by the Missile Warning Center, Space Defense Operations Center, the Air Defense Operations Center, and the Aerospace Defense Intelligence Center.

ADC has 1,450 military and 350 civilians located at Cheyenne Mountain; the Chidlaw and Federal Buildings in Colorado Springs; at Tinker AFB, Okla., supporting NORAD missions in E-3A Airborne Warning and Control System (AWACS) aircraft; at North Bay, Ontario, Canada, supporting the 22d NORAD Region; and at various operating locations in the continental United States.

By mid-1982, ADC people will be serving at Peterson AFB in a back-up facility (BUF) to the NORAD Command Post inside Cheyenne Mountain. The BUF will serve as a peacetime command and control center to carry on essential operations in the event the Cheyenne Mountain operation is disrupted.

Looking farther into the future, an automatic data-processing architecture plan for the Cheyenne Mountain Complex has been developed to guide the modular replacement of all NORAD computers with state-of-the-art technology by 1995.

In other improvement efforts, air defense capability will be upgraded by deploying a new Over-The-Horizon Backscatter radar system, along with a modernized Distant Early Warning Line to provide all-altitude bomber detection. Plans also call for modernizing the active Air Force and Air National Guard interceptor force by replacing F-106s with F-15s and F-16s. The first squadron of continental air defense F-15s entered the active force this year.

The twenty-three-year-old satellite surveillance task continues to catalog 4,700 objects in space. In the satellite-negation mission, NORAD will have operational control of the F-15 antisatellite system when it becomes operational. Concerning satellite protection, NORAD has supported the Space Shuttle launches, has been named the country's laser clearinghouse, and has memoranda of agreement with satellite owners to provide collision avoidance and other flight information.

In missile warning, NORAD is planning to deploy two additional PAVE PAWS sea-launched ballistic missile warning radars and modernize the Ballistic Missile Early Warning System to provide the better detection and tracking capability needed to counter the Soviet threat.

NORAD is on firmer ground than it has been in years because all three of the NORAD mission areas are rapidly gaining credibility as important elements of the country's deterrent posture. Increased support has come from the President's strategic modernization program, the Congress, and the Department of Defense. ■

Gen. James V. Hartinger, Commander in Chief, NORAD and ADCOM; Commander, ADC.

CMSgt. Charles P. Zimkas, Jr., Senior Enlisted Advisor, ADC.

Air Force Technical Applications Center

Various techniques are used by AFTAC to detect nuclear weapons testing: here, a technician examines an air sample.

THE Air Force Technical Applications Center (AFTAC) operates and maintains the US Atomic Energy Detection System (AEDS). While the mission and purpose of the AEDS have not received much publicity throughout the years, the role of AFTAC is assuming greater importance in the 1980s. This is reflected in part by AFTAC becoming a direct reporting unit in October 1980.

The concept of AEDS originated after World War II when it became apparent that other nations would develop a nuclear weapons capability and it was in the best interests of the US to be aware of these developments. A committee of experts subsequently endorsed the concept of a detection system and in September 1947, Gen. Dwight D. Eisenhower directed Army/Air Forces "to detect atomic explosions anywhere in the world." The mission remained with the Air Force when it became a separate service and proved its value when an AFTAC sensor aboard a B-29 flying between Alaska and Japan detected debris from the first Soviet atomic test in September 1949. This detection was especially noteworthy since most experts had predicted the first Soviet atomic test would occur between 1951 and 1953.

In subsequent years, new detection systems were developed and older systems improved. When the Limited Test Ban Treaty was signed in 1963, the primary role of monitoring certain provisions of the treaty was assigned to AFTAC. The treaty prohibited the signatory states from testing nuclear weapons in the atmosphere, underwater, or in space. It also prohibited allowing nuclear debris vented from underground tests to cross international boundaries.

To accomplish its mission, AFTAC has approximately 1,350 people operating a worldwide system with locations in more than thirty-five countries. The Headquarters is at Patrick AFB, Fla., and squadrons are located at McClellan AFB, Calif.; Wheeler AFB, Hawaii; and Lindsey AS, Germany. There are nineteen detachments, four operating locations, and more than fifty equipment locations around the globe. While the squadrons in Germany and Hawaii provide administrative and logistic support to subordinate activities in their geographic areas of responsibility, the role of the squadron in California is more complex. The McClellan AFB unit supports a Central Laboratory and operates a Logistics Depot providing specialized support for the AEDS network.

AFTAC conducts an extensive seismological research program to detect nuclear weapons testing underground: here, an AFTAC technician measures seismic signal waves.

Col. Robert A. Meisenheimer, Commander, AFTAC.

CMSgt. James B. Payne, Senior Enlisted Advisor, AFTAC.

The Central Laboratory is a scientific analytical facility employing a large variety of modern instrumentation in support of the AEDS mission. Analytical activities include approximately 100 different techniques involving mass spectroscopy, electron microprobe analysis, electron microscopy, gas chromatography, nuclear measurement techniques, conventional and analytic- and radio-chemistry, plus a large selection of special physical instrumental methods.

Because the unique systems and instrumentation are only applicable to the AEDS mission, the AFTAC depot at McClellan AFB distributes items managed by AFTAC. The depot prepositions assets for AEDS systems, provides parts support for depot-level maintenance, and provides normal base-level support.

AFTAC people have a wide range of technical expertise: Some have graduate degrees in chemistry, physics, nuclear engineering, and electronics engineering. Complementing this impressive scientific capability is an experienced and talented operational force supported by a handpicked group of skilled technicians. According to the Commander, Col. Robert A. Meisenheimer, "AFTAC personnel have met every challenge. Their dedication to mission accomplishment is unwavering, and I am extremely proud of them."

AFTAC's current goal is to improve AEDS capability to provide appropriate inputs to DoD policies regarding nuclear arms-control issues, while contributing to the nation's ability to monitor international agreements in these areas. A significant portion of this effort involves comprehensive research and development programs designed to increase understanding of the complex technical problems associated with detection and identification of events in the atmosphere, underground, and in space. AFTAC's Vela Seismological Center at Alexandria, Va., conducts an extensive seismological research program, while the Vela Satellite Program provides basic research and investigation of events in space. Almost $16 million was allocated last year for research and development programs. ■

Albert F. Simpson Historical Research Center

THE Albert F. Simpson Historical Research Center is the repository for Air Force historical documents. The Center's collection, begun in Washington during World War II, moved to Maxwell AFB, Ala., in 1949. Today it consists of 45,000,000 pages devoted to the service's history, and represents the largest and most valuable organized collection of documents on US military aviation in the world.

Named in 1972 for Dr. Albert F. Simpson, the Air Force Historian from 1946 to 1969, the Center was established on July 1, 1979, as a Direct Reporting Unit. It is collocated with the Air University and provides research facilities for professional military education students, faculty, and visiting scholars. More than eighty-five percent of the Center's pre-1955 holdings are declassified. The entire collection is recorded on 16-mm microfilm, with microfilm copies deposited at the National Archives and Record Service, Washington, D. C., and at the Office of Air Force History, Bolling AFB, D. C.

Center holdings consist largely of periodic unit histories prepared by the major commands, numbered air forces, and other service organizations. These histories provide comprehensive coverage of Air Force activities beginning in 1942, when the President authorized the program. Extensive primary source material is attached to the histories, greatly enhancing their value.

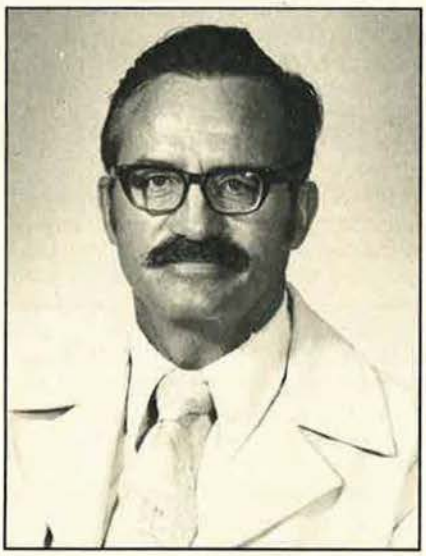
Special collections complement the unit histories. Among them are historical monographs; end-of-tour reports; joint and combined command documents; aircraft record cards; and materials from the US Army, British Air Ministry, and the German Air Force. The Center also houses the personal papers of key retired Air Force leaders and transcripts of their oral-history interviews. About 6,000 documents are added annually.

In 1980 the Center adopted automatic data processing as a finding aid and began to index and abstract all of the collections. The Inferential Retrieval Index System, or IRIS, will become operational in 1983. The collection will eventually become accessible through computers throughout the Air Force.

Materials at the Center are used for professional military education, research by civilian scholars, and the development of Air Force plans, programs, analyses, legal cases, and investigations. Information obtained from Center records appears in orientation programs, public information releases, unit reunions, Air Force responses to inquiries from Congress and other government agencies, research papers, books, television and movie scripts, and many other products.

The Center is organized into four divisions:

- **Reference.** Maintains documents and microfilm, answers inquiries about holdings, produces bibliographies, and provides other services.
- **Research.** Writes books and papers, traces lineage of Air Force units, prepares listing of active Air Force organizations, determines aerial victory and combat credits, and performs other research services.
- **Oral History.** Conducts oral history interviews, monitors the USAF end-of-tour report program, and collects personal papers.
- **Technical Services.** Accessions, catalogs, and indexes documents; develops automatic data processing and microfilming for the Center; and coordinates system applications for the Air Force history program. ■



Lloyd H. Cornett, Jr., Director, Simpson Center.

Air Force Reserve

THE Air Force Reserve (AFRES) continued to meet its Total Force wartime commitments throughout the year and conducted various peacetime missions as by-products of training.

To maintain readiness, Air Force Reservists took part in some sixty joint and command-unique exercises that tested the capabilities, tactics, and proficiency of Reserve units in simulated combat environments—including the execution of new missions and the employment of new weapon systems.

The largest and most comprehensive Air Force Reserve exercise to date—Condor Redoubt 81—involved the simulated mobilization of the command's more than 60,000 Reservists and the deployment of 3,674 personnel, aircraft, and equipment to forward operating locations (FOLs) in the US, Europe, Canada, and Panama. Including fighter, tanker, airlift, and rescue support for air and ground joint operations, the exercise successfully demonstrated the ability of AFRES and other reserve components to integrate effectively with regular forces.

Westover AFB, Mass., served as a major FOL, exercise command headquarters, and a medical command center for a rigorous test of strategic and tactical aeromedical evacuation procedures. For the first time, a complete aeromedical airlift system was operated by Reservists. Using an air-transportable hospital and classroom instruction at a local university, some 1,000 medical Reservists also received training in various medical skills and provided "real-world" medical support for the exercise.

In Denver, the Air Reserve Personnel Center (ARPC) played a key role in Condor Redoubt 81 by demonstrating its ability to mobilize Air Force Reservists in a national emergency. During the course of the exercise, ARPC contacted 3,370 Reservists and retired regulars with mailgrams simulating their recall to active duty. The mailgrams explained the reason for the exercise and asked the Reservists or retired regulars to call an ARPC toll-free number and report the time the mailgram was received. Later, a separate survey form was mailed to certain Reservists in order to gather complete information on their present situations and ability to respond to a future mobilization.

Other exercises involving AFRES airlift elements included: Reforger—more than 165 tons of equipment and 810 people airlifted to and within West Germany; Bold Eagle 81—Army troops of the 101st Airborne Division, at Fort Campbell, Ky., airlifted to Eglin AFB, Fla.; and Cold Fire 81, a multifaceted joint exercise also in West Germany, employing Air Reserve Forces C-130s.

A medical technician from the 32d Aeromedical Evacuation Group, Kelly AFB, Tex., secures a patient before takeoff. The 32d is part of the AFRES 433d Tactical Airlift Wing, a MAC-gained unit.

AFRES fighter units comprise nine percent of the USAF's tactical fighter squadrons. Last year, these Reserve units flew 35,193 hours in varied training missions at home and abroad. Training included participation in the Red Flag series and its Canadian equivalent, Maple Flag, as well as deployments to Hawaii and Denmark.

When fighter units from active and reserve forces units met at Gunsmoke 81, an air tactics exercise, a Reservist amassed 1,495 of 1,500 possible points to win the overall navigation/attack award during this first Air Force tactical gunnery and bombing competition since 1962.

In support of MAC's global airlift mission, AFRES strategic associate and tactical airlift units logged more than 149,000 flying hours—air-dropping or air-landing approximately 124,000 people and some 9,800 tons of cargo. Associate aeromedical evacuation

Maj. Gen. Richard Bodycombe, Commander, AFRES.

(Temporarily Vacant) Senior Enlisted Advisor, AFRES.

Kicking up a cloud of dust, an AFRES C-130 Hercules lands on a dirt runway during a tactical training exercise. Several versions of the C-130 are flown by AFRES airlift, weather reconnaissance, and search and rescue units.

crews flew more than 1,300 line missions, carrying more than 43,000 patients.

Life-saving data from hurricanes and other storms were furnished to national meteorological agencies by the 920th Weather Reconnaissance Group, Keesler AFB, Miss. Flying the WC-130, the Reserve "Storm Trackers" spent nearly 900 flying hours conducting weather surveillance activities, including the penetration of eight hurricanes and three tropical storms.

Air Force Reserve search and rescue units flew 707 hours on eighty-six missions, resulting in forty-nine saves. These missions included Space Shuttle support.

Assisting in entomological control programs, Air Force Reserve C-123 crews sprayed 400,000 acres in the US to help eradicate harmful insects. AFRES provides all of the Air Force's aerial spray capability.

The command realized new missions and requirements as the new year began. Added to the list of gaining commands was the Electronic Security Command. Reserve ESC personnel would augment ESC units deployed worldwide in wartime, conducting electronic communications surveillance. Existing Air Force Communications Command-gained Reserve "Comm" flights continued to provide vital communications support. Approximately twenty-five percent of these units were tasked to support active and Reserve flying unit deployments and exercises during the past year.

AFRES is providing one of six heavy construction and repair Civil Engineering Squadrons. This is a 400-person, AFLC-gained unit, headquartered at Kelly AFB, Tex., with a sizable detachment at Barksdale AFB, La. AFRES also contributes approximately fourteen percent of the base emergency engineering forces, trained in force beddown, emergency airfield damage repair, operation and maintenance of installations, and fire protection/crash rescue. The newest engineering and services mission finds Reservists augmenting the active force with a mobile force of 600 to provide base services, including dining hall and field kitchen support.

AFLC-gained combat logistics support squadrons (CLSS) at Wright-Patterson AFB, Ohio; Robins AFB, Ga.; Tinker AFB, Okla.; Kelly AFB, Tex.; Hill AFB, Utah; and McClellan AFB, Calif., are tasked with the wartime mission of aircraft battle damage repair. CLSS teams of maintenance, supply, and transportation specialists train to return aircraft to serviceable condition in the shortest time possible.

In aerial refueling, the command's first SAC associate unit, the 78th Air Refueling Squadron (Assoc.) at Barksdale AFB, La., commenced operations on November 1, 1981. With their SAC counterparts, 78th AREFS crews fly the new KC-10 tanker/cargo aircraft. Other refueling activities during the year saw three KC-135-equipped AFRES units flying more than 9,500 hours, transferring nearly 28,000,000 pounds of fuel to 4,160 airborne receiver aircraft. The effort represented four percent of the Air Force's air refueling capability during the past year. Tasking included augmentation of the European Tanker Task Force in support of SAC's global refueling mission.

To help move cargo and personnel in the Pacific theater, a new Reserve aerial port unit was established at Andersen AB, Guam. At present, forty-seven percent of the Military Airlift Command's aerial port manpower is provided by the Air Force Reserve.

Results of productive training also brought the command recognition: In a mass ceremony at Portland IAP, Ore., on May 16, 1981, seventy-five Air Medals and fifteen Air Force Commendation Medals were awarded to members of the Reserve's 303d, 304th, and 305th Aerospace Rescue and Recovery Squadrons for saving sixty-one people during the Mount St. Helens volcanic eruption; the Hennessy Trophy for the best Reserve dining facility was won by the 934th Tactical Airlift Group at Minneapolis-St. Paul; and the 72d Aeromedical Evacuation Squadron, McGuire AFB, N. J., garnered the Schafer Trophy for outstanding aeromedical operations.

People remained the command's chief concern. Reserve manning exceeded its goal for the fourth straight year as 12,030 persons joined the ranks. The 765 over-objective total included prior and nonprior-service accessions. In medical recruitment alone, Reserve officials project a gain of 5,000 personnel over the next five years for a total strength of 10,000 medical Reservists. As of December 1981, 6,713 Air Reserve Technicians (ART), almost 4,000 non-ART civilians, and nearly 500 full-time military personnel comprised the command's day-to-day work force. Unit-assigned and individual program Reservists totaled slightly more than 62,000.

Air Force Reserve field unit operations continued to be managed by three numbered air forces: Fourth Air Force, McClellan AFB, Calif.; Tenth Air Force, Bergstrom AFB, Tex.; and Fourteenth Air Force at Dobbins AFB, Ga. Hq. Air Force Reserve at Robins AFB, Ga., manages the overall program and operations of the command's fleet of more than 450 aircraft, as well as associate unit operations.

The Air Reserve Personnel Center, an element of AFRES, provides personnel support to the Air Force Reserve in addition to its mobilization capability.

As a personnel center, ARPC assists all Reserve Force people, including Air National Guard and Air Force Reserve units, and serves as a managerial focal point for all individual program Reservists—including those who train with the active Air Force. The Center also works closely with the Air Force Manpower and Personnel Center (AFMPC) to provide reserve personnel information to

AIR FORCE RESERVE FLYING WINGS AND ASSIGNED UNITS

Air Force	Wing Hq.	Group	Squadron	Type Aircraft	Location	Gaining Command
		920th WRG	815th WRS	WC-130H	Keesler AFB, Miss.	MAC
	349th MAW (Assoc)		301st MAS (Assoc)	C-5	Travis AFB, Calif.	MAC
			312th MAS (Assoc)	C-5	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	HC-130H/N, HH-3E	Selfridge ANGB, Mich.	MAC
			301st ARRS	HC-130H/N, HH-3E	Homestead AFB, Fla.	MAC
Fourth Air Force (Hq., McClellan AFB, Calif.)			303d ARRS	HC-130H	March AFB, Calif.	MAC
			304th ARRS	UH-1N, HH-1H	Portland IAP, Ore.	MAC
Maj. Gen. Sloan R. Gill, Commander	433d TAW		68th TAS	C-130B	Kelly AFB, Tex.	MAC
		934th TAG	96th TAS	C-130A	Minneapolis-St. Paul IAP, Minn.*	MAC
	440th TAW		95th TAS	C-130A	Gen. Billy Mitchell Fld. Wis.*	MAC
		927th TAG	63d TAS	C-130A	Selfridge ANGB, Mich.	MAC
		928th TAG	64th TAS	C-130A	O'Hare IAP, Ill.*	MAC
	442d TAW		303d TAS	C-130E	Richards-Gebaur AFB, Mo.*	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
			302d SOS	CH-3E	Luke AFB, Ariz.	TAC
		919th SOG	711th SOS	AC-130A	Eglin AFB, Fla. (Aux. 3)	TAC
	301st TFW		457th TFS	F-4D	Carswell AFB, Tex.	TAC
		507th TFG	465th TFS	F-4D	Tinker AFB, Okla.	TAC
		508th TFG	466th TFS	F-105D/F	Hill AFB, Utah	TAC
Tenth Air Force (Hq., Bergstrom AFB, Tex.)	434th TFW		45th TFS	A-10A	Grissom AFB, Ind.	TAC
		917th TFG	47th TFS	A-10A	Barksdale AFB, La.	TAC
		926th TFG	706th TFS	A-10A	New Orleans NAS, La.*	TAC
Maj. Gen. John E. Taylor, Jr., Commander	452d AREFW(H)		336th AREFS(H)	KC-135	March AFB, Calif.	SAC
		931st ARG(H)	72d AREFS(H)	KC-135	Grissom AFB, Ind.	SAC
		940th ARG(H)	314th AREFS(H)	KC-135	Mather AFB, Calif.	SAC
			78th AREFS(H) (Assoc)	KC-10	Barksdale AFB, La.	SAC
	482d TFW		93d TFS	F-4C	Homestead AFB, Fla.	TAC
		924th TFG	704th TFS	F-4D	Bergstrom AFB, Tex.	TAC
		906th TFG	89th TFS	F-4D	Wright-Patterson AFB, Ohio	TAC[1]
		932d AAG (Assoc)	73d AAS (Assoc)	C-9	Scott AFB, Ill.	MAC
	94th TAW		700th TAS	C-7A	Dobbins AFB, Ga.*	MAC
		907th TAG	356th TAS	C-130A[2]	Rickenbacker ANGB, Ohio	MAC
		908th TAG	357th TAS	C-7A	Maxwell AFB, Ala.	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
Fourteenth Air Force (Hq., Dobbins AFB, Ga.)	439th TAW		337th TAS	C-130B	Westover AFB, Mass.*	MAC
			731st TAS	C-123K	Westover AFB, Mass.*	MAC
		911th TAG	758th TAS	C-130A	Greater Pittsburgh IAP, Pa.*	MAC
		914th TAG	328th TAS	C-130A	Niagara Falls IAP, N. Y.*	MAC
Maj. Gen. James E. McAdoo, Commander	459th TAW		756th TAS	C-130E	Andrews AFB, Md.	MAC
		910th TAG	757th TAS	C-130B	Youngstown MAP, Ohio*	MAC
		913th TAG	327th TAS	C-130E	Willow Grove NAS, Pa.*	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

AAG (Assoc) Aeromedical Airlift Group (Associate)
ARRS Aerospace Rescue and Recovery Squadron
AREFW(H) Air Refueling Wing (Heavy)
MAW (Assoc) Military Airlift Wing (Associate)
RWRW Rescue and Weather Reconnaissance Wing
SOG Special Operations Group
TAW Tactical Airlift Wing
TFW Tactical Fighter Wing
WRG Weather Reconnaissance Group

*Indicates AFRES Base
[1]Activates July 1, 1982
[2]Retains 3 C-123Ks for aerial spray mission

AFMPC's advanced personnel data system.

ARPC performs myriad functions for Reservists and the Total Force; it convenes selection boards for officer promotion, education, airman commissioning, and other screening boards; monitors and directs personnel training and classification; processes discharges and retirements; processes recalls of officers and airmen to active duty; and assists the active force by providing reserve help in time of critical, peacetime needs. With 180 active-duty and 700 civilian people, ARPC serves some 250,000 members of the Air Force Reserve and Air National Guard.

The Center has implemented many new customer service initiatives to accomplish its jobs. Among the customer services provided are: toll-free telephone service, individualized officer/airman counseling, and improved computerized accounting systems for recording reserve participation. Having been called upon several times to mobilize large numbers of reserve personnel during national emergencies (Berlin, Cuba, Pueblo incident), ARPC has proved its ability to mobilize large numbers of reserve force members, and it's prepared to do so again. ■

Air National Guard

WITH both a state and a federal mission, the Air National Guard (ANG) is unique among the world's reserve military air forces. This twofold mission requires the Air Guard to provide trained and equipped units to augment the active force during times of crisis, national emergencies, or war and, also, to provide a disciplined force to protect life and property during natural disasters, civil disorders, or other emergencies.

Air Guard units in a nonmobilized status are commanded by the governors of the fifty states, the Commonwealth of Puerto Rico, the Territories of the Virgin Islands and of Guam, and the Commanding General of the District of Columbia. All units in a state are responsible to the governor, who is represented in the state or territory chain of command by the Adjutant General.

ANG units may be called for federal service by the President to enforce federal authority, suppress insurrection, or repel invasion. ANG units may also be ordered to active duty by Congress. During peacetime, all Air Guard units are assigned to "gaining" Air Force major commands. The major commands establish unit training standards, provide advisory assistance, and evaluate unit training, safety, and readiness programs.

More than 98,500 Guard people support a force of twenty-four wings, ninety-one flying squadrons, and 237 independent nonflying mission units. The flying squadrons operate nineteen different types of aircraft, representing seventeen percent of the USAF Total Force. There are 154 ANG sites.

The ANG is modernizing its units consistent with Air Force requirements. It was recently announced that, in FY '83, South Carolina's 169th Tactical Fighter Group will be the first Air National Guard unit to convert to the new F-16 Fighting Falcon. Aging F-101 interceptors will be replaced with F-4s in FY '82 and OA-37s will continue to replace O-2s. New C-130Hs will continue to enter the force and provide enhanced tactical airlift support.

Currently, the Air National Guard provides sixty-six percent of the Air Force's fighter-interceptor force, fifty-seven percent of the tactical reconnaissance force, forty-two percent of the electronic combat capability, thirty-eight percent of the tactical air support, thirty percent of the tactical airlift, twenty-seven percent of tactical fighters, seventeen percent of the air refueling tankers, and fifteen percent of the rescue and recovery capability.

In addition, Air Guard A-7, RF-4, and EC-130 units are an integral part of the Rapid Deployment Force (RDF). Aircraft and crews of the 130th Tactical Airlift Group, West Virginia ANG, deployed to Cairo West AB, Egypt, in November 1981, to provide intratheater airlift during Exercise Bright Star. During that exercise, the 242d Combat Communications Squadron, Washington ANG, provided the majority of the communications support. Guard communicators also participated in various European exercises as well as Exercise Team Spirit in Korea.

During 1981, Air National Guard units scored highly in three Air Force competitions. Competing against active-duty, Guard, and Air Force Reserve units, the Colorado's Guard's 140th Tactical Fighter Wing won overall top team and top pilot awards during Gunsmoke 81, TAC's bombing and gunnery competition. A Guard weapons loading team from Montana's 120th Fighter Interceptor Group won top honors in the ADTAC Loadeo. During Photo Finish, an ANG-sponsored reconnaissance competition, the Alabama Guard's 187th Tactical Reconnaissance Group was named best overall unit in competition with active-duty, Guard, and Naval Reserve units.

In 1981, the ANG flew 417,476 hours worldwide and achieved the lowest flying accident rate in its history—1.7 accidents per 100,000 flying hours. Also achieved was the lowest number of fa-

Maj. Gen. John B. Conaway, Director, ANG.

CMSgt. Lynn E. Alexander, Senior Enlisted Advisor, ANG

THE AIR NATIONAL GUARD BY MAJOR COMMAND ASSIGNMENT

(As of April 1, 1982)

STRATEGIC AIR COMMAND

KC-135 Stratotanker

101st	Air Refueling Wing	Bangor, Me.
126th	Air Refueling Wing	Chicago, Ill.
141st	Air Refueling Wing	Fairchild AFB, Wash.
171st	Air Refueling Wing	Pittsburgh, Pa.
128th	Air Refueling Group	Gen. Billy Mitchell Field, Wis.
134th	Air Refueling Group	Knoxville, Tenn.
151st	Air Refueling Group	Salt Lake City, Utah
157th	Air Refueling Group	Pease AFB, N. H.
160th	Air Refueling Group	Rickenbacker ANG Base, Ohio
161st	Air Refueling Group	Phoenix, Ariz.
170th	Air Refueling Group	McGuire AFB, N. J.
189th	Air Refueling Group	Little Rock AFB, Ark.
190th	Air Refueling Group	Forbes Field ANG Base, Kan.

MILITARY AIRLIFT COMMAND

C-130 Hercules

118th	Tactical Airlift Wing	Nashville, Tenn.
133d	Tactical Airlift Wing	Minneapolis/St. Paul, Minn.
136th	Tactical Airlift Wing	Dallas NAS, Tex.
137th	Tactical Airlift Wing	Oklahoma City, Okla.
146th	Tactical Airlift Wing	Van Nuys ANG Base, Calif.
109th	Tactical Airlift Group	Schenectady, N. Y.
130th	Tactical Airlift Group	Charleston, W. Va.
135th	Tactical Airlift Group	Baltimore, Md.
139th	Tactical Airlift Group	St. Joseph, Mo.
143d	Tactical Airlift Group	Quonset Point, R. I.
145th	Tactical Airlift Group	Charlotte, N. C.
153d	Tactical Airlift Group	Cheyenne, Wyo.
164th	Tactical Airlift Group	Memphis, Tenn.
165th	Tactical Airlift Group	Savannah, Ga.
166th	Tactical Airlift Group	Wilmington, Del.
167th	Tactical Airlift Group	Martinsburg, W. Va.
172d	Tactical Airlift Group	Jackson, Miss.
176th	Tactical Airlift Group	Anchorage, Alaska
179th	Tactical Airlift Group	Mansfield, Ohio

HC-130 Hercules/HH-3 Jolly Green Giant

106th	Aerospace Rescue & Recovery Group	Suffolk Co. Airport, N. Y.
129th	Aerospace Rescue & Recovery Group	Moffett NAS, Calif.

PACIFIC AIR FORCES

F-4C Phantom

154th	Composite Group	Hickam AFB, Hawaii

TACTICAL AIR COMMAND

A-7D Corsair II

121st	Tactical Fighter Wing	Rickenbacker ANG Base, Ohio
127th	Tactical Fighter Wing	Selfridge ANG Base, Mich.
132d	Tactical Fighter Wing	Des Moines, Iowa
140th	Tactical Fighter Wing	Buckley ANG Base, Colo.
112th	Tactical Fighter Group	Pittsburgh, Pa.
114th	Tactical Fighter Group	Sioux Falls, S. D.
138th	Tactical Fighter Group	Tulsa, Okla.
150th	Tactical Fighter Group	Kirtland AFB, N. M.
156th	Tactical Fighter Group	San Juan, Puerto Rico
162d	Tactical Fighter Group**	Tucson, Ariz.
169th	Tactical Fighter Group	McEntire ANG Base, S. C.
178th	Tactical Fighter Group	Springfield, Ohio
180th	Tactical Fighter Group	Toledo, Ohio
185th	Tactical Fighter Group	Sioux City, Iowa
192d	Tactical Fighter Group	Richmond, Va.

A-10 Thunderbolt II

128th	Tactical Fighter Wing	Truax Field, Wis.
174th	Tactical Fighter Wing	Syracuse, N. Y.
103d	Tactical Fighter Group	Windsor Locks, Conn.
104th	Tactical Fighter Group	Westfield, Mass.
175th	Tactical Fighter Group	Baltimore, Md.

OA-37B Dragonfly

110th	Tactical Air Support Group	Battle Creek ANG Base, Mich.
111th	Tactical Air Support Group	Willow Grove NAS, Pa.
182d	Tactical Air Support Group	Peoria, Ill.

F-105G Thunderchief

116th	Tactical Fighter Wing	Dobbins AFB, Ga.

F-4C Phantom

122d	Tactical Fighter Wing	Fort Wayne, Ind.
131st	Tactical Fighter Wing	St. Louis, Mo.
149th	Tactical Fighter Group	Kelly AFB, Tex.
159th	Tactical Fighter Group	New Orleans NAS, La.
181st	Tactical Fighter Group	Terre Haute, Ind.
188th	Tactical Fighter Group	Fort Smith, Ark.

F-4D Phantom

108th	Tactical Fighter Wing	McGuire AFB, N. J.
113th	Tactical Fighter Wing	Andrews AFB, Md.
158th	Tactical Fighter Group	Burlington, Vt.
183d	Tactical Fighter Group	Springfield, Ill.
184th	Tactical Fighter Group**	McConnell AFB, Kan.

RF-4C Phantom

117th	Tactical Reconnaissance Wing	Birmingham, Ala.
123d	Tactical Reconnaissance Wing	Louisville, Ky.
124th	Tactical Reconnaissance Group	Boise, Idaho
148th	Tactical Reconnaissance Group	Duluth, Minn.
152d	Tactical Reconnaissance Group	Reno, Nev.
155th	Tactical Reconnaissance Group	Lincoln, Neb.
186th	Tactical Reconnaissance Group	Meridian, Miss.
187th	Tactical Reconnaissance Group	Montgomery, Ala.

O-2A Super Skymaster

105th	Tactical Air Support Group	White Plains, N. Y.
163d	Tactical Air Support Group	Ontario, Calif.

EC-130E

193d	Electronic Combat Group	Harrisburg, Pa.

AIR DEFENSE UNITS

F-101 Voodoo

147th	Fighter Interceptor Group	Ellington AFB, Tex.*

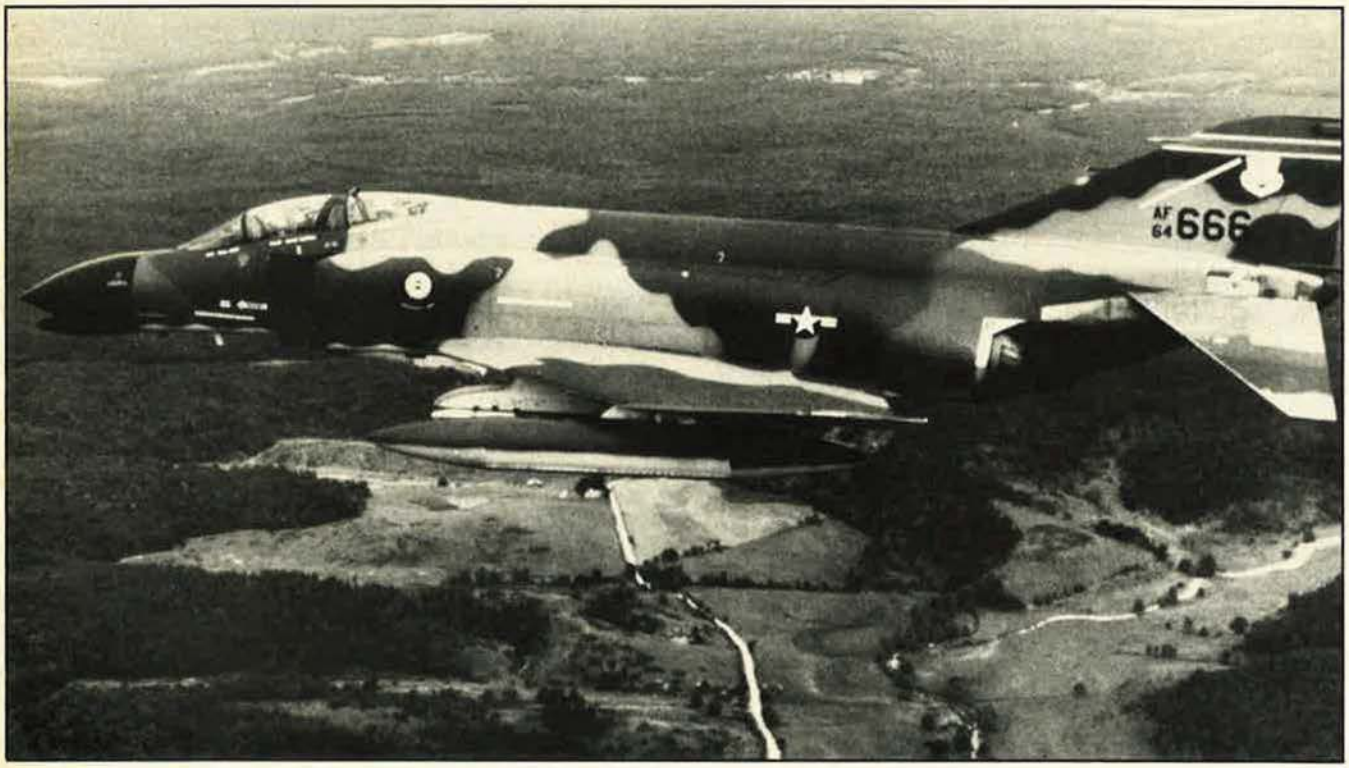
F-106 Delta Dart

102d	Fighter Interceptor Wing	Otis AFB, Mass.*
144th	Fighter Interceptor Wing	Fresno, Calif.
120th	Fighter Interceptor Group	Great Falls, Mont.
125th	Fighter Interceptor Group	Jacksonville, Fla.
177th	Fighter Interceptor Group	Atlantic City, N. J.

F-4C/D Phantom

107th	Fighter Interceptor Group	Niagara Falls, N. Y.
119th	Fighter Interceptor Group	Fargo, N. D.
142d	Fighter Interceptor Group	Portland, Ore.
191st	Fighter Interceptor Group	Selfridge ANG Base, Mich.

*No longer a major active Air Force base.
**Replacement Training Unit (RTU).



An F-4 from the Missouri Air National Guard's 131st Tactical Fighter Wing flies across the mid-America landscape during a routine training mission to improve aircrew proficiency.

talities ever recorded by the Air Guard.

For twenty-eight years, the ANG has had an air-defense alert mission. KC-135 refueling units also perform an around-the-clock alert mission and continue to participate in operational missions supporting the European Tanker Task Force in the US.

ANG C-130s provide airlift support for the US Southern Command in Panama on a rotational basis, perform Distant Early Warning Line and Arctic ice cap resupply missions, and aid the US Forest Service with Modular Airborne Fire-Fighting capabilities. All Air Guard A-7 units share a continuous rotational commitment in Panama, called Coronet Cove, which provides close air support in joint training programs with the US Army.

Civil Engineering flights continue to provide engineering and fire-fighting forces trained and equipped to deploy on short notice in support of active Air Force installations and ANG sites, as well as participate in JCS exercises. RED HORSE Civil Engineering squadrons provide self-sufficient, deployable engineering teams to perform heavy repair and maintenance on air bases and remote sites. Also a composite services force is being organized to provide food service, billeting, and mortuary affairs support at deployment locations.

There are more than 20,000 Air Guard people in 188 communications-electronic units. These provide fifty percent of the Air Force's electronic installation capability. They install, repair, and restore communications, navigational aid, and air traffic control equipment. ANG communications units represent seventy-five percent of the people and seventy percent of the equipment used in combat communications and air traffic services roles. Guard tactical control units comprise fifty percent of the Air Force's combat traffic direction capability.

A new Air Guard tactical radar unit was activated in 1981, the 111th Tactical Control Flight in Phoenix, Ariz. This will be the first of two ANG units to receive the new USAF TPB-1C tactical radar system.

Thirty-nine ANG weather flights provide weather support to Army National Guard and Army Reserve divisions and brigades, as well as to the USAF Tactical Weather System.

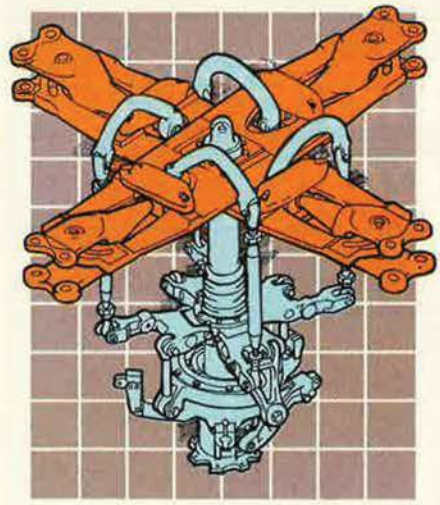
Eighty-five ANG medical units performed their annual training in active-duty Air Force hospitals and clinics during FY '81. Individual critical manning assistance was also provided to selected Air Force hospitals and clinics in the areas of anesthesiology, surgery, dentistry, optometry, obstetrics, gynecology, and radiology, as well as operating room nurses and enlisted medical specialties. Air Guard physicians, dentists, and nurses participated in Medical Red Flag Exercises at Lackland AFB, Tex., and Andrews AFB, Md. Two additional Medical Red Flags are planned for FY '82.

Since 1976, the Air National Guard has participated in thirty-two overseas deployments, gaining realistic training in locations where the units may be called on to fight. Realistic training is also being accomplished through joint exercises in which the Air Guard has provided a majority of the combat communications and tactical control forces, in addition to participation by flying units and their attached medical elements.

The ANG is truly a community force of local families. Seventy-one percent of Air Guard men and women are married and have some 200,000 dependents. In concert with active Air Force emphasis on the family, local unit chaplains and other staff agencies are developing family support programs to provide better family stability when the unit is mobilized.

Deployments, exercises, and direct support to the Air Force on a day-to-day basis give Air National Guard people the constant training needed to maintain a high level of readiness at minimum expense to the American taxpayer. ■

Promote an over-achiever.



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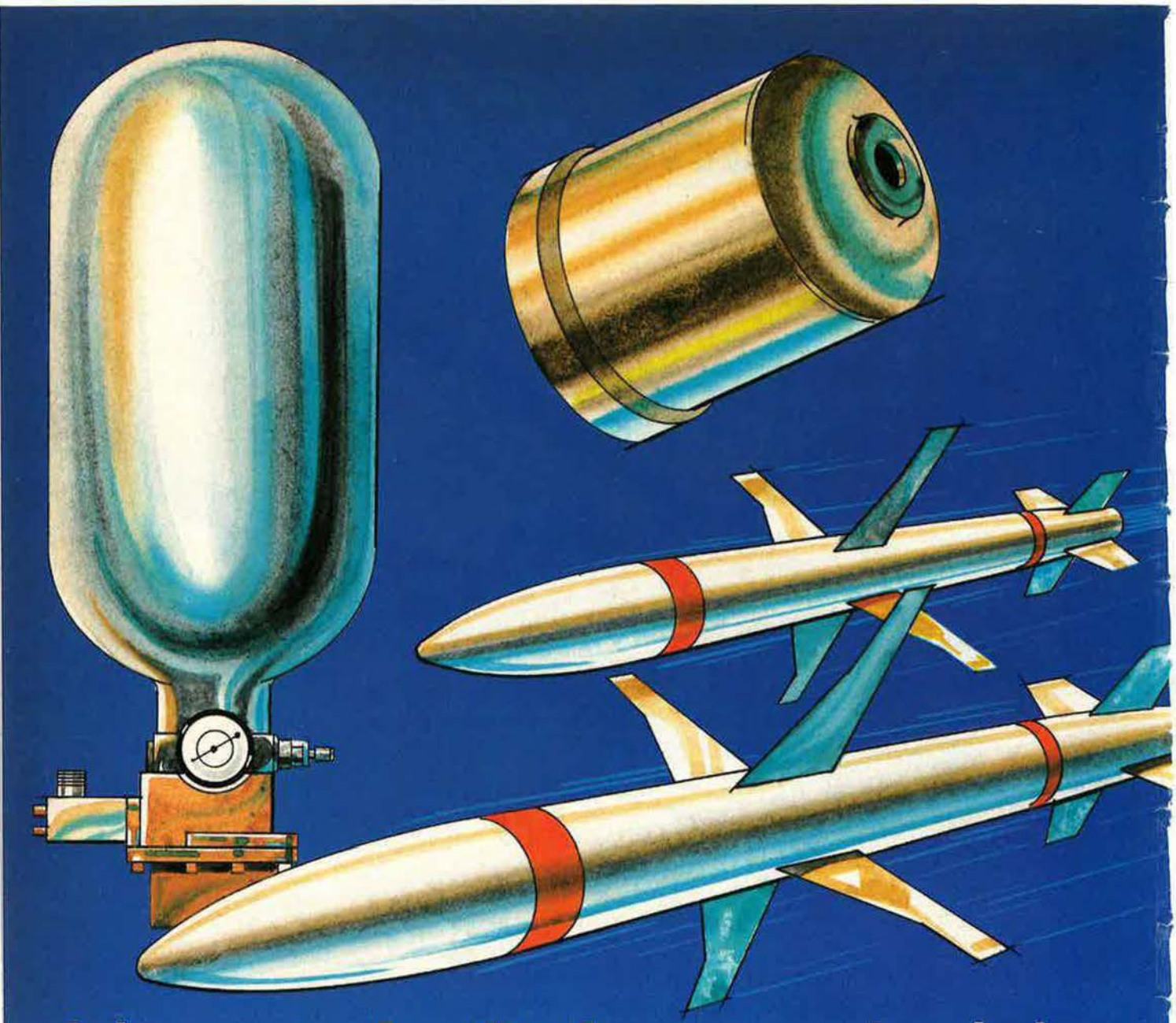

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GALLERY OF USAF WEAPONS

BY SUSAN H. H. YOUNG, ASSOCIATE COMPILER, JANE'S ALL THE WORLD'S AIRCRAFT
EDITED BY JOHN W. R. TAYLOR, EDITOR, JANE'S ALL THE WORLD'S AIRCRAFT

Bombers

B-1B

On October 2, 1981, President Reagan announced his decision to acquire a long-range, high subsonic version of the original B-1, the B-1B, as the next generation multirole bomber. It will be a heavy gross weight bomber powered by four 30,000 lb thrust class augmented General Electric turbofan engines. Its weapons bays will provide the flexibility to carry nuclear air-to-surface missiles, nuclear or conventional gravity bombs, mines, other weapons, or fuel, as required by the assigned mission.

While smaller than the B-52 bomber, the B-1B will carry a considerably greater weapons load. This is possible because of improved engine performance and advanced aerodynamic technology. Using long- and short-range standoff weapons, together with gravity bombs, the B-1B will provide the ability to attack imprecisely located and fixed targets.

Two major factors increase significantly the pre-launch survivability of the B-1B over that of the USAF's B-52s. Firstly, the use of a variable-geometry, or swing-wing, configuration enables the aircraft to become airborne more quickly, using much shorter runways. At low speeds, during takeoffs and landings, the B-1B's wings will be placed in the full-forward position, because a straight wing is far more effective at slow speeds than a swept wing. For high subsonic operation or low-level penetration, the wings will be changed to the full-swept position. Secondly, the new aircraft will be designed to operate from less sophisticated airfields, with shorter runways, thus reducing the possibility of a successful surprise enemy missile attack, as the B-1B force would be dispersed throughout the country.

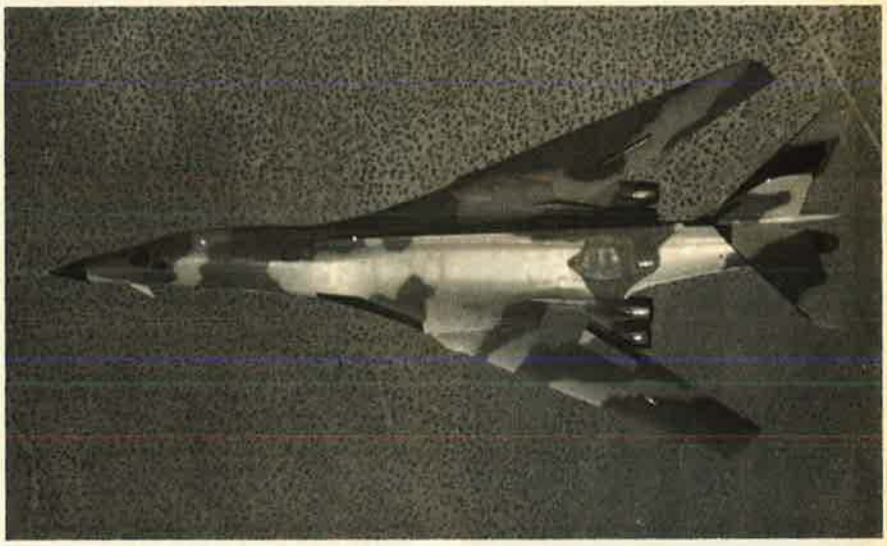
The B-1B also will be equipped with electronic jamming equipment, infrared countermeasures, radar location and warning systems, and other devices necessary to defeat enemy defensive systems. To facilitate very low-level penetration of sophisticated enemy defenses, the B-1B will have a terrain-following radar system that will allow it to follow "the nap of the earth" at near supersonic speeds. This ability will make it extremely difficult for enemy defensive radar systems to track the B-1B, as hills, mountains, towers, buildings, and even trees will clutter the radar screen. Flying low at high speeds also negates the effectiveness of enemy interceptors, because it would be difficult to acquire and track B-1Bs flying close to the ground.

The differences between the original B-1 and the B-1B will be difficult to identify by external appearance. The first B-1B will resemble closely the external configuration of B-1 aircraft No. 4. The major changes will be internal in nature. Structurally, the B-1B will be strengthened to increase the gross takeoff weight from 395,000 lb to 477,000 lb. Plans include provisions to carry weapons externally (up to 14 air-launched cruise missiles along the fuselage); provisions to modify the forward weapons bays to permit internal carriage of cruise missiles and additional fuel; adding radar absorption materials to reduce further the aircraft's radar cross-section (the radar signature is already significantly less than that of the B-52); and use of ejection seats instead of the crew ejection capsule (this change was incorporated into the fourth B-1 prototype). Finally, the variable engine inlets, enabling Mach 2 speeds by the original B-1, will be replaced by fixed inlets optimized for the B-1B's high subsonic, low-altitude penetration mission.

Both offensive and defensive electronics systems are much improved over the original B-1. The offensive avionics include modern forward-looking and terrain-following radars, an extremely accurate inertial navigation system, the Air Force Satellite Communications System, and much of the new Offensive Avionics System (OAS) package being installed in B-52Gs and Hs (strategic Doppler radar and radar altimeter). The defensive avionics package is built around the ALQ-161 electronic countermeasures (ECM) system with an extended frequency coverage. This flexible, reprogrammable system automatically detects and analyzes radars illuminating the aircraft. A central computer then selects an appropriate countermeasure and applies the best ECM technique at precisely the right time, with the right power and optimal angle to protect the aircraft from the probing radar. The defensive avionics package also includes the ALQ-153 tail warning system and expendables such as chaff and flares.

It is planned to use three aircraft for B-1B development, comprising the second B-1 prototype (last flown in February 1979), the fourth B-1 prototype (which was flying until April 1981), and the first production B-1B. A request to procure seven B-1Bs has been included in the FY '83 budget proposals. The first B-1B is scheduled for delivery in December 1984, with all 100 production models delivered by 1988.

Contractor: Rockwell International, North American Aircraft Operations.
Power Plant: four General Electric F101-GE-102 turbofan engines: each 30,000 lb thrust class.
Accommodation: four: pilot, copilot, and two systems operators (offensive and defensive). Provision for two instructors.
Dimensions: span spread 137 ft, fully swept 78 ft, length 147 ft, height 34 ft.
Weight: max operating weight 477,000 lb.
Performance: max speed high subsonic (supersonic at altitude); range, unrefueled, intercontinental.
Armament: nuclear/non-nuclear, 125,000 lb.



B-1 prototype

B-52H Stratofortress

B-52 Stratofortress

Although well into its third decade of operational service, the B-52 Stratofortress still constitutes the major piloted element of SAC. Three hundred and sixteen aircraft, supported by small numbers of training, backup, and test aircraft, make up the B-52 operational force, and are 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 and support for NATO exercises.

Since first entering USAF service in 1955, the B-52 has undergone numerous improvement programs in order to satisfy prevailing defense requirements. 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, as they have external racks and a reconfigured bomb bay capable of carrying larger conventional weapon loads than 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, and 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, giving an increased range of more than 10,000 miles, and has 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 Hs were modified to carry 20 AGM-69A Short-Range Attack Missiles (SRAM), six under each wing and eight in the bomb bay. Additionally, all Gs and Hs 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 improvement programs, initiated in 1974, about 270 Gs and Hs are being progressively updated with Phase VI avionics. This includes ALQ-122 SNOE (Smart Noise Operation Equipment) countermeasures and AN/ALQ-155(V) advanced ECM; an AFSATCOM kit permitting worldwide communication via satellite; a Dalmo Victor ALR-46 digital radar warning receiver; Westinghouse ALQ-153 pulse-Doppler tail warning radar; and ITT Avionics ALQ-172 jammers. Boeing is also contracted to define and design an Offensive Avionics System (OAS) to upgrade the navigation and weapons delivery of the B-52G/H. This is a digital-based, solid-state system, and includes Tercom (terrain comparison) guidance. The first use of the OAS to launch a live SRAM occurred in June last year; the program is scheduled for completion by FY '87.

Because of the long range and updated penetration capabilities of their aircraft, two B-52H wings of the 57th Air Division at Minot and Grand Forks AFBs, N. D., have been assigned to the Strategic Projection Force to support the Rapid Deployment Joint Task Force by employing airpower over great distances on short notice. In addition, the B-52G is being 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 in 1978. In the FY '83 budget proposals, further funding of $305.3 million has been sought to modernize 64 B-52G/H aircraft to interface with the missiles, plus $154.3 million to modify 22 B-52Gs for cruise missile carriage. One B-52G cruise missile squadron should be operationally capable by December of this year at Griffiss AFB, N.Y. Full operational capability is planned by 1985, when 104 B-52G aircraft will be loaded, each with 12 external cruise missiles. The conversion of 96 B-52Hs to cruise missile carriage will begin in 1986. (Data for B-52G, except where noted.)

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.

Weights: G/H models gross more than 488,000 lb, D model grosses more than 450,000 lb.

Performance (approx): max speed at 20,000 ft 660 mph, service ceiling 55,000 ft, range more than 7,500 miles.

Armament: D/G models have four 0.50 caliber guns in tail turret; H model has 20-mm gun; up to 20 SRAM missiles can be carried on G/H models, plus nuclear free-fall bombs.

FB-111

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 58 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.

Fighters

F-4 Phantom IIs

F-5E Tiger II

F-4 Phantom II

Continuous updating of this two-seat, twin-engine, all-weather fighter, designed in the mid-1950s, has enabled it to maintain its effectiveness in USAF's tactical inventory. Approximately 950 F-4s equip active and reserve forces in the United States, Europe, the Pacific, and Iceland. Equipment produced for USAF Phantoms includes the Pave Spike day tracking/laser ordnance designator pod, for use with "smart" weapons. 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. F-4Cs still equip Air National Guard and Air Force Reserve units. 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 some were supplied to other countries. The **F-4E** is a multirole fighter capable of performing counterair, close-support, and interdiction missions. A 20-mm Vulcan multibarrel 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, were 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 were built for USAF. System 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 USAF AIM-9 and AIM-7 missiles. The **F-4G** "Advanced 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) and Standard ARM (AGM-78), with optional availability of the CBU Rockeye area weapon for suppression purposes, and the AGM-65 Maverick (including IIR imaging infrared version). First F-4Gs entered service with 35th TFW at George AFB, Calif., in October 1978; modification of 96 aircraft had been completed by the beginning of 1981. The AGM-88 HARM high-speed antiradiation missile will equip them in FY '85. (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

Developed as the successor to Northrop's F-5A export fighter, the Tiger II is intended primarily to provide America's allies with an uncomplicated air-superiority tactical fighter, which can be operated and maintained relatively inexpensively. 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. An R-843A/ARN-58 localizer receiver and a reconnaissance nose, similar to that of the

RF-5A, can be fitted for low/medium-altitude photo-reconnaissance. To extend the range of armament options, an F-5E completed a technology flying demonstration with a 30-mm underbelly gun pod developed by General Electric. More than a thousand F-5Es and two-seat **F-5Fs** have been delivered to fifteen 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, by 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 9,683 lb, gross 24,676 lb.

Performance (at 13,350 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) 1,543 miles.

Armament: 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

Since the mid-'70s, the original single-seat **F-15A** and two-seat **F-15B** have progressively replaced the F-4 as USAF's primary air-superiority aircraft. From June 1979, they have been followed by the single seat **F 15C** and two-seat **F-15D**, which have 2,000 lb of additional internal fuel and provision for carrying conformal fuel tanks, which has increased maximum gross weight to 68,000 lb. Since the middle of 1980, F-15C/Ds have been fitted with a programmable signal processor to enhance radar capability and flexibility. Planned total production of all models exceeds 1,107 aircraft for USAF, plus the 20 R&D models, by FY '07. Orders to date total 601 for operational use by USAF, with an additional 36 authorized in FY '82, and 42 requested in the FY '83 budget proposals. F-15s are in operational service with TAC's 1st TFW at Langley AFB, Va., 49th TFW at Holloman AFB, N. M., and 33d TFW at Eglin AFB, Fla.; USAFE's 36th TRW at Bitburg AB, Germany, and 32d TFS at Camp New Amsterdam, the Netherlands; and PACAF's 18th TFW at Kadena AB, Okinawa, Japan. The 48th Fighter Interceptor Squadron at Langley AFB, Va., is due to complete conversion this year, as the first US air defense squadron to receive the Eagle. 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 head-up 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.

In April last year, a USAF F-15 equipped with a Martin Marietta ATLIS II automatic tracking and laser illumination system pod and associated internal modifications began a fifteen-month 150-flight test program as part of the Integrated Flight Fire Control (IFFC)/Firefly III program. The optical sensor/tracker pod enables air-to-air weapons to be fired accurately at simulated targets while the F-15 maneuvers at high offset angles, for the first time in the case of a USAF fighter. Another derivative version, with enhanced air-to-ground capability, is being evaluated by USAF. 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.

Weights: 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 tanks, 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 16,000 lb of ordnance on weapon stations.

F-16 Fighting Falcon

Evolved from the USAF Lightweight Fighter Prototype Program, the F-16 incorporates advanced technologies which make it one of the most maneuverable fighters ever built. The 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 head-up display, internal chaff or flare dispensers, and a 500-round 20-mm internal gun. The aircraft also has provisions for ECM. To date, USAF has initiated procurement of 725 F-16s and advance buy of 360 additional F-16s under a multiyear contract for 120 aircraft per year through 1985. The total planned purchase of F-16s has been increased (from 1,388 to 2,333) to support USAF efforts to build toward a force structure that increases the number of tactical wings. The F-16s will be used to replace F-4 aircraft in the active force, and to modernize the Air Reserve Forces. The first F-16 to enter operational service was delivered to USAF's 388th TFW at Hill AFB, Utah, in January 1979. TAC had in early 1982 a total of 350 F-16s in its inventory, and three squadrons are expected to join USAFE's 50th TFW at Hahn AB in West Germany this year, followed by activation of the 363d TFW at Shaw AFB, S. C. To date, and in addition to activations at Hill AFB, Utah, and Hahn AB, Germany, USAF has activated the 56th TTW at MacDill AFB, Fla. (TAC), the 474th TFW at Nellis AFB, Nev. (TAC), and 8th TFW at Kunsan AB, Korea (PACAF). In addition, four NATO allies (Belgium, Denmark, the Netherlands, and Norway) are purchasing 386 F-16s under coproduction arrangements. The first European aircraft flew in December 1978 and was accepted by Belgium in January 1979. Deliveries have since been made to the Netherlands, Norway, and Denmark, and to Israel, which has purchased 75 F-16s and has plans to buy more. Egypt is to receive 80, Pakistan 40, Korea 36, and Venezuela 24. A forward-looking plan for the F-16, known as the Multinational Staged Improvement Program (MSIP), was implemented by USAF in February 1980. This assures the aircraft's capability to accept future systems now under development, thereby minimizing retrofit costs. As a first stage, all F-16s delivered since November 1981 have built-in structural and wiring provisions, and systems architecture, that will expand the single-seater's multi-role flexibility to perform precision strike, night attack, and beyond-visual-range interception missions. Future systems improvements will include installation of AMRAAM air-to-air missiles and LANTIRN nav/attack sys-

F-15 Eagle

F-16 Fighting Falcons

tem. Initial operational capability is scheduled for December 1984, under the designations **F-16C** (single-seat) and **F-16D** (two-seat). In late 1980, General Dynamics initiated company-sponsored development of a new version of the F-16, designated **F-16E,** to enhance its air-to-surface capabilities while still maintaining air-superiority characteristics. The major difference between the F-16E and the basic F-16 is its significantly enhanced aerodynamic configuration, with a unique "cranked arrow" wing planform, which allows improved range, military load, penetration speed, and maneuverability. Flight demonstration testing of the first prototype is scheduled to start in July 1982, followed by the first flight of a second prototype in October 1982. The Air Force Thunderbird Air Demonstration Squadron is reequipping with the F-16 for the abbreviated 1982 season. (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.

Weights: empty 15,137 lb; gross with external loads 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-101B Voodoo

F-101B Voodoo

Operated by the ANG, this two-seat long-range all-weather interceptor is assigned to Tactical Air Command as part of the air defense interceptor force for the continental US. Half of ANG's 36 remaining Voodoos, based at Ellington AFB, Tex., were scheduled for replacement by F-4Cs last year. The aircraft continues to serve with the Canadian Armed Forces under NORAD control.

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

F-105 Thunderchief

Several **F-105D** single-seat all-weather fighter-bombers remain in squadron service with the AF Reserve, equipped with NASARR monopulse radar, for use in both high- and low-level missions, and Doppler for night or bad weather operations. Also in the Reserve are a few **F-105F** two-seat dual-purpose trainer/tactical fighter versions of the F-105D. The two squadrons of the active Air Force which flew the **F-105G** all-weather "Wild Weasel" version of the two-seat F-105, intended for suppression of surface-to-air missile sites, with electronic countermeasures pods mounted on the underfuselage, have reequipped with F-4G "Wild Weasels." The F-105Gs have been transferred to the ANG. 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-106A Delta Darts

F-106 Delta Dart

The F-106 all-weather fighter was developed in the mid-1950s. Constant updating enabled USAF to maintain its effectiveness, and 153 continue to serve with active Air Force and ANG units. The two production versions are the **F-106A** single-seat interceptor, and the **F-106B,** a tandem two-seat dual-purpose combat trainer. 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 3⅓ in.

Weights (approx): empty 25,300 lb, gross 42,400 lb.

Performance (approx): max speed at 40,000 ft Mach 2.0, service ceiling 65,000 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-111A

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 replacement of current analog bombing and navigation systems with digital equipment is being considered. This would enable F-111A/E aircraft to handle modern guided munitions and advanced sensors, as well as future systems such as Navstar and JTIDS. The **F-111D** had from the start advanced avionics, offering improvements in navigation and air-to-air weapon delivery. Ninety-six were built and equip the 27th TFW at Cannon AFB, N. M. 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 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 in production by Grumman *(see page 159).* SAC has a strategic bomber version of the F-111, designated **FB-111A** *(see page 154).* The Royal Australian Air Force acquired 24 **F-111Cs** for strike duties, four of which have since been modified for tactical reconnaissance.

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 wing pylons carrying total external load of up to 25,000 lb of bombs, rockets, missiles, or fuel tanks.

A-7D Corsair II

Attack and Observation Aircraft

A-7D/K Corsair II

The **A-7D** Corsair II is a single-seat, subsonic tactical fighter, 459 of which were delivered to the USAF between 1968 and 1976. 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 were modified to carry a Pave Penny laser target designation pod.

Since 1973, A-7Ds, including all those operated for-

merly by the active AF, have been delivered 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, 42 two-seat **A-7Ks** have been funded. Two will be assigned to each of the ANG's 13 A-7D units, and 16 to the 162d Tactical Fighter Training Group in Tucson, Ariz. First production A-7K entered service in April 1981. The aircraft's combat capability is retained. (Data for A-7D.)

Contractor: Vought Corporation, subsidiary of the LTV Corporation.

Power Plant: one Allison TF41-A-1 non-afterburning turbofan engine; 14,500 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-10 Thunderbolt II

Designed specifically for the close air support (CAS) mission, the A-10 offers a combination of large military load, long loiter, and wide combat radius. 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 head-up display, laser seeker, target penetration aids, and associated equipment for Maverick missiles. The first operational squadron was activated at Myrtle Beach AFB, S. C., in June 1977, and achieved operational capability in October. In early 1978, the 354th TFW began operating A-10s equipped with the Pave Penny laser target designation pod, now approved as standard equipment for the aircraft. Thirty of the 60 A-10s ordered in FY '81 will be tandem two-seat combat-ready trainers, generally similar to the A-10A. Procurement of 20 standard A-10As was authorized in FY '82; a further 20 requested in FY '83 will complete the planned program. Future A-10A enhancements are expected to include installation of the Martin Marietta LANTIRN fire control pod to improve night/adverse weather capability. When all 727 A-10s have been delivered, they will equip six wings. Six squadrons have been deployed at RAF Bentwaters and Woodbridge in the UK. One squadron is planned to be set up in Alaska and one in Korea in FY '83. In addition, deliveries of new production A-10As are under way to four ANG Tactical Fighter Groups, the first first-line aircraft to be assigned to ANG units. Deliveries are also being made to the 434th TFW and 917th TFG of AFRES. The 926th TFG (AFRES) will convert to A-10s this year.

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 439 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.

AC-130A/H

AC-130As serve with the Air Force Reserve's 711th SOS at Eglin AFB, Fla. **AC-130Hs** continue in active service with TAC's 1st Special Operations Wing. AC-130As are equipped with two 40-mm cannon, two 20-mm Vulcan cannon, and two 7.62-mm Miniguns. AC-130Hs are similar, except that one 40-mm cannon is replaced with a 105-mm howitzer. Both models are equipped with sensors and target acquisition systems, including forward-looking infrared and low-light-level TV. AC-130Hs are being modified for inflight refueling.

Contractor: Greenville (Texas) Division of E-Systems, Inc. Other data basically as for C-130 *(page 160)*.

O-2A

A total of 346 specially equipped variants of the "push-and-pull" Cessna 337 Skymaster was ordered by USAF from 1966, originally to replace the Cessna O-1 in the forward air controller role in Vietnam. Though OA-37s will replace some O-2s, these aircraft are still to be used in active and ANG units. Specialized equipment and electronics in the O-2A 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.

OA-37B Dragonfly

A-37B Dragonfly ground support aircraft being withdrawn from operational service with the AFRES are being changed to forward air control duty, replacing O-2As in some ANG squadrons. There are some of the aircraft in the TAC inventory.

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.

OV-10A Bronco

This counterinsurgency combat aircraft, first flown in August 1967, was 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 and 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 USN, US Marine Corps, and foreign air forces.

Contractor: Rockwell International Corporation, Aircraft Operations.

Power Plant: two Garrett 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.

A-10 Thunderbolt IIs

AC-130H

O-2A

OA-37B Dragonfly

OV-10A Bronco

Reconnaissance and Special-Duty Aircraft

SR-71

TR-1

RF-4C

RC-135

SR-71A/C

These multisensored supersonic aircraft equip the 9th Strategic Reconnaissance Wing at Beale AFB, Calif., to support national or strategic requirements, and to support theater commanders in peacetime and during limited conflict. The fastest, highest-flying production aircraft yet built, the **SR-71A** "Blackbird" carries equipment ranging from simple battlefield surveillance systems to systems capable of specialized coverage of up to 100,000 sq miles of territory in one hour. In July 1976, flown by three USAF crews, SR-71As set an absolute world 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. Another SR-71A flew from New York to London, England, in 1 hr 54 min 56.4 sec in September 1974, at an average speed of 1,806.967 mph. The prototype flew for the first time in December 1964, and delivery of production aircraft began in January 1966. 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

Production of the basic U-2 began in the late 1950s. 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-2CT** tandem-cockpit trainer, **U-2EPX** (electronics patrol experimental), **WU-2** weather reconnaissance model, and **HASPU-2** (high-altitude sampling program) are conversions of basic models. All have similar dimensions except for the **U-2R,** which has much increased span and length. This is now the primary version, of which eight remain in first-line service.

Initial funding for the **TR-1A** single-seat tactical reconnaissance version of the U-2R was provided in the FY '79 budget. A total of ten was requested through FY '82, and a further four aircraft are sought in the FY '83 budget proposals. It is expected that 35 will be acquired eventually by USAF (including two two-seat **TR-1Bs** for high-altitude standoff surveillance missions, primarily in Europe. Each 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 modern ECM, an advanced synthetic aperture radar system (ASARS) for standoff imagery, and communications intelligence sensors, or the Precision Location Strike System (PLSS) for use against enemy radar emitters. Although PLSS is a strike system, it is inherently capable of elint data collection. The first TR-1A flew on August 1, 1981, and pilot training at Beale AFB was due to begin later that year.

Air Force U-2s have performed important nonmilitary missions, including flights for the Department of Agriculture land management and crop estimate programs; photographic work in connection with flood, hurricane, and tornado damage; data gathering for a geothermal energy program; and search missions for missing boats and aircraft. (Data for U-2R, but generally applicable to TR-1A.)

Contractor: Lockheed Corporation.

Power Plant: one Pratt & Whitney J75-P-13 turbojet engine; 17,000 lb thrust.

Dimensions: span 103 ft 0 in, length 63 ft 0 in, height 16 ft 0 in.

Weight: gross, with slipper tanks: U-2R 29,000 lb, TR-1 40,000 lb.

Performance (TR-1): max cruising speed at over 70,000 ft more than 430 mph, operational ceiling about 90,000 ft, range more than 3,000 miles.

RF-4C

Developed to replace the day-only RF-101, the **RF-4C** is an unarmed multisensor version of the F-4C Phantom II, designed for day/night, poor-weather reconnaissance operations. The first production model flew in May 1964, and 505 were built before manufacture ended in December 1973. They are operated by six TAC, USAFE, and PACAF tactical reconnaissance squadrons; and by eight squadrons of the ANG, some of which are nominated as part of the Rapid Deployment Force. The RF-4 was the first tactical aircraft equipped with a forward-looking radar capable of simultaneous terrain-following and low-altitude navigation. The basic aircraft is configured with conventional optical cameras for day operations and an infrared (IR) sensor for night. Both the radar and the camera systems are housed in a modified nose, which increases the length of the aircraft by 33 in compared with the fighter version. USAF is in the process of upgrading its night mission capability by replacing the original IR sensor with the higher-resolution AAD-5 set. Eleven RF-4Cs (with 18 planned) are equipped with side-looking airborne radar (SLAR) for standoff battlefield surveillance, and five (with 24 planned) with a tactical electronic reconnaissance (TEREC) sensor capable of locating electronic emitters. Current modifications include the ARN-101 digital avionics package to improve navigation accuracy; Pave Tack to provide the crew with the ability to see targets at night; and data link transmission of SLAR and TEREC in near-real-time, to reduce delays between data collection and dissemination to tactical decision-makers. (Data similar to F-4.)

EC-130E/H

The **EC-130E** electronic surveillance version of the Hercules was developed for USAF to replace the ANG EC-121. Major exterior modifications include large blade antennas under each outer wing and above the dorsal fin, with a smaller horizontal blade antenna on each side of the rear fuselage. Bullet-shape canisters outboard of each underwing antenna and at the extreme tail of the aircraft house trailing-wire antennas that extend several hundred feet behind the EC-130E in flight. Equipment also includes the ABCCC/USC-15 airborne battlefield command and control center capsule, which fits into the cargo hold. The capsule accommodates 12–16 personnel and incorporates 20 different radios, plus secure teletype and voice communications capability, and automatic radio relay. The EC-130E is operated by 7th Airborne Command and Control Squadron (TAC) from Keesler AFB, Miss.

Less is known about the Compass Call **EC-130H,** which works with ground mobile C^3CM systems to counter enemy command control and communications structures. (Data similar to C-130.)

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 thrust 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. TAC provides overseas deployment control of tactical fighters with the **EC-135K.** Versions of the C-135 Stratolifter series used for reconnaissance include turbofan **RC-135Vs,** equipped also for electronic reconnaissance with SAC; **RC-135Ss** and **RC-135Us. WC-135Bs,** converted C-135Bs, are used by MAC for long-range weather reconnaissance missions. In addition, a highly instrumented version, designated **NKC-135** ALL (Airborne Laser Laboratory), is being utilized by USAF as a test-bed in support of the HEL (High Energy Laser) research program being conducted by DARPA and the armed forces. The primary objective is to test the concept that lasers can be used to shoot down surface-to-air and, possibly, air-to-air missiles as aircraft defensive weapons. Air-to-air firing tests conducted in mid-1981 had only limited success; but it is hoped that the NKC-135, working in conjunction with the new high-energy laser system test facility due to become operational at White Sands Missile Range at the end of this year, will speed the development of a fire-control system with just such a capability. Funding of $95 million for development that concentrates on airborne laser applications has been sought in the FY '83 budget proposals. (Data basically as C-135, page 161.)

EF-111A

This modification of the basic General Dynamics F-111A airframe incorporates many off-the-shelf components to accomplish its defense suppression mission role. The EF-111A is designed as a replacement for the EB-66 and EB-57, to provide worldwide support of US tactical strike forces, by denying information to the radars that provide data to hostile command and control systems. The prime jammer, the ALQ-99E, is a modification of the Navy ALQ-99, and is carried internally in the EF-111A. Other equipment includes self-protection systems from the F/FB-111 (ALQ-137/ALR-62), a new vertical stabilizer to house ALQ-99E receivers, a revised crew capsule, updated environmental cooling system, and high-capacity generators from the F-14.

Flight testing of the EF-111A began in March 1977, continuing through December 1979, to ensure that system effectiveness and reliability/maintainability had been achieved. Deliveries are now being made to the 366th TFW at Mountain Home AFB, Idaho. A total of 42 EF-111As is planned, to equip two USAF squadrons during the early 1980s, with the last nine modifications sought in the FY '83 budget proposals.

Contractor: Grumman Aerospace Corporation.
Power Plant: two Pratt & Whitney TF30-P-3 turbofan engines, each 18,500 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 76 ft 0 in, height 20 ft 0 in.
Weight: gross 88,948 lb.
Performance: similar to F-111A/E.
Armament: none.

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 initially by TAC, 30 have been authorized to date. At least 24 had been delivered by the beginning of this year, with a request for two more aircraft in the FY '83 budget proposals. E-3As achieved initial operational status in April 1978, and have since been deployed in Alaska, Iceland, Saudi Arabia, the Mediterranean area, and the Pacific. Four were sent to Ramstein AB, Germany, in December 1980 when internal problems in Poland led to a heightening of East European tension. E-3As took up a role in US continental air defense in January 1979, when 30 NORAD personnel began augmenting TAC E-3A flight crews on all operational NORAD missions from Tinker AFB. In addition, NATO has approved purchase of 18 E-3As to upgrade the command and control of its air defense forces; the first was delivered in January of this year. 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. 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 was awarded a contract in December 1976 to develop a maritime surveillance capability which could be incorporated retrospectively in the radar of all operational E-3As. Flight testing of this system began in mid-1979, and all E-3A aircraft from production system 22 are now being equipped for maritime surveillance, including the NATO models. In addition, all USAF aircraft from No. 24, and all the NATO E-3As, will be upgraded to include a joint tactical information distribution system (JTIDS), and an improved data processing capability. AWACS can support a variety of tactical and/or air defense missions with no change in configuration.

Contractor: The Boeing Aerospace Company.
Power Plant: four Pratt & Whitney TF33-PW-100/100A turbofan engines; each 21,000 lb thrust.
Accommodation: operational crew of 17.
Dimensions: span 145 ft 9 in, length 152 ft 11 in, height 41 ft 4 in.
Weight: gross 325,000 lb.
Performance: max speed 530 mph, service ceiling above 29,000 ft, endurance 6 hr on station 1,000 miles from base.

E-4A/B

SAC is the Air Force single resource manager for the E-4 airborne command post aircraft, the main operating base for which is Offutt AFB, Neb. Three **E-4As,** modified Boeing 747 aircraft, were built initially to support the National Emergency Airborne Command Post (NEACP), and provided an interim capability by utilizing existing EC-135 command control and communications (C^3) equipment. The **E-4B,** the Advanced Airborne Command Post, has been under development for several years, and will eventually support both the NEACP and SAC Airborne Command Post missions. It is equipped for in-flight refueling and contains a new 1,200 kVA electrical system designed to support advanced electronics, and a wide variety of new communications equipment. This includes a more powerful LF/VLF system, improved satellite communications system, and communications processing equipment. The first E-4B entered service with SAC in January 1980, and the first operational mission was flown in March that year. In mid-1980, Boeing Aerospace, together with E-Systems, Inc, was contracted to modify one E-4A to B standard, with options to modify the other two; the first of these options was exercised in December 1980. Two addditional E-4Bs are planned, completing the required total of six aircraft.

Contractor: The Boeing Aerospace Company.
Power Plant: four General Electric CF6-50E turbofan engines, each 52,500 lb thrust.
Dimensions: span 195 ft 8 in, length 231 ft 4 in, height 63 ft 5 in.
Weight: max ramp weight 803,000 lb.
Performance: unrefueled endurance in excess of 12 hours.

WC-130B/E/H

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.

EF-111A

E-3A Sentry

E-4A

Transports and Tankers

C-5 Galaxy

Largest aircraft in service anywhere in the world, the C-5 Galaxy flew for the first time in June 1968. Deliveries to MAC began in December 1969, and all 81 aircraft had been received by May 1973. Each is capable of airlifting loads up to 204,900 lb, such as two M-60 tanks or three CH-47 Chinook helicopters, over transoceanic ranges, and with an in-flight refueling capability. The 77 aircraft currently 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. Under a major modification program, Lockheed is producing kits of components to extend the service life of the C-5s' wings by 30,000 flight hours, without load restrictions. These kits replace only the five main load-carrying wing boxes, to which other existing components are transferred. The use of 7175-T73511 aluminum alloy provides greater strength and resistance to corrosion. Flight testing of a prototype installation was completed successfully during 1980, the converted C-5A being redelivered to USAF early last year. All operational C-5As are expected to be modified by 1987, with delivery of the first production version due next year. In addition, USAF plans to acquire under FY '83 funding the first two of 50 new Galaxies, designated C-5B. (Data for C-5A.)

Contractor: Lockheed-Georgia Company.
Power Plant: four General Electric TF39-GE-1C turbofan engines; each 40,100 lb thrust.
Accommodation: crew of five, rest area for 15 (relief crew, etc); 73 troops and 36 standard 463L pallets or assorted vehicles, or additional 270 troops.
Dimensions: span 222 ft 9 in, length 247 ft 10 in, height 65 ft 1 in.
Weights: empty 372,500 lb, gross (for 2.25g) 769,000 lb.
Performance: max speed at 25,000 ft 571 mph, service ceiling (at 615,000 lb) 34,000 ft, range with 144,000 lb payload 3,450 miles.

C-7A Caribou

Several of these Canadian-built all-weather STOL utility transports, taken over from the US Army in January 1967, continue in service with AF Reserve's 94th Tactical Airlift Wing, but those that were operated by the ANG have been withdrawn from use.

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

C-5A Galaxy

C-7A Caribou

C-9A Nightingale

C-12A

C-123 Provider

C-130H Hercules

KC-135 Stratotanker

paratroops, or 14 litters and 11 other persons.
Dimensions: span 95 ft 8 in, length 74 ft 11 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

Based on the DC-9 Srs 30 commercial airliner, the C-9A is an aeromedical airlift transport, in service since August 1968. Modifications include a special-care compartment with separate atmospheric and ventilation controls. Delivery of 21 to MAC's 375th Aeromedical Airlift Wing was completed by February 1973. The Nightingale is also performing overseas theater aeromedical evacuation missions in Europe, and was used to bring the US hostages back to Europe, from Algeria, on their return from Iran. Three specially configured **VC-9Cs** were delivered to the 89th Military Airlift Wing at Andrews AFB, Md., in 1975 for Presidential and other US governmental duties. (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

Thirty military versions of the Beechcraft Super King Air 200 were delivered to USAF under the designation C-12A. Their 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

In service with Air Force Reserve squadrons, as a part of USAF's tactical airlift capacity, the **C-123K** is the only version of the basic C-123 troop and supply transport still in the USAF inventory. The 16 in current use will be retired in FY '83.
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 21,000 ft, range with 15,000 lb payload 1,035 miles.

C-130 Hercules

Although it was first ordered for USAF 30 years ago, the C-130 remains in production, with basic and specialized versions continuing to perform a diversity of roles, including airlift support, DEW Line and Arctic icecap resupply, aeromedical missions, and fire-fighting duties for the US Forest Service. The initial production model was the **C-130A,** first flown in April 1955, with 3,750 ehp Allison T56-A-11 or -9 turboprops; 219 were ordered, and deliveries began in December 1956. Two **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** introduced 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 land ng gear, increased fuel capacity, and provision for JATO. The **C-130E** is an extended-range development of the C-130B, with large underwing fuel tanks; 389 were ordered for MAC and TAC with deliveries beginning in April 1962. Fifteen were modified to **MC-130E** (Combat Talon) standard, for use by AF Special Operations Forces. This version has terrain-following radar, precision navigation/airdrop and in-flight refueling components. 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, with the latter's older models being gradually replaced by newer versions. 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.

During 1980, a USAF C-130E from Pope AFB was fitted with two light alloy and glassfibre strakes on the undersurface of the rear fuselage. Subsequent flight testing showed more than a 3.5% fuel saving at long-range cruising speeds due to reduced drag, and an increase of more than 20 mph in normal cruising speed at no cost in fuel consumption. Following evaluation of production strakes, USAF was expected to initiate a program to retrofit most of its C-130s with strakes. (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 75,743 lb, gross 175,000 lb.
Performance: max speed 386 mph, service ceiling above 25,000 ft, range with 15,000 lb payload 2,100 miles.

HC-130

Constituting a major element of the Aerospace Rescue and Recovery Service, 55 extended-range C-130s, designated **HC-130H,** were ordered in 1963 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 air-to-air recovery (ATAR) 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 also are capable of refueling helicopters in flight. Nonmilitary rescue missions carried out by HC-130 units have included assistance at the Mount St. Helens volcano disaster in May 1980. Other data similar to C-130.

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 **KC-135A** airframe is basically similar to that of the Boeing 707 airliner. As a result, the aircraft's high-speed, high-altitude capabilities 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 615 remain operational, including those currently assigned to three Air Force Reserve units, on full alert status, and to thirteen ANG units, performing a twenty-four-hour alert mission and participating in operational support missions for the European Tanker Task Force in the UK. 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, thereby enabling the aircraft to remain operational well past the year 2000. This in turn justified the retrofitting of modern technology engines, and selection of the 22,000 lb thrust General Electric/SNECMA CFM56 for retrofit on the KC-135A was announced in 1980. It is planned to re-engine 300 KC-135As, which will be redesignated **KC-135R.** Modification of the first 10 has been authorized, and funding for 20–25 more is included in FY '83 budget requests. In parallel, about $85 million is being allocated to buy commercial 707s, forced into retirement because of federal noise and pollution regulations, and to use their JT3D turbofans for -135 series re-engining. This is seen as a cost-effective alternative to fitting CFM56 engines in the entire fleet, although Congress continues to support use of the more fuel-efficient CFM56. Electrical, hydraulic, and flight control systems will also be modified. Under a separate program, NASA began flight testing winglets for the KC-135A in July 1979, with a view to fuel savings as well as improved takeoff performance and a slight enhancing of fuel off-load capability. Testing was completed early last year, after a total of 173 flying hours. In addition, Aeronautical Systems Division's 4950th Test Wing, at Wright-Patterson AFB, Ohio, has

installed tail-mounted floodlights on six KC-135As, with the aim of increasing boom operator visibility during the night-time aerial refueling of F-16s. Part of the KC-135 Improved Aerial Refueling Systems program, it is expected that similar retrofitting of the entire KC-135 force will begin in December this year. (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

Only 9 basic C-135 transports remain operational with MAC. The type was ordered originally to serve as an interim jet passenger/cargo transport, pending delivery of C-141s; the C-135s now operate within the Aerospace Rescue and Recovery Service. 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 Bs were retrofitted 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.

C-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 **C-137C** for use by the President. It is basically a 707-320B with a special VIP interior. A second C-137C is also operated, together with three smaller 707-120s, originally designated C-137As but later modified to **C-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: C-137B span 130 ft 10 in, length 144 ft 6 in, height 42 ft 0 in; C-137C span 145 ft 9 in, length 152 ft 11 in, height 42 ft 5 in.
Weights: C-137B gross 258,000 lb; C-137C gross 322,000 lb.
Performance (C-137C): max speed 627 mph, service ceiling 42,000 ft, range about 7,000 miles.

C-140 JetStar

Deliveries of the C-140 JetStar began in late 1961. Four **C-140As** are used currently by Air Force Communications Command (AFCC) to evaluate landing systems, navigational aids, radar approach control equipment, and controllers and tower operators. Six **C-140B** transport versions are in service with the 89th Military Airlift Wing of MAC, operating from Andrews AFB, Md. Five **C-140Bs** are used in USAFE for operational support airlift.
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; C-140B crew of three and 8 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-141A** 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 285, of which some were modified to carry Minuteman ICBMs, with local structural strengthening to accommodate this 86,207 lb load. In service, loads were often space-limited; so, to utilize more fully the potential of its C-141s, USAF funded modification of the entire current force of 270 aircraft to **C-141B** standard, with the fuselage lengthened by 23 ft 4 in, and with added in-flight refueling capability. The YC-141B prototype made its maiden flight in March 1977. First production C-141B was delivered to USAF in December 1979, and all MAC C-141s should be modified to B standard by the middle of this year. This will provide the equivalent of 90 additional C-141A aircraft. (Data for C-141B.)
Contractor: Lockheed-Georgia Company.
Power Plant: four Pratt & Whitney TF33-P-7 turbofan engines; each 21,000 lb thrust.
Accommodation: crew of five; cargo on 13 standard 463L pallets, instead of the 10 carried by the C-141A. Alternative freight, vehicle, or passenger payloads.
Dimensions: span 159 ft 11 in, length 168 ft 3½ in, height 39 ft 3 in.
Weights: operating 148,120 lb, max payload 90,880 lb, gross 343,000 lb.
Performance: max cruising speed 566 mph, range with max payload 2,935 miles.

KC-10A Extender

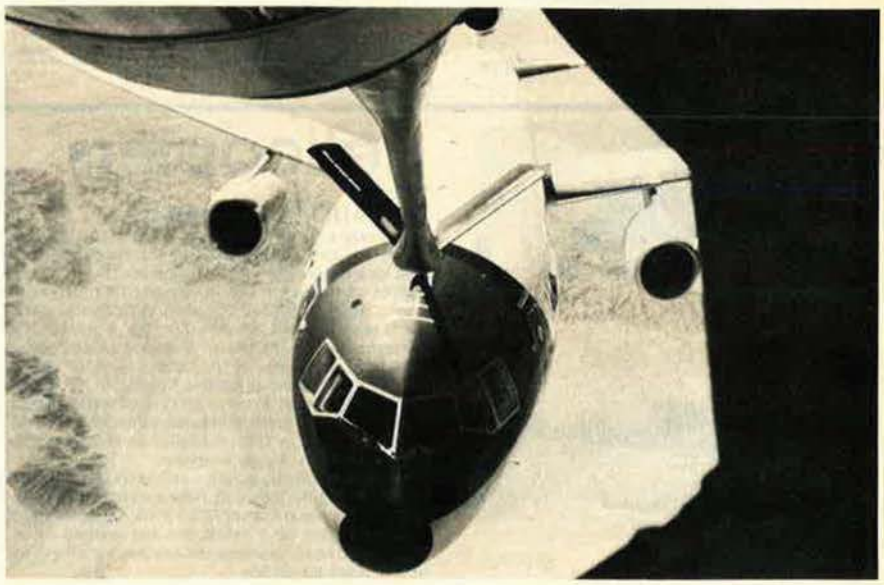
Conceived to meet specific USAF requirements for an Advanced Tanker/Cargo Aircraft (ATCA), the KC-10 was selected following a competitive evaluation of the McDonnell Douglas DC-10 and the Boeing 747. The design is based on the commercial DC-10 Series 30CF, modified to include body bladder fuel cells in the lower cargo compartments, a boom operator's station, an aerial refueling boom, a refueling receptacle, and military avionics. In its primary role of increasing US air mobility, a single KC-10A is 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 can 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. In addition, similarity to the civilian DC-10 has led to a unique system whereby the Extender can use commercial facilities for most maintenance. The manufacturer orders parts and handles heavy repairs: only routine and flight line maintenance is done by the Air Force. The first KC-10A made its maiden flight in July 1980 and delivery of the first KC-10A to enter service took place in March 1981 to Barksdale AFB, La., for operation by SAC. A second followed in July 1981. Available funding over the next five years will determine the number of aircraft to be ordered by USAF, but a total of 12 KC-10As had been provided up to and including FY '81. Eight more have been requested in the initial FY '83 budget proposals, and an eventual force of up to 60 is planned.
Contractor: McDonnell Douglas Corporation.
Power Plant: three General Electric CF6-50C2 turbofan engines; each 52,500 lb st.
Accommodation: max cargo payload 169,529 lb.
Dimensions: span 165 ft 4 in, length 182 ft 3 in, height 58 ft 1 in.
Weight: gross 590,000 lb.
Performance (estimated): max speed at 42,000 ft 528 mph, service ceiling 42,000 ft, max range with max cargo 4,370 miles; or delivery of 193,000 lb of transfer fuel to a receiver 2,000 nm from its home base, and return.

C-137C

C-140 JetStar

C-141 StarLifter

KC-10A Extender



T-33A

T-37B

T-38 Talon

CT-39 Sabreliner

T-41A Mescalero

T-43A

Trainers

T-33A

Although derived from the Shooting Star jet fighter, which flew for the first time nearly forty years ago, about 200 T-33As remain in service for use in combat support missions and for proficiency and radar target evaluation training. A lengthened fuselage accommodates a second cockpit in tandem, with the canopy extended to cover both. 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 .50-caliber machine guns on some early aircraft only.

T-37B

As Air Training Command's standard two-seat primary trainer, the T-37B was used also by ATC, in cooperation with SAC, to implement the Accelerated Copilot Enrichment (ACE) program which provides 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

This lightweight twin-jet advanced trainer, which was in continuous production from 1956 to 1972, is almost identical in structure to the F-5A tactical fighter. 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 about 900 remain in service throughout the Air Force. Most are used by ATC; others fly with the 479th Tactical Training Wing at Holloman AFB, N.M., and have flown with the Thunderbirds Air Demonstration Squadron.

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 operational support 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-39A/B** 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 and two overseas locations. Sabreliners are also in service with PACAF and AFSC, and with AFCC facility checking squadrons which use two Sabreliners, together with four C-140As, to evaluate communications and navigation aids at Air Force bases.

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-41 Mescalero

Acquired by USAF as a trainer under the designation **T-41A,** the standard Cessna Model 172 light aircraft is used in a preliminary flight screening program of about 14 hours for USAF pilot candidates. An initial order for 170 aircraft in 1964 was supplemented by a further 34 in July 1967. Forty-five more-powerful **T-41Cs,** based on the Cessna Model R172E, were delivered for cadet flight training at the USAF Academy. (Data for the T-41A.)

Contractor: Cessna Aircraft Company.
Power Plant: one Continental O-300-C piston engine; 145 hp.
Accommodation: crew of two, side-by-side.
Dimensions: span 35 ft 10 in, length 26 ft 11 in, height 8 ft 9½ in.
Weights: empty 1,285 lb, gross 2,300 lb.
Performance: max speed at S/L 139 mph, service ceiling 13,100 ft, range 720 miles.

T-43A

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; the other 4 are assigned to the ANG.

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.

UH-1F

UH-1Ns

Helicopters

TH/UH-1F, UH-1P, 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 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 missions in Vietnam. **TH-1F** is a version of the UH-1F used for instrument operations training. 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. A total of 66 of all of these helicopters are currently in service.

Notable nonmilitary missions include the rescue of 61 people during the Mount St. Helens volcano disaster in May 1980 by crews from AFRES's 304th ARRS, Portland IAP, Ore., flying UH-1 helicopters and assisted by an HC-130 and mobile communications jeep from the 303d ARRS. (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, of which some 73 remain in the inventory. 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 1,290 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 and mission weight 11,200 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

This twin-engined amphibious transport helicopter, based on the US Navy's SH-3A, incorporates important design changes which 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)*.

Significant nonmilitary operations have included lifting 17 people to safety from the burning MGM Grand Hotel in Las Vegas, by AFRES CH-3Es flown by the 302d SOS from Luke AFB, Ariz., in November 1980.

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 fully equipped troops, 15 litters, or 5,000 lb of cargo.
Dimensions: rotor diameter 62 ft 0 in, length of fuselage 57 ft 3 in, height 18 ft 1 in.
Weights: empty 13,255 lb, gross 22,050 lb.
Performance: max speed at S/L 162 mph, service ceiling 11,100 ft, max range, with 10% reserve, 465 miles.
Armament: General Electric 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 are also 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 1966 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. Delivery began in June the same year, and after extensive use for rescue operations in Southeast Asia HH-53Bs continue in first-line service.

Contractor: Sikorsky Aircraft, Division of United Technologies Corporation.
Power Plant: two General Electric T64-GE-7 turboshaft engines; each 3,925 shp.
Accommodation: crew of five, 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,** an improved version of the HH-53B, was first delivered to USAF in August 1968. With a maximum speed of 196 mph, it can transport 38 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 was built. Eight generally similar **CH-53Cs** are used to provide battlefield mobility for the Air Force mobile Tactical Air Control System.

HH-53H Pave Low III

Under USAF's Pave Low III program, nine HH-53Cs were modified for night and adverse weather operations, with the designation HH-53H. 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.

The first of the Pave Low aircraft was delivered to Pensacola in March 1979, and the final modification was delivered in 1980. These helicopters were originally programmed to go to ARRS; instead, they were transferred to TAC to enhance the Special Operations Force rotary-wing capability.

CH-3E

HH-3E Jolly Green Giant

HH-53C

Strategic Missiles

LGM-25C Titan II

In service since 1963, this two-stage ICBM has a thermonuclear warhead with the largest yield of any carried by a US missile. Titan II has a launch reaction time of one minute from its fully hardened underground silo; it is deployed in six squadrons, with a total of 52 missiles, based at Davis-Monthan AFB, Ariz.; McConnell AFB, Kan.; and Little Rock AFB, Ark. Titan II is expected to be phased out of service by 1987.

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, 9MT, 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

This three-stage, solid-propellant, second-generation ICBM, though of similar range, is smaller and lighter than the liquid-propellant Titan and has a smaller payload. The operational missiles are housed in underground silos, for which an upgrade program was completed in 1980 to provide increased launch facility protection. The current 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 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 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.

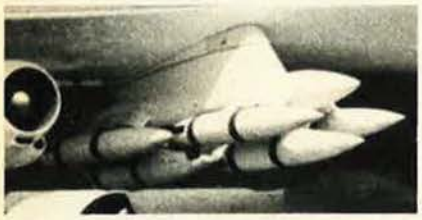
The Minuteman force is made up of 450 Minuteman IIs and 550 Minuteman IIIs. Recent R&D has been aimed at providing improved command control and communications, and at development of the Mk 12A reentry vehicle, which increases the yield of the Minuteman III warhead, and refinements to improve accuracy. The Mk 12A is scheduled for deployment on 300 Minuteman IIIs by early 1983. In addition, it is intended to replace 50 Minuteman IIs with a like number of Minuteman IIIs to offset partially the decrease in strategic capabilities that will result from phase-out of Titan IIs.

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 Mk 11 reentry vehicle; LGM-30G three thermonuclear warheads, each 175 KT in a General Electric Mk 12 or 340 KT in a Mk 12A 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.

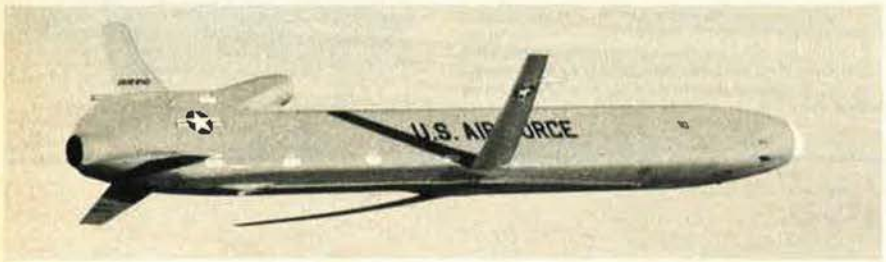
LGM-25C Titan II

LGM-30G Minuteman III

MX cold-launch demonstration



AGM-69 SRAMs on a B-52



AGM-86B ALCM

MX

In order to improve on current ICBM survivability, a new ICBM, the MX, is being developed by USAF. A firm decision regarding the permanent basing mode for the MX has not yet been reached, but Congress has required a relevant recommendation from the Secretary of Defense by July 1, 1983. Plans to house MXs in superhardened silos as an interim basing solution have been scrapped, in the face of expert criticism regarding the survivability of the MXs in such a location and because of the increased accuracy of Soviet missiles. Although Congress fully supports the speedy deployment of the MX missile, it has stipulated that any interim measure must be compatible with a permanent basing solution. Possible permanent options include some form of ballistic missile defense for existing silos, deception, a system of multiple protective shelters (MPSs), or putting the MX on a new aircraft. A force of 100 MX missiles is planned, and a total of $4.46 billion for the program has been requested in the FY '83 budget proposals, including $1.45 billion for procurement of the first nine missiles. Test flying is due to start in 1983, with initial operational capability (10 missiles) in mid-1986.

Assembly and Test: Martin Marietta, Denver Aerospace.
Power Plant: first three stages solid-propellant, fourth stage storable liquid; by Thiokol, Aerojet, Hercules, and Rocketdyne, respectively.
Guidance: inertial, integration by Rockwell, IMU by Northrop.
Warheads: 10, each 340 KT, in General Electric Mk 12A reentry vehicles. Total throw-weight about 7,900 lb.
Dimensions: length 71 ft, diameter 7 ft 8 in.
Weight: 190,000 lb.

AGM-69 SRAM

This defense suppression and primary attack missile was deployed initially with the B-52Gs of SAC's 42d Heavy Bombardment Wing at Loring AFB, Me., in 1972. 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 was undertaken subsequently, 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.
Weight: launch weight approx 2,230 lb.
Performance: speed up to Mach 2.5, range 100 miles at high altitude, 35 miles at low altitude.

AGM-86B ALCM

On March 25, 1980, Boeing Aerospace was declared winner of an eight-month competitive fly-off between the Boeing AGM-86B and General Dynamics AGM-109 candidate missiles, and became prime contractor for the Air-Launched Cruise Missile Program. Its AGM-86B 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. Production is expected to total 3,418 missiles between FY '80 and FY '87, with deliveries to be completed in FY '89. Initial funding for 225 ALCMs was provided in FY '80; 480 more were approved in FY '81, and 440 in FY '82. A further 440 are included in this year's budget requests. ALCMs were first fitted to an operational B-52G at Griffiss AFB, N. Y., in September 1981. The first SAC squadron of 14 B-52Gs fitted externally with 12 ALCMs is due to become operational in December this year. Other units to receive ALCMs are at Wurtsmith AFB, Mich.; Grand Forks AFB, N. D.; and Ellsworth AFB, S. D. Ultimately, each B-52G is intended to be modified to have a bomb-bay rotary launcher for eight more ALCMs, eight SRAMs, or a mix of both. In addition, B-52Hs will be converted for cruise missile carriage, beginning in 1986, and the new B-1B is also to carry ALCMs.

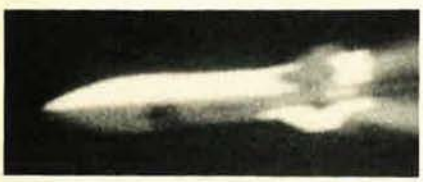
Contractor: Boeing Aerospace Company.
Power Plant: Williams International Corporation F107-WR-100 turbofan engine; 600 lb thrust.
Guidance: inertial plus Tercom, by McDonnell Douglas.
Warhead: W-80-1 nuclear.
Dimensions: length 20 ft 9 in, body diameter 24½ in, wing span 12 ft.
Weight: 2,825 lb.
Performance (approx): speed 500 mph, range 1,550 miles.

BGM-109G GLCM

This small, mobile, ground-to-ground cruise missile is one of the weapons being developed to modernize NATO's Intermediate Range Nuclear Forces (INF). Its characteristics include a small radar cross-section, very low-altitude flight profile, and all-weather capabilities. First test was conducted in May 1980 at the Utah Test and Training Range, using a prototype of the Transporter Erector Launcher (TEL) that is to be operated by USAF and based in the UK and the European. continent from late 1983. A GLCM mobile flight will comprise four trailer/erector/launchers, each carrying four missiles, and two launch control and communications vehicles. A total of 464 missiles is expected to be deployed, with eleven authorized in FY '81, 54 in FY '82, and a further 120 requested in the FY '83 budget proposals.

Contractor: General Dynamics (Convair).
Power Plant: Williams International Corporation F107-WR-400 turbofan engine; 600 lb thrust Atlantic Research Corporation solid-propellant booster.
Guidance: inertial plus Tercom, by McDonnell Douglas.
Warhead: W-84 nuclear.
Dimensions: length 19 ft 8 in, diameter 1 ft 8½ in, wing span 8 ft 2½ in.
Weight: with booster 3,200 lb.
Performance: max speed high subsonic, range 1,550 miles.

Airborne Tactical and Defense Missiles



AIR-2A Genie

AIR-2A Genie

Produced in many thousands before production ended in 1962, the AIR-2A Genie continues in first-line service with 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 KT.
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-4D Falcon

Falcon was the first air-to-air guided weapon to come into USAF service. The AIM-4D version carried by F-101 interceptors combines the improved infrared homing head of the AIM-4G Super Falcon with the basic airframe of the earlier AIM-4C. 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: infrared homing system.
Warhead: high-explosive.
Dimensions: length 6 ft 7½ in, body diameter 6.4 in, wing span 1 ft 8 in.
Weight: launch weight 134 lb.
Performance: max speed Mach 4, range 6 miles.

AIM-4F/G Super Falcon

These developed versions of the original AIM-4A/C Falcon were introduced simultaneously in 1960, to provide 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.

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-7 Sparrow

One of the most important air combat 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. 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. A later version 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 is the only one that can be carried by the F-15, and was approved for deployment in early 1977. General Dynamics was 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 version with this seeker has been redesignated **AIM-7M.** Production began in FY '80. All Sparrow production switched to the AIM-7M in FY '81, and this version is expected to enter operational service during the current fiscal year. Total USAF procurement is anticipated at 9,150 missiles, with 1,300 requested in the FY '83 budget proposals. (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, mounted forward of the wings instead of aft as on earlier versions, and weighing 88 lb.
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 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-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. About 14,000 were delivered to USAF by Ford Aerospace in 1977–78, to equip the F-15 and other Sidewinder-compatible aircraft.

AIM-9P: improved version of AIM-9J, under development by Ford Aerospace. Increased target acquisition envelope, solid-state electronics, and increased lethality due to seeker improvements. Proposed production by conversion of existing AIM-9Es and -9Js.

AIM-9P-3: improved version of AIM-9P, with increased lethality due to fuze improvements. Reduced-smoke rocket motor.

AIM-9L: third-generation Sidewinder for USAF and USN, with all-aspect intercept capability. New Mk 36 Mod 7/8 solid-propellant motors. 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, and active optical fuze for increased lethality and low susceptibility to countermeasures. This version arms USAF F-15 and F-16 aircraft.

AIM-9M: improved version of AIM-9L with increased ECCM capability, improved background discrimination, and reduced-smoke rocket motor. A pilot production contract for 50 units was awarded to Raytheon, for delivery in 1979–80. Full production began in FY '81 with an order for approximately 1,850 missiles. From FY '83 the AIM-9M will incorporate a new closed-cycle IR cooling unit claimed to be easier to service and more effective than the open-cycle gas unit used in earlier versions. Eventual production total of AIM-9L/M missiles for USAF and USN is expected to be 15,000. (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, weighing 25 lb.
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 AIM-9H over 2 miles, AIM-9L over 4.35 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. Maverick missiles were first employed by USAF in Vietnam, and are now carried by the A-7D, A-10, F-4D/E, F-5E/F, F-111F, and F-16, normally in three-round underwing clusters, 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.

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). The AGM-65D entered engineering development in October 1978. Developmental and operational flight testing began in July/August 1980. Subject to satisfactory results, USAF is considering procurement of 61,000 AGM-65D Mavericks; 490 were authorized in FY '82, and 2,560 are requested in FY '83. (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

Although no longer in production, this air-launched, antiradar missile remains an important item in the USAF and USN inventories. The original **AGM-78A** version of Standard ARM (Anti-Radiation Missile) was designed to

AIM-4D Falcon

AIM-7F Sparrows on an F-15

AIM-9J Sidewinder

AGM-45A Shrike on an F-4D

AGM-65 Mavericks

AGM-78 Standard ARM on an F-105

provide a significant increase in capability over earlier weapons in countering the threat of radar-controlled antiaircraft guided missiles and guns. It entered production in 1968, and several advanced models were developed subsequently, some highly classified. The AGM-78A used the passive homing target-seeking head of the Shrike missile. Later 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.

AGM-88A HARM

AGM-88A HARM

Since 1974, this High-speed Anti-Radiation Missile has been under development by Texas Instruments. Emphasis on speed reflects experience gained in Vietnam, where Soviet-built surface-to-air missile radar systems sometimes detected the approach of first-generation Shrike antiradiation missiles and ceased operation before the missiles could lock on to them. USAF intention to equip the F-4G "Wild Weasel" with the AGM-88A will greatly enhance that aircraft's lethality. The missile is also suitable for adaptation to the B-52, F-15, and F-16. Procurement of 136 AGM-88As was authorized in FY '82; another 206 are requested in FY '83 to launch full-scale procurement.

Contractor: Texas Instruments, Inc.
Power Plant: Thiokol smokeless 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 13 ft 8½ in, body diameter 10 in, wing span 3 ft 8½ in.
Weight: 807 lb.
Performance: altitude limits S/L to 40,000 ft, range more than 10 miles.

GBU-15

GBU-15

The GBU-15 is an air-launched cruciform-wing glide bomb fitted with a guidance system designed to give it pinpoint accuracy from altitudes below 200 ft, or over standoff ranges greater than 5.75 miles. Development began in 1974, based on experience gained in Vietnam with the earlier Pave Strike/GBU-8 HOBOS modular weapon program. The GBU-15 is intended for tactical use to suppress enemy defenses and to destroy other high-value targets. The target-detecting device is carried on the front of the warhead; the control module, with autopilot, and data link module attach to the rear.

The weapon offers two basic trajectories. For direct trajectory, the weapon is locked on target before launch and flies a near line-of-sight profile to impact. The indirect profile includes a midcourse glide phase which extends standoff capability. In this profile, the seeker can be locked on to the target after launch, or the operator can fly the weapon manually to impact, using guidance updates provided through the data link. Successful launches have been achieved from F-4, F-111, and B-52 aircraft. Full-scale production of the TV-guided GBU-15(V)/B began in September 1980, with delivery due to begin this year. Development of a planar wing variant has been suspended.

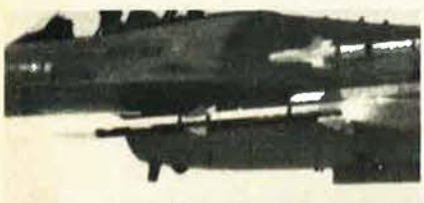
Contractor: Rockwell International Corporation.
Guidance: TV. An imaging infrared seeker is under development. A DME midcourse guidance system is available for increased accuracy.
Warhead: Mk 84 bomb (2,000 lb unitary) or CBU-75 (cluster).
Dimensions: length 12 ft 10½ in, body diameter 1 ft 6 in, wing span 4 ft 11 in.
Weight: approximately 2,500 lb.

AGM-109H Tomahawk II (MRASM)

AGM-109H Tomahawk II (MRASM)

In March 1980, DoD announced that a new medium-range air-to-surface missile (MRASM) for tactical nonnuclear operations was to be based on the General Dynamics Tomahawk cruise missile. Intended to provide tactical aircraft with a reasonable-cost subsonic standoff weapon with which to attack heavily defended high-value targets, MRASM is to be produced initially for USAF in airfield attack form, carrying runway-cratering submunitions. Carrier aircraft will range from the F-16 to the B-52.

Contractor: General Dynamics (Convair).
Power Plant: Teledyne CAE J402 turbojet engine; 660 lb thrust.
Guidance: Tercom inertial/terrain contour matching, plus digital scene matching area correlation (DSMAC) for terminal homing.
Warhead: submunitions.
Dimensions: length 19 ft, diameter 1 ft 8½ in.
Weight: 2,900 lb.
Performance: max speed high subsonic, range 285 miles.



AMRAAM launch from an F-16

ASAT

Under USAF contract, Vought Corporation is developing and flight-testing a small, high-technology air-launched anti-satellite (ASAT) weapon. This consists of a modified SRAM first stage, a Thiokol Altair III solid-propellant second stage rated at 6,000 lb thrust, and a Miniature Vehicle conventional warhead. A further $218 million is requested in FY '83 for ASAT, which will be carried by designated air defense F-15s and will offer the capability of destroying enemy satellites at orbital altitudes.

AMRAAM

On December 11, 1981, USAF awarded a $421 million fixed-price contract to Hughes Aircraft Company to initiate full-scale development of a new radar-guided advanced medium-range air-to-air missile (AMRAAM). Intended as a replacement for the AIM-7 Sparrow, from 1986, AMRAAM will provide an all-environment capability for USAF's F-15 and F-16, and the Navy's F-14 and F/A-18 fighters. Hughes will begin by manufacturing 94 test missiles, but the contract also contains prepriced options for 924 operational AMRAAMs and future options for second-source or follow-on missile production.

Earlier in 1981, both Hughes and Raytheon had conducted air launches of prototype missiles designed to meet the AMRAAM specification. On August 26, Hughes's first guided launch, from an F-16, scored a direct hit on a QF-102 target drone. The second guided launch, on November 23, involved a look-down, shoot-down tail attack on a similar target over a range of 6 miles. The F-15 launch aircraft was flying at Mach 0.75 at 6,000 ft; the QF-102, cruising at Mach 0.7 only 1,000 ft above the ground, received a direct hit.

Few details of AMRAAM may be published. It is known to have a higher performance than Sparrow, and to have an airframe some 50% lighter in weight. It is a launch-and-leave weapon, with inertial midcourse guidance and active radar terminal homing.

Launch Vehicles

Agena

Atlas

Agena

Offering a wide range of applications, Agenas have, since 1959, served as satellite or booster on more missions than any other spacecraft in the world. This inherent versatility derives basically from a payload section (nosecone) able to accommodate a variety of earth-orbiting and space probes weighing up to several hundred pounds. Agena has been utilized as the upper stage of such launchers as Atlas and Titan III; but is no longer used with Atlas. With its attached payload, it has functioned for longer than six months on some USAF missions. An Agena spacecraft was the first to accomplish a rendezvous and docking by spacecraft in orbit and to provide propulsion power in space for another spacecraft. 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.

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.
Launch Weight (typical Agena D): 15,037 lb.

Atlas Launchers

Atlas is a "stage-and-a-half" vehicle, consisting of side booster and central sustainer sections. Current launch versions are as follows:

Atlas SLV-3A: An upgraded version of the earlier SLV-3 for USAF and NASA, 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.

Atlas SLV-3D: Although intended for use primarily

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Aircraft Division

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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.

Atlas-E/F: ICBMs modified to space launch configuration, used to launch various USAF and NASA/NOAA satellites.

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-3D/Centaur 131 ft; max body diameter 10 ft 0 in.

Launch Weight (SLV-3A): 314,000 lb.

Performance (SLV-3A/Centaur): capable of putting payload of 11,300 lb into a 100 nm circular orbit, of launching 4,150 lb into synchronous transfer orbit, or of sending 1,250 lb to nearest planet.

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 1984. Titan IIIE production has ended. Centaur's multiburn and extended coast capability were first used operationally during the 1977 Mariner Jupiter/Saturn missions.

Prime Contractor: General Dynamics Corporation, Convair Division.

Power Plant: two Pratt & Whitney RL10A-3 liquid oxygen/liquid hydrogen engines; each 16,500 lb thrust.

Guidance: inertial guidance system.

Dimensions: Centaur; length 30 ft 0 in, diameter 10 ft 0 in.

Launch Weight (approx): 35,000 lb.

Scout

More than 100 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. Using the latest Algol IIIA first-stage motor, Scouts can put 377 lb payloads into a 310-mile polar orbit, and have been used to launch many unmanned spacecraft, including satellites for the Department of Defense, NASA, and international groups.

Prime Contractor: Vought Corporation (subsidiary of LTV Corporation).

Power Plant: first stage: CSD Algol IIIA; 109,000 lb thrust; second stage: Thiokol Castor IIA solid-propellant motor; 64,000 lb thrust; third stage: Thiokol Antares IIIA solid-propellant motor; 18,700 lb thrust; fourth stage: Thiokol Altair IIIA solid-propellant motor; 5,800 lb thrust.

Guidance: simplified Honeywell gyro guidance system.

Dimensions: height overall 75 ft 5 in, max body diameter 3 ft 9 in.

Launch Weight: 47,619 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 based on the Titan II ICBM. An upper stage, known as Transtage, capable of functioning both in the boost phase of flight and as a restartable space propulsion vehicle, is used on the Titan IIIC version. Current configurations are:

Titan IIIB: the two-stage core vehicle, able to accommodate various upper stages. First launched in July 1966 and used subsequently with Agena upper stages to launch USAF payloads.

Titan IIIC: consists of the core section, and 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.

Titan IIID: basically similar to IIIC but using only the first two stages (the core section) and able to accept a variety of upper stages. Current vehicles use radio guidance. Production contract for original IIID placed by USAF in 1967.

Titan III(34)D: instead of Transtage, future Titan IIIs will use the Boeing Inertial Upper Stage that is being developed for the Space Shuttle. Designated Titan III(34)D, these vehicles will be used for some primary launches, as well as for backup of the Space Shuttle during the transition period. The first Titan III(34)D was completed in February 1981. First flight is expected this autumn from Cape Canaveral and will orbit a military payload. Fourteen vehicles have been ordered by USAF to date, eight of which are scheduled to fly from Cape Canaveral, the remainder from Vandenberg AFB, commencing mid-1983.

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 CSD five-segment solid-propellant booster rocket motors; each more than 1,150,000 lb thrust.

Dimensions: first and second stages of core: height 101 ft, diameter 10 ft; Transtage: height 14 ft 8 in, diameter 10 ft.

Launch Weights (approx): Titan IIIB, 375,000 lb; Titan IIIC, 1,400,000 lb.

Performance (Titan IIIC): 3,550 lb to geosynchronous orbit.

Space Shuttle Transportation System

Developed for use by both DoD and NASA, the Space Shuttle is the first reusable space vehicle. It consists of an Orbiter, similar in configuration to a delta-wing airplane but powered by liquid-propellant rocket motors; a large jettisonable tank carrying the fuel for these motors, which is attached to the Orbiter at liftoff; and two solid-propellant rocket boosters, mounted on each side of the fuel tank for liftoff.

The Shuttle is launched vertically, with all engines firing in both the Orbiter and the boosters. At an altitude of approximately 27 miles the booster stages separate and descend by parachute into the ocean for recovery and eventual reuse. The Orbiter then continues under its own power, jettisoning the external fuel tank just before attaining orbit. The Orbiter is provided with a series of smaller rocket engines for maneuvering and attitude control, and these ensure insertion of the vehicle into the final desired orbit. Its main tasks are to place satellites into orbit, retrieve satellites from orbit, and repair and service satellites in orbit. It could be used to place a propulsive stage and satellite into precise low earth orbit, for subsequent transfer into synchronous orbit or to an "escape" mission into space. It will carry a pressurized and manned space laboratory in its payload bay on some missions, with a basic seven-day duration, extendable up to 30 days. On completion of a mission, the Orbiter flies back into the atmosphere and, once through the reentry phase, is able to glide up to 1,100 miles to its base, steered by aerodynamic controls.

Accommodation is provided in a two-level cabin for up to seven crew members. The upper flight deck level has side-by-side seating for two flight crew, with dual controls. Behind them are seats for one or two mission specialists. Three more mission specialists can be located on the mid-deck. Bunks on this deck can be removed to provide three additional seats in a rescue mission.

Orbiter OV-101 *Enterprise* completed approach and landing tests, after air-launch from a specially modified Boeing 747, in 1977. The first test flight was made successfully by the second Orbiter, OV-102 *Columbia*, from the Kennedy Space Center, Fla., in April 1981. A second flight, again using *Columbia*, was made in November 1981 but was cut short due to a fault in one of the fuel cells that provide all of the vehicle's electricity. The first operational orbital mission is scheduled to be flown by *Columbia* this year, followed by *Challenger*, also this year, *Discovery* in 1983 and *Atlantis* in 1985. Seventy-four operational missions are scheduled for the first four years, with 487 up to the mid-1990s.

Prime Contractors: Rockwell International (Orbiter), Martin Marietta (propellant tank), Thiokol (boosters).

Power Plant: three Rocketdyne main engines, each 375,000 lb thrust at liftoff. Two Thiokol solid-propellant rocket boosters, each 2,900,000 lb thrust at liftoff.

Guidance: automatic and manual control.

Dimensions: Orbiter: length 122 ft 0.2 in, wing span 78 ft 0.7 in, height 56 ft 7 in.

Launch Weights: Orbiter 225,000 lb; propellant tank 1,650,000 lb; boosters, each 2,580,000 lb.

Inertial Upper Stage (IUS)

The IUS will serve as an upper stage for both the Titan III(34)D and the Space Shuttle, boosting payloads into orbits not attainable by the Shuttle Orbiter. IUS vehicles are designed in two sizes, using common components.

Scout

Titan IIIC

Space Shuttle Orbiter OV-102 Columbia *landing at Edwards AFB, Calif.*

The basic two-stage vehicle consists of an aft skirt, an aft-stage solid rocket motor, an interstage, a forward-stage solid rocket motor, and an equipment support structure. The NASA twin-stage IUS is generally similar. The IUS will have the capability of boosting 5,000 lb into geosynchronous orbit for Shuttle missions, and 4,000 lb into geosynchronous orbit when used with the Titan III(34)D. It is anticipated that the majority of IUS missions will be to such orbits, but the IUS will also be capable of delivering heavy payloads to intermediate orbits, such as a nominal 12-hour, 350 × 21,450 nm elliptical orbit. Funding to procure 14 IUS has been included in the FY '83 budget proposals.

Prime Contractor: Boeing Aerospace Company.

Power Plant: basic two-stage IUS, aft-stage solid rocket motor; 42,600 lb thrust forward-stage solid rocket motor; 17,430 lb thrust; NASA IUS, two solid rocket motors, each 21,400 lb thrust.

Guidance: inertial.

Dimensions (basic two-stage IUS): length 16 ft 4½ in, diameter 9 ft 6 in.

Launch Weight (basic two-stage IUS): 32,000 lb.

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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 Public Affairs 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 1983

YEAR	STRENGTH	YEAR	STRENGTH
1907	3	1946	455,515
1908	13	1947	305,827
1909	27	1948	387,730
1910	11	1949	419,347
1911	23	1950	411,277
1912	51	1951	788,381
1913	114	1952	973,474
1914	122	1953	977,593
1915	208	1954	947,918
1916	311	1955	959,946
1917	1,218	1956	909,958
1918	195,023	1957	919,835
1919	25,603	1958	871,156
1920	9,050	1959	840,028
1921	11,649	1960	814,213
1922	9,642	1961	820,490
1923	9,441	1962	883,330
1924	10,547	1963	868,644
1925	9,670	1964	855,802
1926	9,674	1965	823,633
1927	10,078	1966	886,350
1928	10,549	1967	897,426
1929	12,131	1968	904,759
1930	13,531	1969	862,062
1931	14,780	1970	791,078
1932	15,028	1971	755,107
1933	15,099	1972	725,635
1934	15,861	1973	690,999
1935	16,247	1974	643,795
1936	17,233	1975	612,551
1937	19,147	1976	585,207
1938	21,089	1977	570,479
1939	23,455	1978	569,491
1940	51,165	1979	559,450
1941	152,125	1980	557,969
1942	764,415	1981	570,302
1943	2,197,114	1982	580,000
1944	2,372,292	1983	599,000*
1945	2,282,259		*Projected

USAF TOTAL ACTIVE-DUTY STRENGTH BY GRADE

(As of September 30, 1981)

AIRMEN

GRADE	NUMBER
CHIEF MASTER SERGEANT	4,647
SENIOR MASTER SERGEANT	9,251
MASTER SERGEANT	33,445
TECHNICAL SERGEANT	52,122
STAFF SERGEANT	100,886
SERGEANT/SENIOR AIRMAN	106,180
AIRMAN FIRST CLASS	101,886
AIRMAN	26,777
AIRMAN BASIC	31,326
TOTAL	466,520

OFFICERS

GRADE	NUMBER
GENERAL	12
LIEUTENANT GENERAL	35
MAJOR GENERAL	120
BRIGADIER GENERAL	170
COLONEL	5,229
LIEUTENANT COLONEL	12,548
MAJOR	18,139
CAPTAIN	35,429
FIRST LIEUTENANT	13,769
SECOND LIEUTENANT	13,916
TOTAL	99,367
CADETS	4,415
AIRMEN	466,520
TOTAL STRENGTH	**570,302**

USAF AND AIR RESERVE FORCES PERSONNEL BY CATEGORIES

CATEGORY	FY '64	FY '74	FY '80	FY '81	FY '82	FY '83[1]
AIR FORCE MILITARY						
Officers	133,000	110,000	98,000	99,000	102,000	105,000
Airmen	720,000[2]	529,000	456,000	467,000	474,000	490,000
Cadets	3,000	4,000	4,000	4,000	4,000	4,000
TOTAL, AIR FORCE MILITARY	**857,000**	**644,000**	**558,000**	**570,000**	**580,000**	**599,000**
Career Reenlistments	59,300	46,800	38,000	43,000	39,600	39,200
Rate	90%	90%	82%	86%	90%	90%
First-Term Reenlistments	17,400	19,300	15,000	19,000	18,300	18,800
Rate	30%	31%	36%	43%	49%	49%
CIVILIAN PERSONNEL						
Direct Hire (Including Technicians)	290,000	274,000	231,000	233,000	234,000	230,000
Indirect Hire—Foreign Nationals	33,000	16,000	13,000	13,000	13,000	13,000
TOTAL, CIVILIAN PERSONNEL	**322,000**	**289,000**	**244,000**	**246,000**	**247,000**	**243,000**
TOTAL MILITARY AND CIVILIAN[3]	**1,179,000**	**932,000**	**802,000**	**816,000**	**827,000**	**842,000**
Technicians (included above as Direct Hire Civilians)						
AFRES Technicians	—	6,000	6,736	7,600	7,748	7,984
ANG Technicians	15,000	22,000	21,815	21,829	21,833	21,246[4]
AIR RESERVE FORCES						
Air National Guard, Selected Reserve	73,000	94,000	96,000	98,000	100,100	101,781
Air Force Reserve, Paid	67,000	48,000	60,000	62,000	63,736	66,600
Air Force Reserve, Nonpaid	97,000	119,000	45,000	42,000	41,000	45,000
TOTAL, READY RESERVE	**237,000**	**261,000**	**201,000**	**202,000**	**204,836**	**213,381**
Standby	130,000	46,000	44,000	44,000	44,000	40,000
TOTAL, AIR RESERVE FORCES[5]	**367,000**	**307,000**	**245,000**	**246,000**	**248,836**	**253,381**

[1]President's Budget Request.
[2]Excludes Aviation Cadets.
[3]FY '64–81 are actuals; FY '82–83 are estimates; excludes nonchargeable personnel.
[4]The number of ANG Technicians is decreasing as the number of Guardsmen on full-time active duty increases.
[5]Excludes Retired Air Force Reserve.

NOTE: Totals may not add due to rounding.

USAF PERSONNEL STRENGTH BY COMMANDS, SOAs, AND DRUs

(Assigned Strengths as of September 30, 1981)

MAJOR COMMANDS	MILITARY	CIVILIAN	TOTAL
Air Force Communications Command (AFCC)	41,393	6,406	47,799
Air Force Logistics Command (AFLC)	9,936	80,949	90,885
Air Force Systems Command (AFSC)	25,132	26,288	51,420
Air Training Command (ATC)	89,022	15,813	104,835
Alaskan Air Command (AAC)	7,347	1,125	8,472
Electronic Security Command (ESC)	10,832	432	11,264
Military Airlift Command (MAC)	72,144	16,171	88,315
Pacific Air Forces (PACAF)	25,206	9,541	34,747
Strategic Air Command (SAC)	104,985	13,484	118,469
Tactical Air Command (TAC)	99,766	11,851	111,617
United States Air Forces in Europe (USAFE)	56,944	11,074	68,018
TOTALS	**542,707**	**193,134**	**735,841**

SEPARATE OPERATING AGENCIES (SOAs)	MILITARY	CIVILIAN	TOTAL
Air Force Accounting and Finance Center (AFAFC)	243	1,958	2,201
Air Force Audit Agency (AFAA)	217	704	921
Air Force Commissary Service (AFCOMS)	680	8,645	9,325
Air Force Engineering and Services Center (AFESC)	343	432	775
Air Force Inspection and Safety Center (AFISC)	375	138	513
Air Force Intelligence Service (AFIS)	461	152	613
Air Force Legal Service Center (AFLSC)	376	153	529
Air Force Manpower and Personnel Center (AFMPC)	1,851	903	2,754
Air Force Medical Service Center (AFMSC)	90	120	210
Air Force Office of Security Police (AFOSP)	53	46	99
Air Force Office of Special Investigations (AFOSI)	1,716	359	2,075
Air Force Service Information and News Center (AFSINC)	511	134	645
Air Force Test and Evaluation Center (AFTEC)	399	100	499
DIRECT REPORTING UNITS (DRUs)			
Aerospace Defense Center (ADC)	1,401	356	1,757
AFRES/Air Reserve Personnel Center (ARPC)	626	11,074	11,700
Albert F. Simpson Historical Research Center (AFSHRC)	17	63	80
Office, Secretary of the AF/Air Staff/National Guard Bureau (NGB)	2,012	1,924	3,936
United States Air Force Academy (USAFA)*	2,550	1,655	4,205
Other	9,259	24,119	33,378
TOTALS, SOAs and DRUs	**23,180**	**53,035**	**76,215**
TOTALS, COMMANDS, SOAs, and DRUs	**565,887**	**246,169**	**812,056**

*4,415 cadets not included.

AIR FORCE MILITARY PERSONNEL DISTRIBUTION BY GEOGRAPHIC AREA

(As of September 30, 1981)

TOTAL MILITARY PERSONNEL	**570,302**
US TERRITORY AND SPECIAL LOCATIONS	**456,105**
TOTAL IN FOREIGN COUNTRIES	**114,197**
Western and Southern Europe (Major concentrations in Germany—36,637, UK—22,388, Spain—4,866, Italy—4,252, Turkey—3,828)	79,208
East Asia and Pacific (Major concentrations in Japan/Okinawa—14,173, Philippines—8,489, South Korea—9,332)	32,326
Africa, Near East, S. Asia (Major concentrations in Egypt—82, Saudi Arabia—313)	485
Western Hemisphere (Major concentrations in Canada—251, Panama [Republic]—1,831)	2,143
Eastern Europe	18
Undistributed	17

NUMBER OF OFFICERS IN EACH MAJOR CAREER FIELD*

CODE	UTILIZATION FIELD TITLE	ASSIGNED
00**	Commanders and Directors	3,319
02	International-Politico-Military Affairs	209
05	Disaster Preparedness	27
09	Special Duty	1,742
10–14	Pilot	19,462
15 & 22	Navigator	8,764
16	Air Traffic Control	450
17	Air Weapons Director	2,122
18	Missile Operations	3,307
20	Space Systems	621
23	Audiovisual	115
25	Weather	1,297
26	Scientific	1,319
27	Acquisition Program Management	2,008
28	Development Engineer	4,752
29	Program Management	192
30	Communications-Electronics	3,464
31	Missile Maintenance	470
40	Aircraft Maintenance & Munitions	3,899
51	Computer Technology	2,827
55	Civil Engineering	1,966
57	Cartography/Geodesy	82
60	Transportation	990
62	Supply Service	386
64	Supply Management	1,337
65	Procurement/Manufacturing Management	1,499
66	Logistics Plans & Programs	933
67	Financial	1,186
69	Management Analysis	199
70	Administration	2,896
73	Personnel	2,120
74	Manpower Management	620
75	Education & Training	723
79	Public Affairs	595
80	Intelligence	2,828
81	Security Police	969
82	Special Investigations & Counterintelligence	471
87	Band	30
88	Legal	1,185
89	Chaplain	832
90	Health Services Management	1,065
91 & 92	Biomedical Sciences	1,835
93–95	Physician	3,567
96	Medical Research	16
97	Nurse	4,142
98	Dental	1,502
99	Veterinary	225

*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	1,597
11	Aircrew Operations	7,331
20	Intelligence	12,395
22	Photomapping	122
23	Audiovisual	3,178
24	Safety	1,190
25	Weather	2,933
27	Command Control Systems Operations	17,416
29	Communications Operations	9,909
30	Communications-Electronics Systems	26,652
31	Missile Electronic Maintenance	4,355
32	Avionics Systems	28,188
34	Training Devices	2,147
36	Wire Communications Systems Maintenance	4,282
39	Maintenance Management Systems	2,695
40	Intricate Equipment Maintenance	710
42	Aircraft Systems Maintenance	41,133
43	Aircraft Maintenance	44,473
44	Missile Maintenance	3,883
46	Munitions & Weapons Maintenance	21,117
47	Vehicle Maintenance	5,083
51	Computer Systems	6,606
54	Mechanical/Electrical	9,244
55	Structural/Pavements	12,882
56	Sanitation	1,546
57	Fire Protection	5,767
59	Marine	105
60	Transportation	13,863
61	Supply Services	1,916
62	Food Services	4,897
63	Fuels	6,573
64	Supply	25,327
65	Procurement	1,408
66	Logistics Plans	827
67	Accounting & Finance, and Auditing	5,506
69	Management Analysis	483
70	Administration	29,003
73	Personnel	11,450
74	Morale, Welfare & Recreation	1,817
75	Education & Training	3,133
79	Public Affairs	1,224
81	Security Police	35,331
82	Special Investigations & Counterintelligence	899
87	Band	1,105
90 & 91	Medical	21,920
92	Aircrew Protection	2,630
98	Dental	3,600
99	Miscellaneous (Special Duty, Patients, Unclassified, etc.)	16,669

USAF MILITARY PERSONNEL BY GRADE, RACE, AND SEX

(As of September 30, 1981)

OFFICERS

GRADE	FORCE	BLACK*	OTHER**	WOMEN***
GENERAL	337	11	2	3
COLONEL	5,229	97	50	70
LIEUTENANT COLONEL	12,548	290	184	314
MAJOR	18,139	422	344	728
CAPTAIN	35,429	1,837	512	3,314
FIRST LIEUTENANT	13,769	1,181	301	2,530
SECOND LIEUTENANT	13,916	1,000	342	2,147
TOTALS	**99,367**	**4,838**	**1,735**	**9,106**

AIRMEN

GRADE	FORCE	BLACK*	OTHER**	WOMEN***
CHIEF MASTER SERGEANT	4,647	478	53	15
SENIOR MASTER SERGEANT	9,251	1,197	128	34
MASTER SERGEANT	33,445	4,830	494	132
TECHNICAL SERGEANT	52,122	8,148	946	729
STAFF SERGEANT	100,886	19,763	2,957	9,040
SERGEANT/SENIOR AIRMAN	106,180	18,711	3,786	18,295
AIRMAN FIRST CLASS	101,886	16,920	3,611	17,918
AIRMAN	26,777	3,810	863	4,194
AIRMAN BASIC	31,326	4,372	1,000	3,481
TOTALS	**466,520**	**78,229**	**13,838**	**53,838**
TOTALS, INCLUDING OFFICERS	**565,887**	**83,067**	**15,593**	**62,944**

*Includes 11,041 women.
**Includes 1,871 women.
***Includes women from black and other categories.

AVERAGE AGES OF MILITARY PERSONNEL

(As of September 30, 1981)

Officers	Average 34 years of age
Airmen	Average 27 years of age

MONTHLY MILITARY BASIC RATES OF PAY

(Effective October 1, 1981)

PAY GRADE	UNDER 2	2	3	4	6	8	10	12	14	16	18	20	22	26
							YEARS OF SERVICE							
COMMISSIONED OFFICERS														
O-10	$4,506*	$4,665*	$4,665*	$4,665*	$4,665*	$4,844*	$4,844*	$5,215*	$5,215*	$5,588*	$5,588*	$5,961*	$5,961*	$6,333*
O-9	3,994	4,098	4,186*	4,186*	4,186*	4,292*	4,292*	4,471*	4,471*	4,844*	4,844*	5,215*	5,215*	5,588*
O-8	3,617	3,726	3,814	3,814	3,814	4,098	4,098	4,292*	4,292*	4,471*	4,665*	4,844*	5,038*	5,038*
O-7	3,006	3,210	3,210	3,210	3,354	3,354	3,549	3,549	3,726	4,098	4,380*	4,380*	4,380*	4,380*
O-6	2,228	2,448	2,608	2,608	2,608	2,608	2,608	2,608	2,696	3,123	3,283	3,354	3,549	3,849
O-5	1,782	2,092	2,237	2,237	2,237	2,237	2,305	2,428	2,591	2,785	2,945	3,034	3,140	3,140
O-4	1,502	1,828	1,951	1,951	1,986	2,075	2,216	2,341	2,448	2,555	2,626	2,626	2,626	2,626
O-3	1,395	1,560	1,668	1,845	1,934	2,004	2,111	2,216	2,271	2,271	2,271	2,271	2,271	2,271
O-2	1,217	1,329	1,596	1,650	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685	1,685
O-1	1,056	1,099	1,329	1,329	1,329	1,329	1,329	1,329	1,329	1,329	1,329	1,329	1,329	1,329
COMMISSIONED OFFICERS WITH MORE THAN 4 YEARS OF ACTIVE ENLISTED OR WARRANT OFFICER SERVICE														
O-3E	—	—	—	1,845	1,934	2,004	2,111	2,216	2,305	2,305	2,305	2,305	2,305	2,305
O-2E	—	—	—	1,650	1,685	1,738	1,828	1,899	1,951	1,951	1,951	1,951	1,951	1,951
O-1E	—	—	—	1,329	1,419	1,472	1,525	1,578	1,650	1,650	1,650	1,650	1,650	1,650
ENLISTED MEMBERS														
E-9	—	—	—	—	—	—	1,653	1,691	1,729	1,769	1,809	1,844	1,941	2,130
E-8	—	—	—	—	—	1,387	1,426	1,464	1,502	1,542	1,577	1,616	1,711	1,902
E-7	968	1,045	1,084	1,122	1,160	1,197	1,236	1,274	1,331	1,369	1,408	1,426	1,522	1,711
E-6	833	908	946	986	1,023	1,060	1,099	1,155	1,192	1,230	1,249	1,249	1,249	1,249
E-5	731	796	834	870	927	965	1,004	1,041	1,060	1,060	1,060	1,060	1,060	1,060
E-4	682	720	762	821	854	854	854	854	854	854	854	854	854	854
E-3	642	677	705	732	732	732	732	732	732	732	732	732	732	732
E-2	618	618	618	618	618	618	618	618	618	618	618	618	618	618
E-1	551	551	551	551	551	551	551	551	551	551	551	551	551	551

NOTE: Amounts less than $1 have been omitted.
*Basic pay is limited to $4,176.00 by Level V of the Executive Schedule.
Basic pay while serving as Chairman of the Joint Chiefs of Staff or as Chief of Staff of the Air Force is $6,988.50, regardless of cumulative years of service.
Basic pay while serving as Chief Master Sergeant of the Air Force is $2,589.00, regardless of cumulative years of service.

MONTHLY BASIC ALLOWANCE FOR QUARTERS (BAQ)

(Effective October 1, 1981)

Pay Grade	Without Dependents		With Dependents
	Full*	Partial**	
C/S and O-10	$489.00	$50.70	$611.70
O-9	489.00	50.70	611.70
O-8	489.00	50.70	611.70
O-7	489.00	50.70	611.70
O-6	438.90	39.60	535.50
O-5	404.70	33.00	487.20
O-4	360.30	26.70	434.70
O-3	316.80	22.20	390.90
O-2	275.10	17.70	348.00
O-1	214.80	13.20	279.60
CMSAF and E-9	261.90	18.60	368.70
E-8	241.50	15.30	340.50
E-7	205.50	12.00	316.80
E-6	186.60	9.90	291.60
E-5	179.40	8.70	267.90
E-4	158.10	8.10	235.50
E-3	141.30	7.80	205.50
E-2	124.80	7.20	205.50
E-1	117.90	6.90	205.50

*Payment of the full rate of basic allowance for quarters at these rates to members of the uniformed services without dependents is authorized by 37 U.S.C. 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.C. 403(b) or 403(c), are not entitled to the full rate of basic allowance for quarters, is authorized by 37 U.S.C. 1009(d) and Part IV of Executive Order 11157, as amended.

MONTHLY INCENTIVE PAY RATES*

(Effective September 1, 1981)

PHASE I

Monthly Rate	Years of Aviation Service as an Officer *(including flight training)*
$125	2 or less
$156	over 2
$188	over 3
$206	over 4
$400	over 6

PHASE II

Monthly Rate	Years of Service as an Officer as Computed under 37 U.S.C. 205
$370	over 18
$340	over 20
$310	over 22
$280	over 24
$250	over 25 (O-6 and below)

Non-Crew Member Flying Pay

	Monthly Rate
Officer	$110
Enlisted Non-Crew Member	$ 83

*For rated officers, flight surgeons, and other designated medical officers.

NOTE: An officer in pay grade O-7 may not be paid at a rate greater than $200 a month. An officer in pay grade O-8 or above may not be paid at a rate greater than $206 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
$94.39	$4.50	$5.09	$6.73

EDUCATIONAL LEVELS—USAF LINE OFFICERS

Level	End of September 1981 Number	Percent
Below baccalaureate/unknown	568	0.6
Baccalaureate, no master's degree	50,245	59.3
Master's degree, no doctorate	32,599	38.5
Doctoral and professional degrees	1,353	1.6
TOTALS	**84,765**	**100.0**

EDUCATION LEVELS—USAF ENLISTED FORCE

Level	End of September 1981 Number	Percent
Below high school	8,635[1]	1.8
High School	349,137[2]	75.0
Some college to less than two years of college	62,932	13.5
AA/AS Degree	8,727	1.9
Two–three years of college	26,100	5.6
Baccalaureate, no master's	9,136	2.0
Master's degree, no doctorate	1,042[3]	0.2
TOTALS	**465,709**	**100.0**

[1]Includes individuals with no high school diploma or GED certificate.
[2]Includes individuals with a high school diploma or GED certificate.
[3]Includes seven individuals with doctoral and professional degrees.

NOTE: Titles were changed to simplify education level figures and to align them with titles used for officers.

FEDERAL CIVILIAN PAY SCALE

General Schedule

(Effective October 1, 1981)

GRADE	1	2	3	4	5	6	7	8	9	10
GS-1	$8,342	$8,620	$8,898	$9,175	$9,453	$9,615	$9,890	$10,165	$10,178	$10,439
GS-2	9,381	9,603	9,913	10,178	10,292	10,595	10,898	11,201	11,504	11,807
GS-3	10,235	10,576	10,917	11,258	11,599	11,940	12,281	12,622	12,963	13,304
GS-4	11,490	11,873	12,256	12,639	13,022	13,405	13,788	14,171	14,554	14,937
GS-5	12,854	13,282	13,710	14,138	14,566	14,994	15,422	15,850	16,278	16,706
GS-6	14,328	14,806	15,284	15,762	16,240	16,718	17,196	17,674	18,152	18,630
GS-7	15,922	16,453	16,984	17,515	18,046	18,577	19,108	19,639	20,170	20,701
GS-8	17,634	18,222	18,810	19,398	19,986	20,574	21,162	21,750	22,338	22,926
GS-9	19,477	20,126	20,775	21,424	22,073	22,722	23,371	24,020	24,669	25,318
GS-10	21,449	22,164	22,879	23,594	24,309	25,024	25,739	26,454	27,169	27,884
GS-11	23,566	24,352	25,138	25,924	26,710	27,496	28,282	29,068	29,854	30,640
GS-12	28,245	29,187	30,129	31,071	32,013	32,955	33,897	34,839	35,781	36,723
GS-13	33,586	34,706	35,826	36,946	38,066	39,186	40,306	41,426	42,546	43,666
GS-14	39,689	41,012	42,335	43,658	44,981	46,304	47,627	48,950	50,273	51,596
GS-15	46,685	48,241	49,797	51,353	52,909	54,465	56,021	57,577*	59,133*	60,689*
GS-16	54,755	56,580	58,405*	60,230*	62,055*	63,880*	65,705*	67,530*	69,355*	
GS-17	64,142*	66,280*	68,418*	70,556*	72,694*					
GS-18	75,177*									

Senior Executive Service**

LEVEL	1	2	3	4	5	6
	$54,755	$56,936	$59,119	$61,300	$62,950	$64,600

*Pay limited to Level V of the Executive Schedule, $57,500.60.
**Basic pay for employees at these rates is limited to $58,500, in accordance with Public Law 97-92.

AIR FORCE FULL-TIME CIVILIAN EMPLOYMENT BY GRADE

(As of November 30, 1981)

GS/OTHER		WG		WL		WS	
GR	POP	GR	POP	GR	POP	GR	POP
1	234	1	284	1	3	1	31
2	1,186	2	1,439	2	49	2	42
3	8,493	3	997	3	2	3	126
4	17,280	4	1,649	4	45	4	225
5	22,626	5	4,745	5	57	5	481
6	9,189	6	4,653	6	35	6	531
7	13,484	7	5,933	7	43	7	1,228
8	3,521	8	7,900	8	162	8	910
9	17,809	9	7,188	9	264	9	1,931
10	1,188	10	25,048	10	906	10	2,282
11	15,565	11	6,654	11	110	11	865
12	15,996	12	5,069	12	16	12	553
13	8,605	13	540	13	2	13	418
14	3,022	14	167	14	0	14	232
15	965	15	4	15	0	15	119
16	2					16	37
17	1					17	13
18	0					18	2
ST	3					19	1
SES	178						
TOTALS	**139,345**		**72,220**		**1,694**		**10,027**

GR = Grade
GS = General Schedule
ST = Scientific and Professional
SES = Senior Executive Service

POP = Population
WG = Wage Grade Positions
WL = Wage Grade Leader Positions
WS = Wage Grade Supervisory Positions

Note: Table does not include ANG Technicians

AIR FORCE CIVILIAN PERSONNEL AVERAGE AGE AND LENGTH OF SERVICE

(As of December 31, 1981)

Average age	43.1 years
Average length of service	14.8 years

DoD FINANCIAL SUMMARY BY COMPONENT FOR FY 1981–83

(TOA in Billions of Dollars)

Component	FY '81	FY '82	FY '83
Army	$ 43.24	$ 50.98	$ 60.74
Navy	57.47	67.97	88.02
Air Force	52.43	64.23	78.37
Defense Agencies/OSD	6.73	7.77	9.48
Defense-wide	16.24	17.89	17.15
Defense-wide Contingencies	—	5.40	4.23
TOTALS	$176.10	$214.24	$257.98

NOTE: Totals may not add due to rounding.

COMPARISON OF DoD BUDGETS BY MILITARY PROGRAMS FOR FY 1979–83

(Billions of Dollars)

Military Program	Total Obligational Authority in Current Dollars					Change
	1979*	1980*	1981	1982	1983	FY 1982–83
Strategic Forces	$ 8.0	$ 11.1	$ 12.7	$ 16.2	$ 23.1	+ 6.9
General-Purpose Forces	47.4	52.2	68.3	88.0	106.5	+18.5
Intelligence and Communications	8.0	9.1	11.2	14.0	18.0	+ 4.0
Airlift and Sealift	1.7	2.1	2.9	4.0	4.4	+ 0.3
Guard and Reserve Forces	6.9	7.9	9.9	11.6	14.3	+ 2.8
Research and Development	10.9	11.9	14.2	16.9	20.1	+ 3.2
Central Supply and Maintenance	13.0	16.0	17.6	19.2	22.2	+ 3.0
Training, Medical, and Other General Personnel Activities	26.4	29.2	35.0	39.8	44.2	+ 4.5
Administrative and Associated Activities	2.3	2.5	3.4	3.6	4.3	+ 0.7
Support of Other Nations	0.4	0.6	0.9	1.0	0.9	− 0.1
TOTAL MILITARY FUNCTIONS	**$124.8**	**$142.2**	**$176.1**	**$214.2**	**$258.0**	**+43.7**

NOTE: Totals may not add due to rounding.
*Expressed in 1981 dollars.

INSTALLATIONS OF THE US AIR FORCE

MAJOR INSTALLATIONS	FY '64	FY '75	FY '76	FY '77	FY '78	FY '79	FY '80	FY '81	FY '82
US and Possessions*	160	113	111	107	107	107	107	107	106
Foreign	56	35	29	27	27	27	27	27	28
Worldwide	**216**	**148**	**140**	**134**	**134**	**134**	**134**	**134**	**134**
OTHER INSTALLATIONS									
US and Possessions	3,650	2,323	2,372	2,305	2,202	2,169	2,168	2,069	2,061
Foreign	1,168	720	658	664	661	645	645	626	625
Worldwide	**4,818**	**3,043**	**3,030**	**2,969**	**2,863**	**2,814**	**2,813**	**2,695**	**2,686**
"Other Installations" includes:									
Auxiliary	2,849	—	—	—	—	—	—	—	—
Ballistic Missile	1,083	1,157	1,157	1,157	1,157	1,157	1,157	1,157	1,158
Industrial	55	—	—	—	—	—	—	—	—
Radar	331	—	—	—	—	—	—	—	—
Air National Guard	103	125	127	128	127	128	128	134	134
Tenant, Non-Air Force	348	—	—	—	—	—	—	—	—
War Only	49	—	—	—	—	—	—	—	—
Electronics Station or Site	—	599	579	569	545	530	530	464	461
General Support Annex	—	1,140	1,146	1,095	1,016	981	980	924	917
Auxiliary Airfield	—	22	21	20	18	18	18	16	16

*Includes Air Reserve Forces (AFRES and ANG).

AIR FORCE BUDGET AND FINANCE—FISCAL YEARS 1968–83

(Figures in millions of dollars)

	FY '68	FY '74	FY '80	FY '81	FY '82	FY '83
Gross National Product	$834,400	$1,381,500	$2,567,500	$2,858,600	$3,082,900	$3,433,600
Federal Budget, Outlays (Current $)	178,000	269,600	579,600	657,200	725,300	757,600
DoD Budget, Outlays (Current $)	77,265	77,550	132,840	156,100	182,800	215,900
DoD Percent of: GNP	9.3%	5.6%	5.2%	5.5%	5.9%	6.3%
Federal Budget	43.4%	28.8%	22.9%	23.8%	25.2%	28.5%
Air Force Budget Outlays						
Current Dollars	25,734	23,928	38,976	46,748	55,408	67,094
Constant FY '83 Dollars	80,899	51,373	51,305	54,296	59,212	67,094
AF Percent of: GNP	3.1%	1.7%	1.5%	1.6%	1.8%	2.0%
Federal Budget	14.4%	8.9%	6.7%	7.1%	7.6%	8.9%
DoD Budget	33.3%	30.9%	29.3%	29.9%	30.3%	31.1%
Total Obligational Authority						
DoD—Current Dollars	75,627	85,054	142,211	176,094	214,235	257,985
Constant FY '83 Dollars	238,866	169,752	182,364	202,159	227,813	257,985
AF—Current Dollars	24,974	24,760	41,653	52,425	64,227	78,373
Constant FY '83 Dollars	79,915	52,264	53,558	60,165	68,306	78,373
(With anticipated supplementals)						
Current Dollars						
Aircraft Procurement (3010)	5,306	2,819	7,981	10,298	14,022	17,757
Missile Procurement (3020)	1,408	1,419	2,159	3,333	4,574	6,828
Other Procurement (3080)	2,357	1,652	2,655	3,148	5,407	5,845
Procurement Subtotal	9,071	5,890	12,795	16,779	24,003	30,430
Military Construction—AF (3300)	481	321	572	937	1,630	2,082
Military Construction—AFRES (3730)	4	11	12	22	37	36
Military Construction—ANG (3830)	10	19	36	90	105	107
Military Construction Subtotal	495	351	620	1,049	1,772	2,224
RDT&E (3600)	3,412	3,063	5,001	7,133	8,876	11,220
TOTAL, INVESTMENT	**12,978**	**9,303**	**18,416**	**24,961**	**34,651**	**43,874**
Military Personnel—AF (3500)	5,677	7,479	8,496	9,913	10,334	12,031
Reserve Personnel—AF (3700)	64	126	226	277	295	351
National Guard Personnel—AF (3850)	84	182	299	386	426	545
Military Personnel Subtotal	5,825	7,787	9,021	10,576	11,055	12,927
Operation & Maintenance—AF (3400)	5,904	6,882	12,421	14,742	16,124	17,945
Operation & Maintenance—AFRES (3740)	—	239	511	599	670	766
Operation & Maintenance—ANG (3840)	266	551	1,283	1,519	1,648	1,762
Stock Fund (4921)	—	—	—	28	79	162
Operation & Maintenance Subtotal	6,170	7,672	14,215	16,888	18,521	20,634
Family Housing* (0704)	—	—	—	—	—	938
TOTAL, OPERATING	**11,995**	**15,459**	**23,236**	**27,464**	**29,576**	**34,499**
Programs, TOA (Current $)						
I Strategic Forces	5,176	4,315	6,658	8,101	11,300	16,386
II General-Purpose Forces	7,273	5,593	11,757	15,256	19,479	20,644
III Intelligence & Communications	3,622	3,340	4,742	5,920	7,179	9,372
IV Airlift & Sealift Forces	1,736	756	2,034	2,867	3,863	4,202
V Reserve & Guard Forces	621	1,223	3,083	3,525	3,500	3,916
VI Research & Development	1,556	2,401	4,174	5,729	7,044	8,911
VII Central Supply & Maintenance	2,375	2,763	4,515	5,196	5,494	6,865
VIII Training, Medical & Other General Activities	2,079	3,441	3,881	4,611	5,246	6,905
IX Administration & Associated Activities	352	568	529	790	724	927
X Support of Other Nations	182	363	281	429	398	246
Pay Raise in DoD Contingency Accounts for Supplemental Requests	—	—	—	—	1,530	1,182

NOTE: Totals may not add due to rounding. FY '82 column is a revised estimate. FY '83 is President's budget request.
*OSD appropriation prior to FY '83.

USAF AIRCRAFT PROCUREMENT—FY '74–82

CATEGORY	FY '74	FY '75	FY '76	FY '77	FY '78	FY '79	FY '80	FY '81	FY '82
Fixed-Wing Aircraft									
Total Budgeted	165	193	181	216	356	392	408	313	201
Accepted/Scheduled Acceptances	118	99	275	190	187	287	349	395	366
Helicopters									
Total Budgeted	0	0	0	0	0	0	0	5	6
Accepted/Scheduled Acceptances	1	5	0	0	0	0	0	0	0

NOTE: FY '74–81 columns are actual. FY '82 data are planned.

USAF'S AIRCRAFT—HOW MANY OF EACH TYPE AND HOW OLD?

(Current as of September 30, 1981)

	0–3 yrs.	3–6 yrs.	6–9 yrs.	9–12 yrs.	12–15 yrs.	15–18 yrs.	18–21 yrs.	21–24 yrs.	24+ yrs.	TOTAL NUMBER	AVERAGE AGE
A-7	1	—	—	17	3	—	—	—	—	21	10 yrs., 5 mos.
A-10	248	120	5	—	—	—	—	—	—	373	2 yrs., 1 mo.
A-37	—	3	11	16	1	—	—	—	—	31	8 yrs., 11 mos.
B-1	1	1	—	—	—	—	—	—	—	2	3 yrs., 7 mos.
B-52	—	—	—	—	—	—	114	164	69	347	21 yrs., 11 mos.
FB-111	—	—	—	60	3	—	—	—	—	63	10 yrs., 11 mos.
C-5	—	1	15	59	2	—	—	—	—	77	10 yrs., 0 mos.
C-6	—	—	—	—	—	1	—	—	—	1	15 yrs., 10 mos.
C-9	—	—	3	12	8	—	—	—	—	23	10 yrs., 6 mos.
C-10	5	—	—	—	—	—	—	—	—	5	0 yrs., 1 mo.
C-12	—	11	2	—	—	—	—	—	—	13	5 yrs., 5 mos.
C-130	—	36	40	39	28	177	32	8	2	362	14 yrs., 0 mos.
C-131	—	—	—	—	—	—	—	—	1	1	26 yrs., 6 mos.
C-135	—	—	—	—	—	118	250	231	16	615	20 yrs., 2 mos.
C-137	—	—	1	—	—	—	1	3	—	5	18 yrs., 11 mos.
C-140	—	—	—	—	—	—	15	—	—	15	18 yrs., 11 mos.
C-141	—	—	—	—	135	138	1	—	—	274	15 yrs., 1 mo.
E-3	11	14	—	—	—	—	—	—	—	25	3 yrs., 1 mo.
E-4	—	—	4	—	—	—	—	—	—	4	7 yrs., 4 mos.
F-4	—	96	72	235	618	111	1	—	—	1,133	12 yrs., 2 mos.
F-5	—	75	26	2	—	1	—	—	—	104	6 yrs., 4 mos.
F-15	277	278	29	—	—	—	—	—	—	584	3 yrs., 2 mos.
F-16	298	8	—	—	—	—	—	—	—	306	1 yr., 1 mo.
F-101	—	—	—	—	—	—	—	19	—	19	21 yrs., 10 mos.
F-106	—	—	—	—	—	—	12	115	1	128	21 yrs., 8 mos.
F-111	—	11	62	183	96	—	—	—	—	352	10 yrs., 5 mos.
H-1	—	—	22	70	27	10	—	—	—	129	11 yrs., 6 mos.
H-3	—	—	—	8	25	20	1	—	—	54	14 yrs., 5 mos.
H-53	—	—	6	26	15	—	—	—	—	47	11 yrs., 1 mo.
O-2	—	—	—	75	24	—	—	—	—	99	11 yrs., 10 mos.
OV-10	—	—	—	—	78	—	—	—	—	78	12 yrs., 11 mos.
T-33	—	—	—	—	—	—	—	92	28	120	23 yrs., 6 mos.
T-37	—	—	—	10	149	43	91	320	12	625	19 yrs., 2 mos.
T-38	—	—	—	77	231	349	177	—	—	834	15 yrs., 6 mos.
T-39	—	—	—	—	—	3	129	—	—	132	19 yrs., 1 mo.
T-41	—	—	—	6	44	—	—	—	—	50	13 yrs., 5 mos.
T-43	—	—	15	—	—	—	—	—	—	15	7 yrs., 7 mos.
UV-18	—	2	—	—	—	—	—	—	—	2	4 yrs., 0 mos.
OTHER*	(24)									(24)	
TOTALS	**841**	**656**	**313**	**895**	**1,487**	**971**	**824**	**952**	**129**	**7,092**	**13 yrs., 1 mo.**
PERCENT	**12%**	**9%**	**4%**	**13%**	**21%**	**14%**	**12%**	**13%**	**2%**		

Less than 9 years old: 1,810 aircraft (25.5%)
More than 9 years old: 5,272 aircraft (74.5%)
*Inventory only

AIR NATIONAL GUARD AIRCRAFT —HOW MANY, HOW OLD?

(Current as of September 30, 1981)

	0–3 yrs.	3–6 yrs.	6–9 yrs.	9–12 yrs.	12–15 yrs.	15–18 yrs.	18–21 yrs.	21–24 yrs.	24+ yrs.	TOTAL NUMBER	AVERAGE AGE
A-7	12	28	129	184	—	—	—	—	—	353	8 yrs., 7 mos.
A-10	97	—	—	—	—	—	—	—	—	97	2 yrs., 0 mos.
A-37	—	12	25	31	11	—	—	—	—	79	9 yrs., 2 mos.
B-57	—	—	—	—	—	—	—	—	17	17	26 yrs., 8 mos.
C-7	—	—	—	—	1	—	1	—	—	2	17 yrs., 8 mos.
C-130	20	—	—	—	3	21	51	66	34	195	19 yrs., 1 mo.
C-131	—	—	—	—	—	—	—	1	32	33	26 yrs., 1 mo.
C-135	—	—	—	—	—	—	1	103	—	104	22 yrs., 7 mos.
F-4	—	—	—	—	115	370	—	—	—	485	15 yrs., 11 mos.
F-101	—	—	—	—	—	—	1	40	—	41	21 yrs., 5 mos.
F-105	—	—	—	—	—	32	4	1	—	37	17 yrs., 8 mos.
F-106	—	—	—	—	—	—	5	83	—	88	21 yrs., 11 mos.
H-3	—	—	—	3	2	7	—	—	—	12	14 yrs., 2 mos.
O-2	—	—	—	12	32	—	—	—	—	44	13 yrs., 2 mos.
T-33	—	—	—	—	—	—	—	8	37	45	25 yrs., 10 mos.
T-43	—	—	4	—	—	—	—	—	—	4	7 yrs., 6 mos.
TOTALS	**129**	**40**	**158**	**230**	**164**	**430**	**63**	**302**	**120**	**1,636**	**15 yrs., 0 mos.**
PERCENT	**8%**	**2%**	**10%**	**14%**	**10%**	**26%**	**4%**	**19%**	**7%**		

Less than 9 years old: 327 aircraft (20%)
More than 9 years old: 1,309 aircraft (80%)

AIR FORCE RESERVE AIRCRAFT—HOW MANY, HOW OLD?

(Current as of September 30, 1981)

	0–3 yrs.	3–6 yrs.	6–9 yrs.	9–12 yrs.	12–15 yrs.	15–18 yrs.	18–21 yrs.	21–24 yrs.	24+ yrs.	TOTAL NUMBER	AVERAGE AGE
A-10	45	5	—	—	—	—	—	—	—	50	2 yrs., 0 mos.
A-37	—	7	16	2	—	—	—	—	—	25	6 yrs., 11 mos.
C-7	—	—	—	—	26	—	2	—	—	28	15 yrs., 1 mo.
C-123	—	—	—	—	—	—	—	1	35	36	25 yrs., 4 mos.
C-130	—	—	—	4	—	28	48	36	38	154	20 yrs., 8 mos.
C-135	—	—	—	—	—	—	—	24	—	24	22 yrs., 6 mos.
F-4	—	—	—	—	42	20	—	—	—	62	14 yrs., 11 mos.
F-105	—	—	—	—	—	7	42	—	—	49	19 yrs., 0 mos.
H-1	—	—	5	5	—	—	—	—	—	10	9 yrs., 6 mos.
H-3	—	—	—	2	8	4	—	—	—	14	14 yrs., 1 mo.
TOTALS	**45**	**12**	**21**	**13**	**76**	**59**	**92**	**61**	**73**	**452**	**16 yrs., 6 mos.**
PERCENT	**10%**	**3%**	**5%**	**3%**	**17%**	**13%**	**20%**	**13%**	**16%**		

Less than 9 years old: 78 aircraft (17.3%)
More than 9 years old: 374 aircraft (82.7%)

ACTIVE-DUTY MILITARY PERSONNEL, RESERVE COMPONENT MILITARY PERSONNEL, AND CIVILIAN PERSONNEL STRENGTH

(Figures in thousands)

	FY '64	FY '76	FY '79	FY '80	FY '81	FY '82	FY '83
Active-Duty Military							
Army	972	779	758	777	781	784	784
Navy	667	525	522	527	540	553	569
Marine Corps	190	192	185	188	191	192	195
Air Force	856	585	559	558	570	581	600
Total	**2,685**	**2,081**	**2,024**	**2,050**	**2,082**	**2,110**	**2,148**
Reserve Components (Selected Reserve)							
Army National Guard	382	362	346	367	389	398	417
Army Reserve	269	195	190	207	225	252	269
Naval Reserve	123	97	88	87	88	94	106
Marine Corps Reserve	46	30	33	35	37	39	40
Air National Guard	73	91	93	96	98	100	102
Air Force Reserve	61	48	57	59	62	64	67
Total	**953**	**823**	**807**	**851**	**899**	**946**	**1,000**
Direct Hire Civilian							
Army*	360	329	359	312	318	322	323
Navy	332	311	310	298	310	308	309
Air Force*	305	248	245	231	233	233	229
Defense Agencies	38	72	77	75	79	84	86
Total*	**1,035**	**960**	**991**	**916**	**940**	**947**	**947**

NOTE: Totals may not add due to rounding.

*These totals include Army and Air National Guard Technicians, who were converted from State to Federal employees in FY '69. The FY '64 totals have been adjusted to include approximately 38,000 technicians.

USAF SQUADRONS BY TYPE AND NUMBER

MAJOR AIR FORCE SQUADRONS	FY '64	FY '79	FY '80	FY '81	FY '82	FY '83
Bomber	75	25	25	25	25	22
ECM/Reconnaissance	5	1	4	4	2	2
IRBM/ICBM	35	26	26	26	26	26
Tanker	55	34	33	33	32	32
Interceptor	40	6	6	6	5	5
Bomarc	8	—	—	—	—	—
Command Control & Surveillance	13	6	6	6	6	6
Tactical Bomber	2	—	—	—	—	—
Mace/Matador	8	—	—	—	—	—
Fighter	75	79	78	78	79	80
Reconnaissance	8	7	6	6	6	7
Tanker/Cargo	—	—	—	1	1	1
Tactical Air Control System	1	13	9	9	9	9
Special Operations Force	6	5	5	5	5	5
Tactical Airborne Command Control System	—	5	5	5	5	5
Tactical Electronic Warfare Support	—	—	—	1	2	2
Tactical Airlift	26	14	14	14	14	14
Strategic Airlift	35	17	17	17	17	17
Aeromed Evacuation	5	3	3	3	3	3
Special Mission	2	1	1	1	1	1
Mapping	2	—	—	—	—	—
Weather	6	2	2	2	2	2
Air Rescue & Recovery	12	7	7	7	7	7
Intelligence	—	5	6	6	6	6
TOTAL, USAF	**439**	**279**	**276**	**255**	**253**	**252**
Air National Guard	92	91	91	91	92	92
Air Force Reserve	50	53*	53*	53*	53*	54*
TOTAL, MAJOR FORCE SQUADRONS	**581**	**423**	**420**	**399**	**398**	**398**

NOTE: Data in FY '64–81 columns are actual; FY '82 and FY '83 data are estimated.
FY '81–83 columns do not include miscellaneous squadrons.
*Includes Associate Squadrons.

NUMBER OF AIRCRAFT PER ACTIVE-DUTY USAF SQUADRON

Aircraft Type	Number*
A-7	24
A-10	18 or 24
B-52	12, 13, 14, 16, 17, or 19
C-5	17 or 18
C-9	3 or 11
C-130	16
AC-130	10
KC-135	9 to 25
C-141	18
E-3A	2, 3, or 17
F-4	18 or 24
RF-4	18
F-5	11, 18, or 21
F-15	18 or 24
F-16	18 or 24
F-106	18
F-111	18 or 24
FB-111	12 or 13

*For some types of aircraft, squadrons vary in size as shown here. HC-130, WC-130, T-39, and T-38 aircraft are counted as total Unit Equipment, not by squadrons.

THE NUMBER OF ACTIVE AIRCRAFT AND FLYING HOURS

TYPE OF AIRCRAFT	FY '64	FY '74	FY '79	FY '80	FY '81	FY '82	FY '83
Bomber, Strategic	1,364	500	417	414	412	411	363
Bomber, Other	145	—	—	—	—	—	—
Tanker	998	657	525	529	534	539	544
Fighter/Interceptor/Attack	3,538	2,387	2,622	2,769	2,850	2,925	3,026
Reconnaissance/Electronic Warfare	595	610	366	354	344	363	392
Cargo/Transport	2,327	1,253	841	836	835	832	828
Search & Rescue (Fixed Wing)	100	56	35	35	36	37	35
Helicopter (includes Rescue)	401	317	230	230	230	230	238
Special Research	3	—	—	—	—	—	—
Trainer	2,873	1,996	1,704	1,678	1,644	1,660	1,664
Utility/Observation	345	154	210	189	207	197	215
TOTAL, USAF	**12,689**	**7,930**	**6,950**	**7,034**	**7,092**	**7,194**	**7,305**
Air National Guard total	1,806	1,798	1,522	1,560	1,636	1,665	1,656
Air Force Reserve total	719	428	487	474	452	455	458
Free World Military Forces total	—	1,976	—	—	—	—	—
Earmarked (MAP, USN, and Other Non-Air Force)	166	—	—	—	—	—	—
TOTAL, ACTIVE AIRCRAFT, USAF, ANG, AFRES	**15,380**	**12,132**	**8,959**	**9,069**	**9,180**	**9,314**	**9,419**
Active aircraft including foreign government owned		(12,132)	(9,100)	(9,209)	(9,321)	(9,450)	(9,510)
FLYING HOURS (000)							
USAF	6,028	3,272	2,646	2,596	2,619	2,800	2,901
Air National Guard	432	405	381	393	406	411	412
Air Force Reserve	202	128	139	136	134	133	131
TOTAL FLYING HOURS	**6,662**	**3,805**	**3,166**	**3,125**	**3,159**	**3,344**	**3,444**

NOTE: Data in FY '64–81 columns are actual; FY '82 and FY '83 data are estimated.

UNITED STATES AIR FORCE MEDAL OF HONOR RECIPIENTS—1918–1982

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	Monterey, Calif. (Ret. Lt. Gen.)
Erwin, SSgt. Henry E.	Adamsville, Ala.	Apr. 12, 1945, Koriyama, Japan	Leeds, 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	Died, March 4, 1982
Howard, Lt. Col. James H.	Canton, China	Jan. 11, 1944, Oschersleben, Germany	Belleair Bluffs, Fla. (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. Lt. 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	St. Petersburg, Fla.
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. Lt. 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, Lt. Col., Randolph AFB, Tex.
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	Santa Monica, Calif. (Ret. 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	Anacortes, Wash. (Ret. Lt. Col.)

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.

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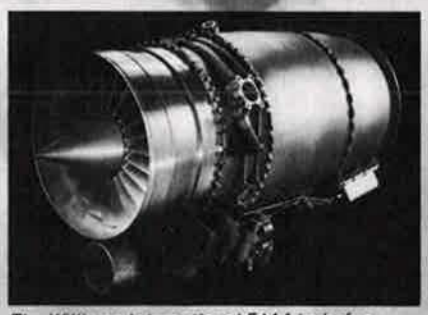
Peregrine also boasts an innovative contractor approach to logistics and support. Savings: a 51% reduction in maintenance costs.



The Williams International FJ44 turbofan designed for the Gulfstream NGT/Peregrine.

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Gulfstream American

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, Lt. Col. William D.	16
Johnson, Capt. Robert S.	27	Hill, Col. David L. (AVG/USAF) (12.25)	18.25**	Harris, Lt. Col. Bill	16
MacDonald, Col. Charles H.	27	Older, Lt. Col. Charles H. (AVG/USAF) (11.25)	18.25**	Welch, Capt. George S.	16
Preddy, Maj. George E.	26.83	Beckham, Maj. Walter C.	18	Beerbower, Capt. Donald M.	15.50
Meyer, Lt. Col. John C.	24*	Green, Maj. Herschel H.	18	Brown, Maj. Samuel J.	15.50
Schilling, Col. David C.	22.50	Herbst, Lt. Col. John C.	18	Peterson, Capt. Richard A.	15.50
Johnson, Lt. Col. Gerald R.	22	Zemke, Lt. Col. Hubert	17.75	Whisner, Capt. William T., Jr.	15.50*
Kearby, Col. Neel E.	22	England, Maj. John B.	17.50	Blakeslee, Col. Donald J. M. (ES/USAF) (3.5)	15**
Robbins, Maj. Jay T.	22	Beeson, Capt. Duane W.	17.33	Bradley, Lt. Col. Jack T.	15
Christensen, Capt. Fred J.	21.50	Thornell, 1st Lt. John F., Jr.	17.25	Cragg, Maj. Edward	15
Wetmore, Capt. Ray S.	21.25	Reed, Lt. Col. William N. (AVG/USAF) (11)	17**	Foy, Maj. Robert W.	15
Voll, Capt. John J.	21	Varnell, Capt. James S., Jr.	17	Hofer, 2d Lt. Ralph K.	15
Mahurin, Maj. Walker M.	20.75*	Johnson, Maj. Gerald W.	16.50	Homer, Capt. Cyril F.	15
Lynch, Lt. Col. Thomas J.	20			Landers, Lt. Col. John D.	14.50
Westbrook, Lt. Col. Robert B.	20			Powers, Capt. Joe H., Jr.	14.50
Gentile, Capt. Donald S.	19.83				

* 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	6.50	14.50	Mattson, Capt. Conrad E.	1	4	5
Hovde, Lt. Col. William J.	10.50	1	11.50	Shaeffer, Maj. William 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, Maj. 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	Voll, Capt. John J.	21	WW II
Meyer, Col. John C.	26	WW II, Korea	Whisner, Maj. William T., Jr.	21	WW II, Korea
Rickenbacker, Capt. Edward V.	26	WW I	Eagleston, Col. Glenn T.	20.50	WW II, Korea
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 of two wars	Maj. William T. Whisner, Jr. (15.5 in WW II; 5.5 in Korea)
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.

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	May 18, 1979
Hans Mark	July 26, 1979	Feb. 9, 1981
Verne Orr	Feb. 9, 1981	

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	

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	Aug. 1, 1979
CMSAF James M. McCoy	Aug. 1, 1979	July 1, 1981
CMSAF Arthur L. Andrews	Aug. 1, 1981	

AIR FORCE COMMUNICATIONS COMMAND

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	July 1, 1979
Maj. Gen. Robert T. Herres	July 1, 1979	July 27, 1981
Maj. Gen. Robert F. McCarthy	July 27, 1981	

Formerly Air Force Communications Service.
Redesignated Air Force Communications Command Nov. 15, 1979.

AIR FORCE LOGISTICS COMMAND

Gen. Joseph T. McNarney	Oct. 14, 1947	Aug. 31, 1949
Lt. Gen. Benjamin W. Chidlaw	Sept. 1, 1949	Aug. 20, 1951
Gen. Edwin W. Rawlings	Aug. 21, 1951	Feb. 28, 1959
Lt. Gen. William F. McKee	Mar. 1, 1959	Mar. 14, 1959
Gen. Samuel E. Anderson	Mar. 15, 1959	July 31, 1961
Gen. William F. McKee	Aug. 1, 1961	June 30, 1962
Gen. Mark E. Bradley, Jr.	July 1, 1962	July 31, 1965
Gen. Kenneth B. Hobson	Aug. 1, 1965	July 31, 1967
Gen. Thomas P. Gerrity	Aug. 1, 1967	Feb. 24, 1968
Lt. Gen. Lewis L. Mundell (acting)	Feb. 24, 1968	Mar. 28, 1968
Gen. Jack G. Merrell	Mar. 29, 1968	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	July 31, 1981
Gen. James P. Mullins	Aug. 1, 1981	

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	Feb. 1, 1981
Gen. Robert T. Marsh	Feb. 1, 1981	

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	July 29, 1981
Gen. Thomas M. Ryan	July 29, 1981	

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, 1961
Lt. Gen. Troup Miller, Jr.	Aug. 1, 1961	Dec. 31, 1963
Lt. Gen. Ralph P. Swofford, Jr.	Jan. 1, 1964	July 31, 1965
Lt. Gen. John W. Carpenter III	Aug. 1, 1965	July 31, 1968
Lt. Gen. Albert P. Clark	Aug. 1, 1968	July 31, 1970
Lt. Gen. Alvan C. Gillem II	Aug. 1, 1970	Oct. 31, 1973
Lt. Gen. F. Michael Rogers	Nov. 1, 1973	Aug. 31, 1975
Lt. Gen. Raymond B. Furlong	Sept. 1, 1975	July 1, 1979
Lt. Gen. Stanley M. Umstead	July 1, 1979	July 24, 1981
Lt. Gen. Charles G. Cleveland	July 24, 1981	

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	Apr. 1, 1981
Lt. Gen. Lynwood E. Clark	Apr. 1, 1981	

ELECTRONIC SECURITY COMMAND

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	

Formerly USAF Security Service.
Redesignated Electronic Security Command Aug. 1, 1979.

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	June 30, 1979
Gen. Robert E. Huyser	July 1, 1979	June 26, 1981
Gen. James R. Allen	June 26, 1981	

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	July 1, 1981
Lt. Gen. Arnold W. Braswell	July 1, 1981	

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	Aug. 1, 1981
Gen. Bennie L. Davis	Aug. 1, 1981	

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. W. 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	Aug. 1, 1980
Gen. Charles A. Gabriel	Aug. 1, 1980	

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	June 16, 1981
Maj. Gen. Robert E. Kelley	June 16, 1981	

AEROSPACE DEFENSE CENTER

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	Jan. 1, 1980
Gen. James V. Hartinger	Jan. 1, 1980	

Formerly Air Defense Command.
Redesignated Aerospace Defense Command Jan. 1, 1968.
Redesignated Aerospace Defense Center Dec. 1, 1979.

AIR FORCE RESERVE

Maj. Gen. Rollin B. Moore, Jr.	Aug. 1, 1968	Jan. 26, 1972
Brig. Gen. Alfred Verhulst (acting)	Jan. 27, 1972	Mar. 15, 1972
Maj. Gen. Homer I. Lewis	Mar. 16, 1972	Apr. 8, 1975
Maj. Gen. William Lyon	Apr. 16, 1975	Apr. 16, 1979
Maj. Gen. Richard Bodycombe	Apr. 17, 1979	

Since Mar. 16, 1972, the Chief of Air Force Reserve has been dual-hatted as Commander, Hq. Air Force Reserve (AFRES). The earlier Chief of Air Force Reserve was Maj. Gen. Tom E. Marchbanks, Jr., from Jan. 18, 1968, to Feb. 1, 1971.

AIR NATIONAL GUARD

Col. William A. R. Robertson	Nov. 28, 1945	Oct. 1948
Maj. Gen. George G. Finch	Oct. 1948	Sept. 25, 1950
Maj. Gen. Earl T. Ricks	Oct. 13, 1950	Jan. 4, 1954
Maj. Gen. Winston P. Wilson	Jan. 26, 1954	Aug. 5, 1962
Maj. Gen. I. G. Brown	Aug. 6, 1962	Apr. 19, 1974
Maj. Gen. John J. Pesch	Apr. 20, 1974	Jan. 31, 1977
Maj. Gen. John T. Guice	Feb. 1, 1977	Apr. 1, 1981
Maj. Gen. John B. Conaway	Apr. 1, 1981	

The ANG head was Chief, Aviation Group, National Guard Bureau until 1948, when the title changed to Chief, Air Force Division, NGB. In Dec. 1969 the title was changed to the present Director, Air National Guard.

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; within Altus city limits. Phone (405) 482-8100; AUTOVON 866-1110. MAC base. 443d Military Airlift Wing; training for C-141 and C-5 crews; basic flight engineer course; 340th Air Refueling Gp. (SAC); 2002d Communications Sqdn. (AFCC). Base activated Jan. 1942, inactivated May 1945, reactivated Jan. 1953. Area 4,113 acres. Altitude 1,376 ft. Military 3,508; civilians 876. Payroll $71.3 million. Housing: 163 officer; 637 NCO; 12 transient (4 VOQ, 4 VAQ, 4 transient). 30-bed hospital.

Andersen AFB, Guam 96334; 16.8 mi. N of Agana. Phone (671) 366-1110; AUTOVON 343-1110. SAC base. Hq. 3d Air Div., 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 20,500 acres, including off-base facilities. Altitude 525 ft. Military 3,801; civilians 645. Payroll $73.3 million. Housing: 243 officer and 1,508 NCO; transient 206. Clinic, outpatient care only. 63-bed hospital at Naval Regional Medical Center, Agana, Guam.

Andrews AFB, Md. 20331; 11 mi. SE of Washington, D. C. Phone (301) 981-9111; AUTOVON 858-1110. MAC base. 1776th Air Base Wing; Hq. Air Force Systems Command: 76th Airlift Div.; 89th Military Airlift Wing; 113th Tactical Fighter Wing (ANG); 459th Tactical Airlift Wing (AFRES); 2045th Communications Gp. (AFCC); Det. 11, 1361st Audiovisual Sqdn. Base activated June 1943; named for Lt. Gen. Frank M. Andrews, military air pioneer, WW II commander, European theater, killed in aircraft accident May 3, 1943, in Iceland. Area 4,216 acres. Altitude 279 ft. Military 5,360; civilians 3,236. Payroll $195.2 million. Housing: 392 officer; 1,696 NCO: 273 transient (incl. 82 temp. living quarters for incoming personnel, 141 VOQ, 50 TAQ). 250-bed hospital.

Arnold AFS, Tenn. 37389; approx. 7 mi. SE of Manchester. Phone (615) 340-5011; AUTOVON 882-1520. AFSC station; site of Arnold Engineering Development Center, 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 USAF, other 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. Military 145; civil service 216; contractor employees 3,600. Payroll $100 million. Housing: 24 officer; 16 NCO; 48 transient. Dispensary.

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 Gp. (AFRES), flying A-10s. The 917th TFG is the only AFRES A-10 replacement training unit. In spring 1981 it became first USAF installation to receive the KC-10 Extender tanker aircraft. Base named for Lt. Eugene H. Barksdale, WW I airman killed in Aug. 1926, in crash near Wright Field, Ohio. Area 22,000 acres (20,000 acres reserved for recreation). Altitude 167 ft. Military 5,532; civilians 1,526. Payroll $121.4 million. Housing: 205 officer; 828 NCO; 29 transient. 65-bed hospital.

Beale AFB, Calif. 95903; 13 mi. E of Marysville. Phone (916) 634-3000; AUTOVON 368-1110. SAC base. 14th Air Div.; 9th Strategic Recon Wing; 7th Missile Warning Sqdn.; 100th Air Refueling Wing; 1883d Communications Sqdn. (AFCC). Beale is the only USAF base having SR-71, U-2, and TR-1 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 23,204 acres. Altitude 113 ft. Military 4,170; civilians 560. Payroll $81.8 million. Housing: 395 officer; 1,342 NCO; 45 transient. 30-bed hospital.

Bergstrom AFB, Tex. 78743; 7 mi. SE of downtown Austin. Phone (512) 479-4100; AUTOVON 685-4100. TAC base. Hq. 12th Air Force; Hq. 10th Air Force (AFRES); 67th Tactical Recon Wing (host) with RF-4C recon operations; 602d Tactical Air Control Wing; 924th Tactical Airlift Gp. (AFRES); also F-4D fighter operations; TAC NCO Academy West. Base activated Sept. 22, 1942; named for Capt. John A. E. Bergstrom, first Austin serviceman killed in WW II, died Dec. 8, 1941, at Clark Field, Philippines. Area 3,998 acres. Altitude 541 ft. Military 3,900; civilians 650. Payroll $75.7 million. Housing: 92 officer; 612 NCO; 190 transient. 30-bed hospital.

Blytheville AFB, Ark. 72315; 4 mi. NW of Blytheville. Phone (501) 762-7000; AUTOVON 637-1110. SAC base. 42d Air Div.; 97th Bomb Wing. Base activated June 1942; inactivated Feb. 1947; reactivated Aug. 1955. Area 3,092 acres. Altitude 254 ft. Military 2,735; civilians 335. Payroll $36.7 million. Housing: 200 officer; 825 NCO; 79 transient. 25-bed hospital.

Bolling AFB, D. C. 20332; 3 mi. S of US Capitol. Phone (202) 545-6700; AUTOVON 227-0101. MAC base. 1100th Air Base Wing; Air Force Office of Scientific Research (AFSC); Air Reserve Personnel Center Operating Location; Air Force Chief of Chaplains; US Air Force Office of History. Activated Oct. 1917; named for Col. Raynal C. Bolling, assistant chief of air service, killed in France during WW I. Area 604 acres. Altitude 16 ft. Military 1,562; civilians 1,157. Payroll $38 million. Housing: 296 officer; 1,100 NCO; 168 transient (including 69 VAQ, 84 VOQ, 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 Div., USAF School of Aerospace Medicine; USAF Occupational and Environmental Lab, USAF Human Resources Lab; tenant units include the USAF Medical Service Center, a security squadron, and a communications group. 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. Military 1,450; civilians 960. Payroll $46 million. Housing: 70 officer; 100 NCO; 8 transient. Dispensary.

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 under the Army Air Corps. Deactivated May 1947. Reactivated July 1951 under the Air Force; named for Gen. John K. Cannon, WW II commander of all Allied Air Forces in Mediterranean theater. Area 3,780 acres. Altitude 4,295 ft. Military 3,866; civilians 409. Payroll $62.5 million. Housing: 149 officer; 863 NCO; 104 transient. 25-bed hospital.

Carswell AFB, Tex. 76127; 7 mi. WNW of downtown Fort Worth. Phone (817) 735-5000; AUTOVON 739-1110. SAC base. 19th Air Div.; 7th Bomb Wing (SAC); 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 recipient. Area 2,750 acres. Altitude 650 ft. Military 4,921; civilians 1,233. Payroll $76 million. Housing: 128 officer; 679 NCO. 125-bed hospital.

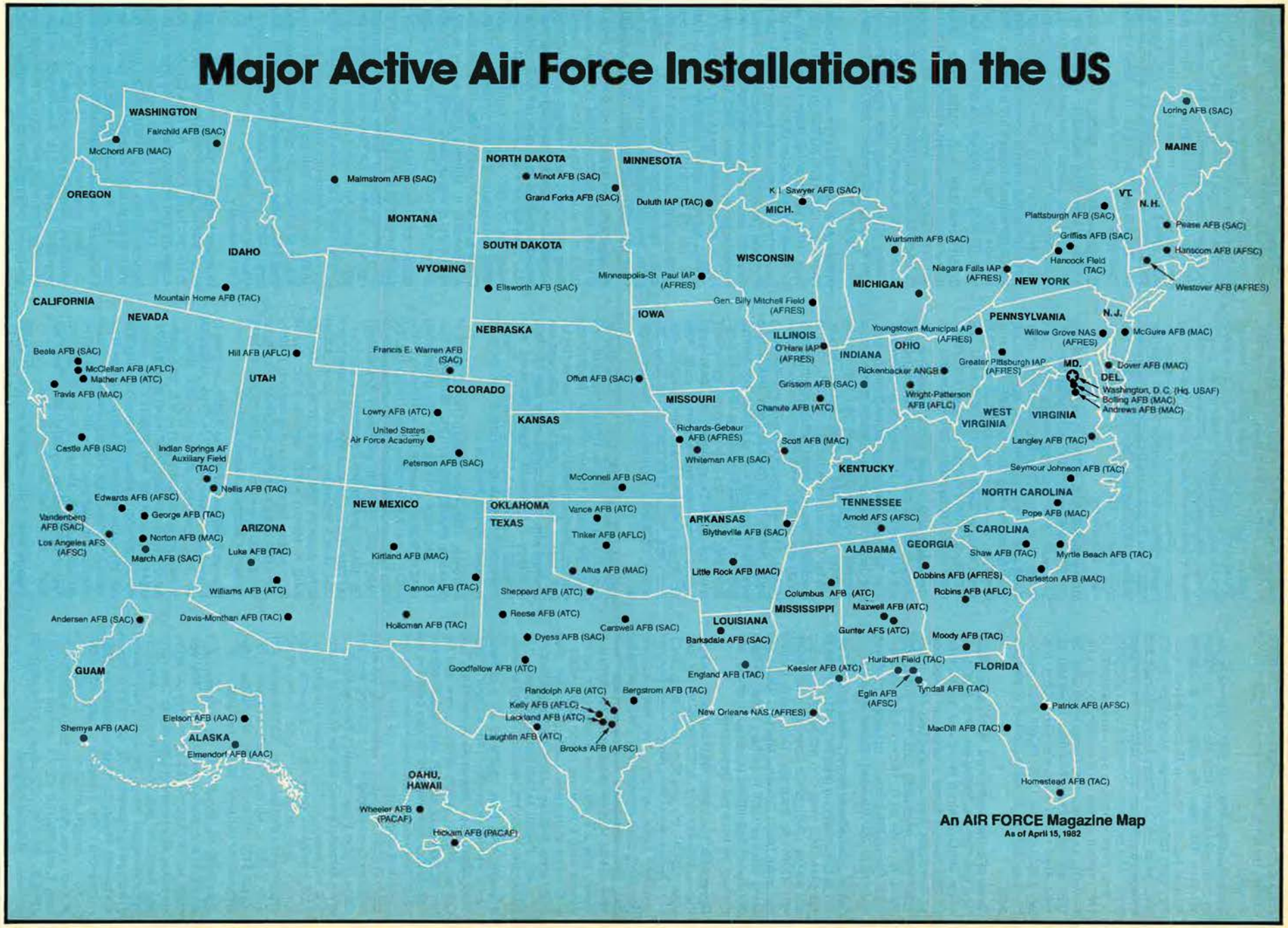
Castle AFB, Calif. 95342; 8 mi. NW of Merced. Phone (209) 726-2011; AUTOVON 347-1110. SAC base. 93d Bomb Wing. Conducts training of all SAC B-52G and H and KC-135 aircrews. Also houses 84th Fighter Interceptor Sqdn. (TAC), and is site of Castle Air Museum. Activated Sept. 1941; named for Brig. Gen. Frederick W. Castle, WW II B-17 pilot and Medal of Honor recipient. Area 2,777 acres. Altitude 188 ft. Military 5,052; civilians 400. Payroll $100.9 million. Housing: 92 officer; 842 NCO; 388 transient (incl. 108 VAQ, 276 VOQ, and 4 transient quarters). 25-bed hospital.

Chanute AFB, Ill. 61868; 14 mi. N of Champaign at Rantoul, Ill. Phone (217) 495-1110; AUTOVON 862-1110. ATC base. Chanute Technical Training Center provides training in missile and aircraft mechanics, aerospace ground equipment, life support, metallurgy and nondestructive inspection, weather forecasting, weather equipment, and fire protection and rescue. Chanute Technical Training Display Center is base museum. Base activated May 1, 1917; named for Octave Chanute, aeronautical engineer and glider pioneer who died in 1910. Area 2,125 acres. Altitude 735 ft. Military 7,500; civilians 1,700. Payroll $111 million. Housing: 142 officer; 1,518 NCO; 38 transient. 60-bed hospital.

Charleston AFB, S. C. 29404; in North Charleston. Phone (803) 554-0230; AUTOVON 583-0111. MAC base. Joint-use airfield. 437th Military Airlift Wing and 315th MAW (AFRES Assoc.). Also 1968th Communications Sqdn.; Det. 1, 48th Fighter Interceptor Sqdn. (TAC); and Det. 7, 1361st Audiovisual Sqdn. Base activated June 1942; inactivated Feb. 1946, reactivated Aug. 1953. Area 3,772 acres. Altitude 45 ft. Military 7,081 (incl. AFRES); civilians 1,667. Payroll $81 million. Housing: 142 officer; 813 NCO; 75 trailer spaces; 472 transient (150 VOQ, 322 VAQ). Dispensary.

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

Major Active Air Force Installations in the US



An AIR FORCE Magazine Map

As of April 15, 1982

1941 for pilot training. Area 4,606 acres. Altitude 214 ft. Military 2,972; civilians 906. Payroll $57.3 million. Housing: 262 officer; 558 NCO. 15-bed hospital.

Davis-Monthan AFB, Ariz. 85707; within city limits of Tucson. Phone (602) 748-3900; AUTOVON 361-1110. TAC base. Hq. 836th Air Div.; 355th Tactical Training Wing, A-10 combat crew training; 390th Strategic Missile Wing (Titan II)(SAC). Also site of AFLC's Military Aircraft Storage and Disposition Center; 23d Tactical Air Support Sqdn.; 41st Electronic Combat Sqdn.; and 868th Tactical Missile Training Sqdn. Base activated in 1927; named for two local aviation accident victims—1st Lt. Samuel H. Davis, killed Dec. 28, 1921; and 2d Lt. Oscar Monthan, killed Mar. 27, 1924. Area 11,000 acres. Altitude 2,705 ft. Military 5,762; civilians 1,290. Payroll $95.7 million. Housing: 215 officer; 1,040 enlisted. 70-bed hospital.

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 Assoc.). 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. Military 4,900; civilians 1,300. Payroll $96.9 million. Housing: 229 officer; 1,327 NCO; 297 transient. 30-bed hospital.

Duluth International Airport, Minn. 53814; 5 mi. NW of Duluth. Phone (218) 727-8211; AUTOVON 825-0011. TAC base. 23d NORAD Region; Hq. 23d Air Div. (TAC); SAGE Control Center (NORAD); 4787th Air Base Gp. (TAC); 148th Tactical Recon Gp. (ANG). Activated Mar. 1951. Area 1,139 acres. Altitude 1,429 ft. Military 1,036; civilians 287. Payroll $19 million. Housing: 70 officer; 361 military; 24 transient. Dispensary.

Dyess AFB, Tex. 79607; WSW border of Abilene. Phone (915) 696-0212; AUTOVON 461-1110. SAC base. 12th Air Div. and 96th Bomb Wing (SAC); 463d Tactical Airlift Wing (MAC); 1993d Communications Sqdn. (AFCC); 417th Field Training Det. (ATC). Base activated Apr. 1942; deactivated Dec. 1945; reactivated Abilene Air Base, Sept. 1955. In Mar. 1956 renamed for Lt. Col. William E. Dyess, WW II fighter pilot known best for his escape from a Japanese prison camp, killed in P-38 crash at Burbank, Calif., Dec. 1943. Area 6,058 acres. Altitude 1,789 ft. Military 4,978; civilians 462. Payroll $119.8 million. Housing: 150 officer; 849 NCO; 128 transient. 40-bed hospital.

Edwards AFB, Calif. 93523; 20 mi. E of Rosamond. Phone (805) 277-1110; AUTOVON 350-1110. AFSC base. Site of Air Force Flight Test Center (AFFTC), which conducts new and follow-on testing of aircraft and related avionics and weapon systems. AFFTC also operates the USAF Test Pilot School, which trains pilots and flight test engineers. Also the site of the Air Force Rocket Propulsion Laboratory, US Army Aviation Engineering Flight Activity, and the NASA Dryden Flight Research Facility. Edwards is the primary landing site for all Space Shuttle test and evaluation flights. Base activated Sept. 1933; named for Capt. Glen W. Edwards, killed June 5, 1948, in crash of YB-49 "Flying Wing" experimental bomber. Area 301,000 acres. Altitude 2,302 ft. Military 3,657; civilians 4,737. Payroll $178 million. Housing: 558 officer; 2,997 enlisted; 92 transient. 15-bed hospital.

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. AF Armament Div.; AF Armament Lab; 3246th Test Wing; 39th Aerospace Rescue and Recovery Wing; 33d Tactical Fighter Wing; Tac Air Warfare Center; 919th Special Operations Gp. (AFRES); Air Force Armament Museum. Base activated in 1935; named for Lt. Col. Frederick I. Eglin, WW I flyer killed in aircraft accident, Jan. 1, 1937. Area 464,980 acres. Altitude 85 ft. Military 8,865; civilians 4,400. Payroll $227.1 million (includes AFRES). Housing: 322 officer; 2,014 NCO; 84 transient. 160-bed hospital.

Eielson AFB, Alaska 99702; 26 mi. SE of Fairbanks. Phone (907) 372-1181; AUTOVON (317) 377-1291. AAC base. 343d Composite Wing; 18th Tactical Fighter Sqdn.; 343d Combat Support Group is host unit. Air defense, search and rescue for AAC, and close air support for ground forces; 6th Strategic Wing (SAC) tanker operations; communications for AFCC; Arctic Survival School (ATC). Activated Oct. 1944; named for Carl B. Eielson, Arctic aviation pioneer, died Nov. 1929. Area 35,000 acres (approx). Altitude 534 ft. Military 2,670; civilians 300. Payroll $67.7 million. Housing: 148 officer; 1,015 NCO; 20 transient. Dispensary.

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, including SAC postattack command and control system sqdn. Activated July 1954; named for Brig. Gen. Richard E. Ellsworth, killed Mar. 18, 1953, in crash of RB-36. Area 5,675 acres. Altitude 3,600 ft. Military 6,053; civilians 774. Payroll $105.7 million. Housing: 419 officer; 1,474 NCO; 142 transient. 30-bed hospital.

Elmendorf AFB, Alaska 99506; bordering Anchorage. Phone (907) 552-1110; AUTOVON (317) 552-1110. AAC base. Hq. Alaskan Air Command; 21st Tactical Fighter Wing; NORAD Region Control Center; Rescue Coordination Center; 531st Aircraft Control and Warning Gp.; 18th Tactical Fighter Sqdn.; 43d Tactical Fighter Sqdn.; 1931st Communications Gp. (AFCC); 6981st Electronic Security Sqdn. (ESC); 616th Military Airlift Gp. (MAC); 17th Tactical Airlift Sqdn. (MAC); 71st Aerospace Rescue and Recovery Sqdn. (MAC); 11th Weather Sqdn. (MAC); plus varied US Army and Navy activities. 21st Combat Support Gp. (AAC) is host unit. Base activated July 1940; named for Capt. Hugh M. Elmendorf, killed Jan. 13, 1933, at Wright Field, Ohio, while flight-testing a new type of pursuit plane. Area 13,400 acres. Altitude 118 ft. Military 6,209; civilians 1,464. Payroll $128.1 million. Housing: 356 officer; 1,839 NCO; 140 transient. 140-bed hospital.

England AFB, La. 71301; 5 mi. W of Alexandria. Phone (318) 448-2100; AUTOVON 683-1110. TAC base. 23d Tactical Fighter Wing, A-10 fighter operations. Base activated Oct. 1942; named for Lt. Col. John B. England, WW II P-51 pilot and ace credited with 17.5 victories, killed Nov. 17, 1954, in France in F-86 crash. Area 2,282 acres. Altitude 89 ft. Military 3,173; civilians 540. Payroll $53.8 million. Housing: 109 officer; 491 NCO; 44 transient. 40-bed hospital.

Fairchild AFB, Wash. 99011; 12 mi. WSW of Spokane. Phone (509) 247-1212; AUTOVON 352-1110. SAC base. 47th Air Div.; 92d Bomb Wing (SAC); 3636th Combat Crew Training Wing (ATC); 141st Air Refueling Wing (ANG); Det. 24, 40th Rescue and Weather Reconnaissance Wing (MAC); Det. 1, 4000th Aerospace Applications Gp. (SAC); and 2039th Communications Sqdn. (AFCC). Base activated Jan. 1942. Named for Gen. Muir S. Fairchild, USAF Vice Chief of Staff at his death in 1950. Area 6,127 acres. Altitude 2,462 ft. Military 4,000; civilians 1,700. Payroll $72.3 million for civilian and active-duty military and $12.5 million for ANG. Housing: 502 officer; 1,079 NCO; transient incl. 60 VOQ and 62 VAQ, no family quarters. 45-bed hospital.

Francis E. Warren AFB, Wyo. 82001; adjacent to Cheyenne. Phone (307) 775-1110; AUTOVON 481-1110. SAC base. 4th Air Div.; 90th Strategic Missile Wing. Base activated July 4, 1867; under Army jurisdiction until 1947 when reassigned to USAF. Home of the first Atlas-D ICBM missile wing (1960–65); named for Francis Emory Warren, Wyoming senator and early governor. Base has 5,872 acres, plus 200 Minuteman III missile sites distributed over more than 12,600 sq. mi. Altitude 6,142 ft. Military 3,664; civilians 578. Payroll $47.5 million. Housing: 211 officer; 620 NCO; 36 transient. 32-bed hospital.

George AFB, Calif. 92392; 6 mi. NW of Victorville. Phone (714) 269-1110; AUTOVON 353-1110. TAC base. Hq. 831st Air Div.; 37th Tac Fighter Wing, home of TAC's "Wild Weasel" F-4G squadrons; 35th Tac Fighter Wing, "Pave Spike" F-4E sqdn.; F-4 transitional and upgrade training; German Air Force training in F-4. TAC F-106 detachment. Base activated in 1941; named for Brig. Gen. Harold H. George, WW I fighter ace killed Apr. 29, 1942, in Australia in aircraft accident. Area 5,347 acres. Altitude 2,875. Military 5,169; civilians 454. Payroll $85.3 million. Housing: 229 officer; 1,212 NCO; 198 Senior NCO; transient 40 TLQs. 46-bed hospital.

Goodfellow AFB, Tex. 76908; 2 mi. SE of San Angelo. Phone (915) 653-3231; AUTOVON 477-2011. ATC base. 3480th Technical Training Wing; USAF Technical Training School. Base activated Jan. 1941; named for Lt. John J. Goodfellow, Jr., WW I fighter pilot killed in combat Sept. 17, 1918. Area 1,127 acres. Altitude 1,877 ft. Military 1,394; civilians 576. Payroll $20 million. Housing: 3 officer; 96 NCO; 86 transient (23 VAQs, 63 VOQs).

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 6,912 acres. Altitude 911 ft. Military 5,116; civilians 469. Payroll $89.4 million. Housing: 418 officer; 1,695 NCO; 243 transient. 30-bed hospital.

Griffiss AFB, N. Y. 13441; 1 mi. NE of Rome. Phone (315) 390-1110; AUTOVON 587-1110. SAC base. 416th Bomb Wing. Major tenant is Rome Air Development Center (RADC), part of AFSC. Base also houses headquarters of AFCC's Northern Communications Area; 485th Communications and Installations Gp. (AFCC); and 49th Fighter Interceptor Sqdn. (TAC). Base activated Feb. 1, 1942; named for Lt. Col. Townsend E. Griffiss, killed in aircraft accident, Feb. 15, 1942 (the first US airman to lose his life in Europe while in the line of duty during WW II). Area 3,896 acres. Altitude 504 ft. Military 3,871; civilians 2,870. Payroll $109.8 million. Housing: 175 officer; 558 NCO; 140 transient. 70-bed hospital.

Grissom AFB, Ind. 46971; 7 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 Gp. (AFRES). Activated Jan. 1943 for Navy flight training; reactivated June 1954 as Bunker Hill AFB; renamed May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967, at Cape Kennedy, Fla., with other Astronauts Edward White and Roger Chaffee, in Apollo capsule fire. Area 2,810 acres. Altitude 800 ft. Military 2,552; civilians 968. Payroll $47.6 million (SAC only). Housing: 276 officer; 1,852 NCO; 138 transient. Dispensary.

Gunter AFS, Ala. 36114; 4 mi. NE of Montgomery. Phone (205) 279-1110; AUTOVON 921-1110. ATC station. Hq. Air Force Data Automation Agency and site of Air Force Data Systems Design Center; Air Force Logistics Management Center; USAF Extension Course Institute; USAF Senior NCO Academy. Base activated Aug. 27, 1940; named for William A. Gunter, longtime mayor of Montgomery and airpower exponent, died 1940. Area 348 acres. Altitude 220 ft. Military 1,430; civilians 1,048. Payroll included in Maxwell entry. Housing: 118 officer; 206 NCO; 107 transient.

Hancock Field, N. Y. 13225; 10 mi. NNE of Syracuse. Phone (315) 458-5500; AUTOVON 587-9110. TAC base. 4789th Air Base Gp., host unit, supports 21st NORAD Region; Hq. 21st Air Div. (TAC); 113th Tactical Control Flight (ANG); 174th Tactical Fighter Wing (ANG); 3513th USAF Recruiting Sqdn. Base activated Sept. 1942 as Syracuse Army Air Base, renamed Mar. 1952 for Clarence E. Hancock (1885–1949), prominent local citizen and member of US House of Representatives. Area 765 acres. Altitude 421 ft. Military 884; civilians 315. Payroll $20 million. Housing: 61 officer; 167 NCO; 17 transient; two temporary lodging facilities for families. Clinic.

Hanscom AFB, Mass. 01731; 17 mi. NW of Boston. Phone (617) 861-4441; AUTOVON 478-4441. AFSC base. Hq. Electronic Systems Div. (AFSC), manages development and acquisition of command control and communications systems. Also site of AF Geophysics Lab, center for research and exploratory development in the terrestrial, atmospheric, and space environments. Base has no flying mission; transient USAF aircraft use runways of Laurence G. Hanscom Field, state-operated airfield adjoining the base. Named for a pre-WW II advocate of private aviation, killed in a lightplane accident in 1941. Area 887 acres. Altitude 133 ft. Military 1,848; civilians 3,025. Payroll $118 million. Housing: 289 officer; 406 NCO; 16 transient. Dispensary.

Hickam AFB, Hawaii 96853; 6 mi. W of Honolulu. Phone (808) 422-0531 (Oahu military operator); AUTOVON 430-0111. PACAF base. Hq. Pacific Air Forces; 15th Air Base Wing, support organization for Air Force units in Hawaii and throughout the Pacific; 154th Tactical Fighter Gp. (ANG); Hq. Pacific Communications Div. (AFCC); 1st Weather Wing (MAC); 834th Airlift Div. (MAC). Base activated Sept. 1937. Named for Lt. Col. Horace M. Hickam, air pioneer killed in crash Nov. 5, 1934, at Fort Crockett, Tex. Area 2,731 acres. Altitude sea level. Military 5,100; civilians 2,000. Payroll $128 million (includes Hickam and Wheeler AFBs and Bellows AFS). Housing: 535 officer; 1,940 NCO. Clinic.

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 Minuteman and Titan II missiles; BOMARC drone and Maverick missiles; Walleye; laser and electro-optical guided bombs; emergency rocket communications systems; MX missile; F-4, F-16, and F-101 systems manager; air munitions; aircraft landing gears; wheels, brakes, tires, and tubes; photographic and aerospace training equipment; and COM-10. Also home of 388th Tactical Fighter Wing; 508th Tactical Fighter Gp. (AFRES); 6545th Test Gp. (AFSC), which includes management of 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; manages 961,896 acres. Altitude 4,788 ft. Military 5,280; civilians 14,319. Payroll $421 million. Housing: 263 officer; 882 NCO; 8 transient. 35-bed hospital.

Holloman AFB, N. M. 88330; 6 mi. SW of Alamogordo. Phone (505) 479-6511; AUTOVON 867-1110. TAC base. Hq. 833d Air Div.; 49th Tactical Fighter Wing (F-15 operations); 479th Tactical Training Wing (T-38 fighter lead-in training); 4449th Mobility Support Sqdn. (Harvest Bare); and 82d Tactical Control Flight. 6585th Test Group (AFSC) conducts test and evaluation of aircraft and missile systems and operates the Central Inertial Guidance Test Facility, the High Speed Test Track Facility, and the Radar Target Scatter (RATSCAT) Site. Base activated in 1942; named for Col. George V. Holloman, guided-missile pioneer, killed in B-17 crash in Formosa, Mar. 19, 1946. Area 57,530 acres. Altitude 4,092 ft. Military 5,737; civilians 1,371. Payroll $110 million. Housing: 192 officer; 1,360 NCO; 250 transient. 25-bed hospital.

Homestead AFB, Fla. 33039; 5 mi. NNE of Homestead. Phone (305) 257-8011; AUTOVON 791-0111. TAC base. 31st Tactical Fighter Wing; F-4D fighter operations and training; site of ATC sea-survival school; 726th Tactical Control Sqdn. (TAC); Naval Security Group Activity; 482d Tactical Fighter Wing (AFRES); and 301st Aerospace Rescue and Recovery Sqdn. (AFRES). Base activated Apr. 1955. Area 3,491 acres. Altitude 7 ft. Military 6,508; civilians 1,172. Payroll $96 million. Housing: 321 officer; 1,294 NCO; 299 transient (214 VAQ, 83 VOQ). 80-bed hospital.

Hurlburt Field, Fla. 32544; 8 mi. W of Fort Walton Beach. Phone (904) 881-6668; AUTOVON 872-1110. TAC base, though part of the Eglin AFB (AFSC) reservation. Home of 1st Special Operations Wing, focal point of all USAF special operations; USAF Special Operations School; MC-130E (Combat Talon), AC-130H (Spectre Gunship), HH-53H (Super Jolly), and UH-1N (Iroquois) helicopter sqdns.; TAC's only special operations combat control team and special operations weather team; 4442d Tactical Control Gp., including USAF Air Ground Operations School, 823d Civil Engineering Sqdn. (Red Horse). Base activated in 1943; named for Lt. Donald W. Hurlburt, WW II pilot killed Oct. 2, 1943, in a crash on Eglin reservation. Altitude 35 ft. Military 3,534; civilians 390. Payroll $60 million. Housing: 74 officer; 306 NCO; 341 transient. Clinic only at Hurlburt, but 200-bed hospital at Eglin main base.

Indian Springs AF Auxiliary Field, Nev. 89018; 45 mi. NW of Las Vegas. Phone (702) 897-6201; AUTOVON 682-6201. TAC base. 554th Combat Support Sqdn.; Det. 1, 57th Fighter Weapons Wing; provides bombing and gunnery range support for tactical operations from Nellis AFB; manages construction of realistic target complexes; supports US Department of Energy research activities. Base activated in 1942. Area 1,652 acres. Altitude 3,124 ft. Military 343; civilians 13. (Payroll included in Nellis AFB entry.) Housing: 78 officer and NCO quarters; 40 trailer spaces. Dispensary.

Keesler AFB, Miss. 39534; located in Biloxi. Phone (601) 377-1110; AUTOVON 868-1110. ATC base. Hq. 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 sqdn., AFCC installation gp., and AFCC NCO Academy/Leadership School. Base activated June 12, 1941; named for 2d Lt. Samuel R. Keesler, Jr., WW I aerial observer, killed in action Oct. 9, 1918, near Verdun, France. Area 3,600 acres. Altitude 26 ft. Military 13,726; civilians 3,650. Payroll $209 million. Housing: 430 officer; 1,527 NCO; 68 transient. (350 VOQ units on space availability, tech training students occupy many units.) 337-bed hospital.

Kelly AFB, Tex. 78241; 5 mi. SW of San Antonio. Phone (512) 925-1110; AUTOVON 945-1110. AFLC base. Hq. San Antonio Air Logistics Center; Hq. Electronic Security Command; AF Electronic Warfare Center; AF Cryptologic Support Center; Joint Electronic Warfare Center; USAF Service Information and News Center; AF Commissary Service; 433d Tactical Airlift Wing (AFRES); 149th Tactical Fighter Gp. (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 3,925

GUIDE TO AIR FORCE STATIONS

In addition to the major facilities in this Guide to Bases, USAF has a number of Air Force stations (AFS) throughout the US and overseas. These stations, for the most part, perform an air defense mission, are Joint Surveillance Systems (JSS), and house radar, SAGE, and/or AC&W units. Some stations are excess to USAF requirements and will be closed. Here is a listing of stations with state, ZIP code, and major command. Where a station can be reached by a general-purpose AUTOVON number, such a number (AV) is listed. Commercial telephone numbers (AC) are given for stations not having access to AUTOVON.

Bellows AFS, Hawaii 96795 (PACAF)	AC (808) 259-5941
Calumet AFS, Michigan 49913 (TAC)	AC (906) 337-4200
Campion AFS, APO Seattle 98703 (AAC)	AV 317-743-1200
Cape Canaveral AFS, Florida 32925 (AFSC)	AV 467-1110
Cape Lisburne AFS, APO Seattle 98716 (AAC)	AV 317-725-1200
Cape Newenham AFS, APO Seattle 98745 (AAC)	AV 317-794-1200
Cape Romanzof AFS, APO Seattle 98706 (AAC)	AV 317-795-1200
Cold Bay AFS, APO Seattle 98711 (AAC)	AV 317-565-7200
Concrete MEWS, North Dakota 58221 (SAC)	AV 330-3297
Crescent City AFS, California 95548 (TAC)	AV 670-2352
Cudjoe Key AFS, Florida 33039 (TAC)	AV 798-8124
Dallas AFS, Oregon 97338 (TAC)	AC (503) 787-3336
Empire AFS, Michigan 49630 (TAC)	AC (616) 326-6211
Finland AFS, Minnesota 55603 (TAC)	AC (218) 353-7444
Finley AFS, North Dakota 59230 (TAC)	AV 362-6138
Fort Fisher AFS, North Carolina 28449 (TAC)	AC (919) 458-8251
Fort Lee AFS, Virginia 23801 (TAC)	AV 687-4008
Fort Yukon AFS, APO Seattle 98710 (AAC)	AV 317-732-1200
Fortuna AFS, North Dakota 58844 (TAC)	AC (701) 834-2251
Galena Airport, APO Seattle 98723 (AAC)	AV (317) 446-3311
Gentile AFS, Ohio 45401 (AFLC)	AV 850-5111
Gibbsboro AFS, New Jersey 08026 (TAC)	AC (609) 763-1449
Indian Mountain AFS, APO Seattle 98748 (AAC)	AV 317-722-1200
Kalispell AFS, Montana 59922 (TAC)	AC (406) 844-3351
King Salmon Airport, APO Seattle 98713 (AAC)	AV (317) 721-3550
Kotzebue AFS, APO Seattle 98709 (AAC)	AV 317-748-1200
Makah AFS, Washington 98357 (TAC)	AC (206) 645-2231
Mica Peak AFS, Washington 99023 (TAC)	AC (509) 247-2669
Mill Valley AFS, California 94941 (TAC)	AV 837-3758
Mt. Hebo AFS, Oregon 97122 (TAC)	AC (503) 392-3111
Mt. Laguna AFS, California 92048 (TAC)	AV 876-3663
Murphy Dome AFS, APO Seattle 98750 (AAC)	AV (317) 744-1200
Newark AFS, Ohio 43055 (AFLC)	AV 580-1110
North Bend AFS, Oregon 97459 (TAC)	AC (503) 756-4146
North Charleston AFS, South Carolina 29405 (TAC)	AC (919) 744-7481
North Truro AFS, Massachusetts 02652 (TAC)	AC (617) 487-1248
Oklahoma City AFS, Oklahoma 73145 (AFLC)	AV 735-9011
Point Arena AFS, California 95468 (TAC)	AC (707) 882-2165
Port Austin AFS, Michigan 48467 (TAC)	AC (517) 738-5111
Richmond Heights AFS, Florida 33039 (TAC)	AV 791-8124
Savannah AFS, Georgia 31402 (ANG)	AC (912) 352-5414
Sparrevohn AFS, APO Seattle 98746 (AAC)	AV 317-731-1200
Sunnyvale AFS, California 94088 (AFSC)	AV 359-3611
Tatalina AFS, APO Seattle 98747 (AAC)	AV 317-728-1200
Tin City AFS, APO Seattle 98715 (AAC)	AV 317-724-1200
Tonapah AFS, Nevada 89049 (AFSC)	AC (702) 643-9252

acres. Altitude 689 ft. Military 4,210; civilians 18,560. Payroll $452.8 million. Housing: 46 officer; 368 NCO. 3-bed dispensary.

Kirtland AFB, N. M. 87117; S of Albuquerque. Phone (505) 844-0011; AUTOVON 244-0011. MAC base. 1606th Air Base Wing. Major agencies and units include AF Contract Management Div. (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; 150th Tactical Fighter Gp. (ANG); 1960th Communications Sqdn.; 3098th Aviation Depot Sqdn.; and Det. 1, 1369th Audiovisual Sqdn. 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 May 2, 1941. Area 51,330 acres. Altitude 5,352 ft. Military 4,876; civilians 12,090. Payroll $479.2 million. Housing: 124 officer; 2,010 NCO; 380 transient (211 VOQ, 169 VAQ). Dispensary and 40-bed hospital.

K. I. Sawyer AFB, Mich. 49843; 20 mi. S of Marquette. Phone (906) 346-6511; AUTOVON 472-1110. SAC base. 410th Bomb Wing; 46th Air Refueling Sqdn.; 87th Fighter Interceptor Sqdn. (TAC); 2001st Communications Sqdn. (AFCC). Base activated in 1959; named for Kenneth I. Sawyer, who proposed site for county airport, died in 1944. Area 5,224 acres. Altitude 1,220 ft. Military 3,678; civilians 417. Payroll $60 million. Housing: 337 officer; 1,356 NCO; 40 BOQ units; 244 transient (incl. 20 fully furnished efficiency apartments and 200 trailer spaces in housing section). 50-bed hospital.

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 policy/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. Base activated in 1941; named for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, died 1943. Area 6,828 acres, incl. 4,017 acres at Lackland Training Annex. Altitude 787 ft. Military 19,860; civilians 4,891. Payroll $202.3 million. Housing: 106 officer; 619 NCO; 1,257 transient. 1,000-bed hospital.

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 Gp. (TAC); 460th Reconnaissance Technical Sqdn. (TAC); 6th Airborne Command and Control Sqdn. (TAC); US Army TRADOC Flight Det.; 48th Fighter Interceptor Sqdn. (TAC). 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. Military 8,681; civilians 2,319. Payroll $173.3 million. Housing: 384 officer; 1,259 NCO; 202 transient. 65-bed hospital.

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, B-17 pilot killed over Java, Jan. 29, 1942. Area 4,008 acres. Altitude 1,080 ft. Military 2,600; civilians 500. Payroll $46 million. Housing: 255 officer; 348 NCO; 39 transient. 15-bed hospital.

Laurence G. Hanscom AFB *(see Hanscom AFB).*

Little Rock AFB, Ark. 72099; 12 mi. NE of Little Rock. Phone (501) 988-3131; AUTOVON 731-1110. MAC base, 314th Tactical Airlift Wing; 308th Strategic Missile Wing; SAC Titan II ICBM support base; 189th Air Refueling Gp. (ANG); Det. 9, 1365th Audiovisual Sqdn. Base activated in 1955. Area 6,919 acres. Altitude 310 ft. Military 6,195; civilians 800. Payroll $111 million. Housing: 313 officer; 1,222 NCO; 380 transient (160 VAQ, 220 VOQ). 30-bed hospital.

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, as Limestone AFB; renamed for Maj. Charles J. Loring, Jr., F-80 pilot killed Nov. 22, 1952, in North Korea; posthumously awarded Medal of Honor. Area more than 9,000 acres. Altitude 746 ft. Military 3,276; civilians 762. Payroll $54.5 million. Housing: 654 officer; 1,364 NCO; 12 transient; 4 VIP. 20-bed hospital.

Los Angeles AFS, Calif. 90009; in metropolitan Los Angeles area, city of El Segundo, one mi. S of Los Angeles IAP. Phone (213) 643-1000; AUTOVON 833-1110. Headquarters of AFSC's Space Division, which manages the development, launch, and on-orbit control of DoD's space program. Support unit is 6592d ABGp. Station activated Dec. 14, 1960. 23 tenant units on station; also provides support to 41 off-station units/activities. Military 2,010; civilians 1,300. Payroll $67 million. Housing units under construction nearby in San Pedro; the first of 300 scheduled to be occupied in late 1982. Station is site for one of the five prototype AF Family Support Centers.

Lowry AFB, Colo. 80230; 6 mi. E of Denver. Phone (303) 370-1110; AUTOVON 926-1110. ATC base. Technical Training Center; Air Force Accounting and Finance Center; Air Reserve Personnel Center, and the 3320th Correction and Rehabilitation Sqdn. Lowry Technical Training Center conducts training in avionics, aerospace munitions, air intelligence, logistics, and audiovisual fields. Base activated Feb. 26, 1938; named for 1st Lt. Francis B. Lowry, killed in action Sept. 26, 1918, near Crepion, France, while on a photo mission. Area 1,863 acres on base and 3,833-acre training annex 25 mi. E of Lowry. Altitude 5,400 ft. Military 8,841; civilians 5,011. Payroll $154 million. Housing: 94 officer; 772 NCO; 40 transient. Dispensary.

Luke AFB, Ariz. 85309; 20 mi. WNW of Phoenix. Phone (602) 856-7411; AUTOVON 853-1110. TAC base. 832d Air Div., 405th Tactical Training Wing; 58th Tactical Training Wing; Hq. 26th NORAD Region; Hq. 26th Air Div. (TAC); 302d Special Operations Sqdn. (AFRES). Luke, the largest fighter training base in the free world, conducts training of USAF aircrews in the F-4C and F-15, German students in the F-104G, and foreign training in the F-5 (at nearby Williams AFB). Base activated in 1941; named for 2d Lt. Frank Luke, Jr., observation balloon-busting ace of WW I and first flyer to receive the Medal of Honor, killed in action Sept. 29, 1918, near Murvaux, France. Area 4,197 acres plus 2,700,000-acre range. Altitude 1,101 ft. Military 6,000; civilians 2,000. Payroll $140 million. Housing: 80 officer; 786 NCO; 40 transient. 105-bed hospital.

MacDill AFB, Fla. 33608; adjacent to Tampa city limits. Phone (813) 830-1110; AUTOVON 968-1110. TAC base. Hq. US Readiness Command, Rapid Deployment Joint Task Force; 56th Tactical Fighter Wing conducts replacement training in the F-4D and the F-16. The wing has completed 75% of its conversion to the F-16. Base activated Apr. 15, 1941; named for Col. Leslie MacDill, killed in an aircraft accident Nov. 8, 1938, near Washington, D. C. Area 5,631 acres. Altitude 6 ft. Military 6,242; civilians 1,350. Payroll $141 million. Housing: 58 officer; 746 enlisted; 350 transient. 75-bed USAF regional hospital.

Malmstrom AFB, Mont. 59402; 4 mi. E of Great Falls. Phone (406) 731-9990; AUTOVON 632-1110. SAC base. 341st Strategic Missile Wing; Hq. 24th Air Div. (TAC); SAGE Region Control Center (NORAD). Base activated Dec. 15, 1942; named for Col. Einar A. Malmstrom, WW II fighter commander killed in air accident Aug. 24, 1954. Site of SAC's first Minuteman wing. Area 3,573 acres, plus about 23,000 sq. mi. of missile complex. Altitude 3,525 ft. Military 4,334; civilians 496. Payroll $72.3 million. Housing: 294 officer; 1,112 NCO; 107 transient. 29-bed hospital.

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 Aerospace Rescue and Recovery Sqdn. (AFRES). Base activated Mar. 1, 1918; named for 2d Lt. Peyton C. March, Jr., who died in Texas of crash injuries Feb. 18, 1918. Area 7,117 acres. Altitude 1,530 ft. Military 4,149; civilians 1,414. Payroll $177.1 million. Housing: 103 officer; 608 NCO; 177 transient. 145-bed hospital.

Mather, AFB, Calif. 95655; 12 mi. ESE of Sacramento. Phone (916) 364-1110; AUTOVON 828-1110. ATC base. DoD executive manager for navigator training (USAF, Navy, Marine Corps basic navigation training). Only navigator training base; also trains USAF electronic warfare officers and navigator-bombardiers. 320th Bomb Wing (SAC); 940th Air Refueling Gp. (AFRES); 3506th Recruiting Gp. Base activated 1918; named for 2d Lt. Carl S. Mather, killed in midair collision, Jan. 30, 1918, in Texas. Area 5,800 acres. Altitude 96 ft. Military 4,900; civilians 2,100. Payroll $121 million. Housing: 447 officer; 864 NCO; 40 transient. 75-bed hospital.

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 Gp. (AFRES). (The Senior NCO Academy and Extension Course Institute are at Gunter AFS.) Base activated 1918; named for 2d Lt. William C. Maxwell, killed in an air accident Aug. 12, 1920, in the Philippines. Area 2,523 acres. Altitude 168 ft. Military 4,079; civilians 2,178. Payroll $153 million. Housing: 275 officer; 388 NCO; 1,029 transient (971 VOQ and 58 VAQ). 90-bed hospital.

McChord AFB, Wash. 98438; 8 mi. S of Tacoma. Phone (206) 984-1910; AUTOVON 976-1110. MAC base. 62d Military Airlift Wing; Hq. 25th Air Div. (TAC); 318th Fighter Interceptor Sqdn. (TAC); SAGE Region Control Center (NORAD); 446th Military Airlift Wing (AFRES Assoc.). Base activated May 5, 1938; named for Col. William C. McChord, killed Aug. 18, 1937, while attempting a forced landing at Maidens, Va. Area 4,609 acres. Altitude 322 ft. Military 5,703; civilians 1,703. Payroll $128.2 million. Housing: 111 officer; 882 NCO; 284 transient. Dispensary.

McClellan AFB, Calif. 95652; 9 mi. NE of Sacramento. Phone (916) 643-2111; AUTOVON 633-1110. AFLC base. Hq. Sacramento Air Logistics Center, logistics management, procurement, maintenance, and distribution support for such USAF weapon systems as F-111, FB-111, A-10, T-39; surveillance and warning systems, Space Transportation System, communication-electronics equipment, radar sites, and generators; maintenance support for F-4 and F-106 aircraft. Associate units include 41st Rescue and Weather Recon Wing (MAC); 2049th Communications Gp., and 1849th Electronics Installations Sqdn. (AFCC); 1155th Technical Operations Sqdn.

(AFSC); 431st Fighter Weapons Sqdn. (TAC); Hq. 4th Air Force (AFRES); Defense Logistics Agency; and US Coast Guard Air Station, Sacramento (DOT). Named for Maj. Hezekiah McClellan, pioneer in Arctic aeronautical experiments, killed in crash May 25, 1936. Area 2,625 acres. Altitude 76 ft. Military 3,600; civilians 13,900. Payroll $367.3 million. Housing: 168 officer; 507 NCO; 21 transient. Dispensary.

McConnell AFB, Kan. 67221; 5 mi. SE of Wichita. Phone (316) 681-6100; AUTOVON 962-1110. SAC base. 381st Strategic Missile Wing; 384th Air Refueling Wing; 184th Tactical Fighter Gp. (ANG). Base activated June 5, 1951; named for Capt. Fred J. McConnell, WW II B-24 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 B-24 pilot, killed July 10, 1943, during attack on Bougainville in the Pacific. Area 2,608 acres. Altitude 1,371 ft. Military 4,058; civilians 753. Payroll $63 million. Housing: 149 officer; 445 NCO; 133 transient. 20-bed hospital.

McGuire AFB, N. J. 08641; 18 mi. SE of Trenton. Phone (609) 724-1110; AUTOVON 440-0111. MAC base. 438th Military Airlift Wing; Hq. 21st Air Force; N. J. ANG; N. J. Civil Air Patrol; 170th Air Refueling Gp. (ANG); 108th Tactical Fighter Wing (ANG); 514th Military Airlift Wing (AFRES Assoc.); the MAC NCO Academy East; and Air Force Band of the East. Base adjoins Army's Fort Dix; formerly Fort Dix Army Air Base. Activated as AFB in 1949; named for Maj. Thomas B. McGuire, Jr., P-38 pilot, 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. Military 4,886; civilians 1,714. Payroll $115.9 million. Housing: 442 officer; 1,312 NCO; 620 transient (186 VOQ, 244 VAQ, 160 transient family units, 30 transient). Dispensary and 163-bed hospital.

Minot AFB, N. D. 58705; 13 mi. N of Minot. Phone (701) 727-4761; AUTOVON 344-1110. SAC base. 57th Air Div.; 91st Strategic Missile Wing; 5th Bomb Wing; 5th Fighter Interceptor Sqdn. (TAC). Base activated Feb. 1957. Area 5,050 acres, plus additional 19,324 acres for missile sites. Altitude 1,650 ft. Military 5,648; civilians 588. Payroll $85.9 million. Housing: 543 officers; 1,927 NCO; 104 transient. Dispensary, also 40-bed military hospital in city of Minot.

Moody AFB, Ga. 31699; 10 mi. NNE of Valdosta.

USAF'S PRINCIPAL BASES OVERSEAS

Ankara AS, Turkey
APO New York 09254
AUTOVON 672-1110
TUSLOG Hq., USAFE

Aviano AB, Italy
APO New York 09293
AUTOVON 632-1110
Tactical group, USAFE

Bitburg AB, Germany
APO New York 09132
AUTOVON 453-1110
Tactical fighter base, USAFE

Camp New Amsterdam, The Netherlands
APO New York 09292
Tactical fighter unit, USAFE
(Call Ramstein, AUTOVON 424-1110; ask for Camp New Amsterdam.)

Clark AB, Philippines
APO San Francisco 96274
AUTOVON 822-1201
Hq. 13th Air Force, PACAF

Hahn AB, Germany
APO New York 09109
AUTOVON 450-1110
Tactical fighter base, USAFE

Hellenikon AB, Greece
APO New York 09223
AUTOVON 662-1110
Support base, USAFE

Hessisch-Oldendorf AS, Germany
APO New York 09669
Support base, USAFE
(Call Sembach, AUTOVON 427-1110; ask for Hessisch-Oldendorf.)

Howard AFB, Panama
APO Miami 34001
AUTOVON 284-1110
Hq. USAF Southern Air Division, TAC

Incirlik AB, Turkey
APO New York 09289
AUTOVON 676-1110
Support base, USAFE

Iraklion AS, Crete, Greece
APO New York 09291
AUTOVON 668-1110
Support base, USAFE

Izmir, Turkey
APO New York 09224
AUTOVON 675-1110
Support base, USAFE

Kadena AB, Okinawa, Japan
APO San Francisco 96239
AUTOVON 630-1110
313th Air Division, PACAF
18th Tactical Fighter Wing, PACAF
Tactical fighter base, PACAF
Strategic operations, SAC

Keflavik Airport, Iceland
FPO New York 09571
AUTOVON 231-1290
Fighter-interceptor base, TAC

Kunsan AB, South Korea
APO San Francisco 96264
AUTOVON 272-1110
8th Tactical Fighter Wing, PACAF
Tactical fighter base, PACAF

Kwang Ju AB, South Korea
APO San Francisco 96324
Combat support base, PACAF
(Call Korea, AUTOVON 262-1101; ask for Kwang Ju AB.)

Lajes Field, Azores
APO New York 09406
AUTOVON 895-3490
Airlift base, MAC

Lindsey AS, Germany
APO New York 09633
AUTOVON 339-1110
Support base, USAFE

Misawa AB, Japan
APO San Francisco 96519
AUTOVON 248-1101
6112th Air Base Wing, PACAF
Support base, PACAF

Osan AB, South Korea
APO San Francisco 96570
AUTOVON 271-1234
314th Air Division, PACAF
51st Composite Wing (Tactical), PACAF
Tactical fighter base, PACAF

RAF Alconbury, United Kingdom
APO New York 09238
AUTOVON 223-1110
Tactical reconnaissance base, USAFE

RAF Bentwaters, United Kingdom
APO New York 09755
AUTOVON 225-1110
Tactical fighter base, USAFE

RAF Chicksands, United Kingdom
APO New York 09193
AUTOVON 234-1110
Support base, USAFE

RAF Fairford, United Kingdom
APO New York 09125
AUTOVON 247-1110
KC-135 refueling support base, USAFE/SAC

RAF Greenham Common, United Kingdom
APO New York 09150
(Call RAF Upper Heyford, AUTOVON 263-1110; ask for Greenham Common.)
Support base, USAFE

RAF Lakenheath, United Kingdom
APO New York 09179
AUTOVON 226-1110
Tactical fighter base, USAFE

RAF Mildenhall, United Kingdom
APO New York 09127
AUTOVON 238-1110
Hq. 3d Air Force, USAFE
Tactical airlift base, USAFE
Rotational KC-135, SAC
Rotational C-130, MAC

RAF Upper Heyford, United Kingdom
APO New York 09194
AUTOVON 263-1110
Tactical fighter base, USAFE

RAF Woodbridge, United Kingdom
APO New York 09405
AUTOVON 225-1110
Tactical fighter base, USAFE

Ramstein AB, Germany
APO New York 09012
AUTOVON 480-1110
Hq. USAFE
Tactical fighter base, USAFE
Hq. European Communications Division, AFCC
7th Air Division, SAC
322d Airlift Division, MAC
2d Weather Wing, MAC

Rhein-Main AB, Germany
APO New York 09057
AUTOVON 330-1110
Tactical airlift base, MAC

San Vito AS, Italy
APO New York 09240
AUTOVON 633-1110
Support base, USAFE

Sembach AB, Germany
APO New York 09130
AUTOVON 496-1110
Hq. 17th Air Force, USAFE
Tactical air control base, USAFE

Sondrestrom AB, Greenland
APO New York 09121
Support base, SAC
(Call Malmstrom AFB, AUTOVON 632-6000; ask for Sondrestrom AB.)

Spangdahlem AB, Germany
APO New York 09123
AUTOVON 452-1110
Tactical fighter base, USAFE

Suwon AB, South Korea
APO San Francisco (to be assigned)
(Call Korea, AUTOVON 271-1234; ask for Suwon AB.)
Tactical fighter base, PACAF

Taegu AB, South Korea
APO San Francisco 96213
Combat support base, PACAF
(Call Korea, AUTOVON 262-1101; ask for Taegu AB.)

Tempelhof Airport, Berlin
APO New York 09611
AUTOVON 332-1110
Support base, USAFE

Thule AB, Greenland
APO New York 09023
AUTOVON 834-1211; ask for Thule.
Support base, SAC

Torrejon AB, Spain
APO New York 09283
AUTOVON 723-1110
Hq. 16th Air Force, USAFE
Tactical fighter base, USAFE

Yokota AB, Japan
APO San Francisco 96328
AUTOVON 248-1101
Hq. US Forces, Japan
Hq. 5th Air Force, PACAF
475th Air Base Wing (PACAF)
Support base, PACAF

Zaragoza AB, Spain
APO New York 09286
AUTOVON 724-1110
Tactical fighter training base, USAFE

Zweibrücken AB, Germany
APO New York 09860
AUTOVON 425-1110
Tactical reconnaissance base, USAFE

Phone (912) 333-4211; AUTOVON 460-1110. TAC base. 347th Tactical Fighter Wing, F-4E fighter operations. Base activated June 1941; named for Maj. George P. Moody, killed May 5, 1941, while test-flying Beech AT-10. Area 6,050 acres. Altitude 233 ft. Military 2,610; civilians 486. Payroll $52.9 million. Housing: 61 officers; 245 NCO; 41 transient. 25-bed hospital.

Mountain Home AFB, Idaho 83648; 56 mi. SE of Boise. Phone (208) 828-2111; AUTOVON 857-1110. TAC base. 366th Tactical Fighter Wing, F-111A fighter and EF-111A electronic countermeasures operations. Base activated Apr. 1942. Area 6,639 acres. Altitude 3,000 ft. Military 4,205; civilians 683. Payroll $65 million. Housing: 242 officer; 1,296 NCO; 105 transient. 20-bed hospital.

Myrtle Beach AFB, S. C. 29577; S of Myrtle Beach. Phone (803) 238-7211; AUTOVON 748-1110. TAC base; shares runway with Myrtle Beach Jetport. 354th Tactical Fighter Wing. A-10 fighter operations. Served as Army air base, 1941–47; USAF base since 1956. Area 3,793 acres. Altitude 25 ft. Military 3,138; civilians 463. Payroll $55.5 million. Housing: 130 officer; 670 NCO; 65 trailer lots; 116 transient. 32-bed hospital.

Nellis AFB, Nev. 89191; 8 mi. NE of Las Vegas. Phone (702) 643-1800; AUTOVON 682-1800. TAC base. Tactical Fighter Weapons Center, host unit. F-4E, F-5E, F-15, F-16, F-111, A-10, T-38, UH-1N operations; 57th Fighter Weapons Wing; USAF Thunderbirds Air Demonstration Sqdn.; 4440th Tactical Fighter Training Gp. (Red Flag); 554th Operations Support Wing; 554th Range Group; conducts advanced tactical fighter training and realistic combat training for DoD; provides test and evaluation of air tactics and new equipment. Tenant units: 474th TFW; EWCAS/Joint Task Force; 4450th Tactical Training Gp.; 3096th Aviation Depot Sqdn.; 2069th Communications Sqdn. Base activated July 1941; named for 1st Lt. William H. Nellis, WW II P-47 fighter pilot, killed Dec. 27, 1944, in Europe. Area 11,274 acres, with ranges totaling 3,012,770 acres. Altitude 2,171 ft. Military 9,256; civilians 1,026. Payroll $162 million. Housing: 168 officer; 1,329 NCO; 100 trailer spaces; 1,075 transient (incl. 846 VAQ, 204 VOQ, 25 TLQ). 40-bed hospital.

Norton AFB, Calif. 92409; 59 mi. E of Los Angeles, within San Bernardino corporate limits. Phone (714) 382-1110; AUTOVON 876-1110. MAC base. 63d Military Airlift Wing; Hq. AF Inspection and Safety Center; Hq. Defense Audiovisual Agency; Hq. AF Audit Agency; Hq. Aerospace Audiovisual Service (MAC). Also Ballistic Missile Office (AFSC); 445th Military Airlift Wing (AFRES Assoc.); MAC NCO Academy West and 22d Air Force NCO Leadership School. Base activated Mar. 2, 1942; named for Capt. Leland F. Norton, native of San Bernardino, WW II A-20 attack bomber pilot, killed in action May 27, 1944, near Amiens, France. Area 2,407 acres. Altitude 1,156 ft. Military 5,396; civilians 2,798. Payroll $161 million. Housing: 56 officer; 208 NCO; 339 transient. Clinic.

Offutt AFB, Neb. 68113; 8 mi. S of Omaha. Phone (402) 294-1110; AUTOVON 271-1110. SAC base. Hq. Strategic Air Command; 55th Strategic Reconnaissance Wing; 544th Strategic Intelligence Wing; AF Global Weather Central (MAC); 3d Weather Wing (MAC); 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, died Aug. 13, 1918, from injuries received at Valheureux, France. Area 1,914 acres. Altitude 1,048 ft. Military 12,464; civilians 2,110 (incl. 468 contractor personnel). Payroll $220.1 million. Housing: 882 officer; 1,798 NCO; 60 transient. 65-bed hospital.

Patrick AFB, Fla. 32925; 2 mi. S of Cocoa Beach. Phone (305) 494-1110; AUTOVON 854-1110. AFSC base. Operated by the Eastern Space and Missile Center in support of DoD, NASA, and other agency missile and space programs. Major tenants are Equal Opportunity Management Institute; AF Technical Applications Center; 549th Tactical Air Support Gp.; and 2d Combat Communications Gp. (AFCC). Activated in 1940, base is airhead for Cape Canaveral AFS. Named for Maj. Gen. Mason M. Patrick, chief of AEF's Air Service in WW I and chief of the Air Service/Air Corps, 1921–27. Area 2,341 acres. Altitude 9 ft. Military 3,281; civilians 6,697. Payroll $69.5 million. Housing: 247 officer; 1,401 NCO. 25-bed hospital.

Pease AFB, N. H. 03801; 3 mi. W of Portsmouth. Phone (603) 436-0100; AUTOVON 852-1110. SAC base. 45th Air Div.; 509th Bomb Wing; 157th Air Refueling Gp. (ANG). Base activated 1956; named for Capt. Harl Pease, Jr., WW II B-17 pilot and Medal of Honor recipient, killed Aug. 7, 1942, during attack on Rabaul, New Britain Island. Area 4,374 acres. Altitude 101 ft. Military 3,580; civilians 545. Payroll $68.7 million. Housing: 138 officer; 1,073 NCO; 50 trailer spaces; 128 transient. 70-bed hospital.

Peterson AFB, Colo. 80914; 7 mi. E of Colorado Springs. Phone (301) 591-7321; AUTOVON 692-7011. SAC base. Home of 46th Aerospace Defense Wing (SAC), which supports Hq. North American Air Defense Command/Aerospace Defense Command (NORAD/ADCOM) Combat Operations Center in Cheyenne Mountain; Aerospace Defense Center; the Air Force Academy; and Fort Carson, Colo. Base activated in 1942; named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942, in aircraft crash at the base. Area 1,176 acres. Altitude 6,200 ft. Military 3,357; civilians 1,086. Payroll $92 million. Housing: 106 officer; 384 NCO; 40 transient. Dispensary.

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. 4007th Combat Crew Training Sqdn. 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. Military 3,700; civilians 660. Payroll $62.5 million. Housing: 230 officer; 1,412 NCO. 20-bed hospital.

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 Sqdn.; 1943d Communications Sqdn.; 53d Mobile Aerial Port Sqdn. (AFRES). Base adjoins Army's Fort Bragg and provides intratheater airlift support for airborne forces and other personnel, equipment, and supplies. Base activated 1919; named for 1st Lt. Harley H. Pope, WW I flyer, killed Jan. 6, 1919, when his JN-4 "Jenny" ran out of fuel near Fayetteville and crashed. Area 1,750 acres. Altitude 218 ft. Military 3,834; civilians 617. Payroll $71 million. Housing: 89 officer; 370 NCO; 216 transient. Dispensary.

Randolph AFB, Tex. 78148; 20 mi. ENE of San Antonio. Phone (512) 652-1110; AUTOVON 487-1110. ATC base. 12th Flying Training Wing, T-37 and T-38 pilot instructor training. Major tenants are Hq. Air Training Command; Air Force Manpower and Personnel Center; Occupational Measurement Center; Office of Civilian Personnel Operations; and Hq. USAF Recruiting Service. Base activated June 1930; named for Capt. William M. Randolph, killed Feb. 17, 1928, when his AT-4 crashed on takeoff at Gorman, Tex. Area 2,901 acres. Altitude 761 ft. Military 5,532; civilians 2,354. Payroll $179 million. Housing: 203 officer; 816 NCO; 13 transient. Dispensary.

Reese AFB, Tex. 79489; 6 mi. W of Lubbock. Phone (806) 885-4511; AUTOVON 838-1110. ATC base. 64th Flying Training Wing, undergraduate pilot training. Base activated in 1942; named for 1st Lt. Augustus F. Reese, Jr., P-38 fighter pilot killed in Sardinia, May 14, 1943. Area 3,597 acres. Altitude 3,338 ft. Military 2,537; civilians 568. Payroll $61 million. Housing: 108 officer; 289 NCO. 28 transient. 10-bed hospital.

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; Hq. Air Force Reserve (AFRES); 2853d Air Base Gp.; 19th Bomb Wing (SAC); 5th Combat Communications Gp. (AFLC); 3503d Recruiting Gp.; 1926th Communications Sqdn. (AFCC). Base activated Mar. 1942; named for Brig. Gen. Augustine Warner Robins, an early Chief of the Materiel Division of the Air Corps, died June 16, 1940. Area 8,856 acres. Altitude 294 ft. Military 3,843; civilians 15,262. Payroll $428.8 million. Housing: 249 officer; 1,147 NCO; 40 transient. 40-bed hospital.

Sawyer AFB *(see K. I. Sawyer AFB).*

Scott AFB, Ill. 62225; 6 mi. ENE of Belleville. Phone (618) 256-1110; AUTOVON 638-1110. MAC base. 375th Aeromedical Airlift Wing; Hq. Military Airlift Command; Hq. Air Force Communications Command; Hq. Aerospace Rescue and Recovery Service; Hq. Air Weather Service. Also, Defense Commercial Communications Office; Environmental Technical Applications Center; USAF Medical Center, Scott; 7th Weather Wing; 932d Aeromedical Airlift Gp. (AFRES Assoc.); Airlift Communications Division; and 375th Air Base Gp. 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. Military 6,714; civilians 3,122. Payroll $196.7 million. Housing; 404 officer; 1,469 NCO, plus 120 spaces for privately owned trailers; 283 transient. 175-bed hospital; 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); 2012th Communications Sqdn. (AFCC). Base activated June 12, 1941; named for Navy Lt. Seymour A. Johnson, native of Goldsboro, killed Mar. 4, 1941, in crash in Maryland. Area 4,281 acres. Altitude 109 ft. Military 5,155; civilians 837. Payroll $86 million. Housing: 524 officer; 1,221 NCO; 138 transient (includes 46 VOQ, 92 VAQ). 30-bed hospital.

Shaw AFB, S. C. 29152; 10 mi. WNW of Sumter. Phone (803) 668-8110; AUTOVON 965-1110. TAC base. Hq. 9th Air Force (TAC); 363d Tactical Fighter Wing, F-16 fighter and RF-4C recon operations; 507th Tactical 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 in France July 9, 1918, when his Bristol fighter was shot down during a reconnaissance mission. Area 3,269 acres; supports another 8,038 acres. Altitude 244 ft. Military 5,132; civilians 576. Payroll $88 million. Housing: 389 officer; 1,315 NCO; 16 transient. 40-bed hospital.

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 the local date is the same as elsewhere in the US. Area about 4.5 mi. long by 2.5 mi. wide. Altitude 270 ft. Military 547. Payroll $7.5 million. Housing: 70 transient. Dispensary.

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 Gp. provides specialized and advanced training at 70

field training detachments and 19 operating locations worldwide. The School of Health Care Sciences provides training in medicine, dentistry, nursing, biomedical sciences, and health services administration. 80th Flying Training Wing conducts undergraduate pilot training and instructor training for the Euro-NATO Joint Jet Pilot Training Program. The wing trains allied fighter pilots for 12 NATO countries. 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. Military 7,729; civilians 3,476. Payroll $147.5 million. Housing: 200 officer; 1,087 NCO. 378-bed hospital.

Tinker AFB, Okla. 73145; 8 mi. SE of Oklahoma City. Phone (405) 734-7321; AUTOVON 735-1110. AFLC base. Hq. Oklahoma City Air Logistics Center, furnishes logistic support for bombers, jet engines, instruments, and electronics; Electronics Installation Center; 3d Combat Communications Gp.; 552d Airborne Warning and Control Wing (TAC); 507th Tactical Fighter Gp. (AFRES). Base activated Mar. 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 retreating enemy ships. Area 4,277 acres. Altitude 1,291 ft. Military 5,700; civilians 16,500. Payroll $440 million. Housing: 110 officer; 422 NCO. 30-bed hospital.

Travis AFB, Calif. 94535; at Fairfield, 50 mi. NE of San Francisco. Phone (707) 438-4011; AUTOVON 837-1110. MAC base. Hq. 22d Air Force; 60th Military Airlift Wing; 349th Military Airlift Wing (AFRES Assoc.); 307th Air Refueling Gp. (SAC); David Grant Medical Center. Base activated May 25, 1943; named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950, in a B-29 accident. Area 6,170 acres. Altitude 62 ft. Military 9,016; civilians 2,347. Payroll $193.2 million. Housing: 241 officer; 1,926 NCO; 584 transient (incl. 40 transient living quarters, 204 VOQ, 188 VAQ, 83 Aerial Port quarters with cooking facilities, 69 Aerial Port quarters without). 290-bed hospital.

Tyndall AFB, Fla. 32403; 13 mi. E of Panama City. Phone (904) 283-1113; AUTOVON 970-1110. TAC base. Home of the USAF Air Defense Weapons Center and the 325th Combat Support Group. The base is a single DoD unit for centralization of operational and technical expertise on air defense. Conducts weapons-firing programs and evaluation for fighter-interceptor pilots; tests new air defense-related equipment and tactics. Home of the biennial Project William Tell fighter interceptor weapons meet, which tests the mission skills of the best air defense fighter units. Tenants include Air Force Engineering and Services Center; 3625th Technical Training Sqdn. (ATC); 678th Air Defense Gp. (TAC); 2021st Communications Sqdn. (AFCC); and TAC NCO Academy East. Location of the first Region Operations Control Center scheduled for activation in late 1982. Base activated Dec. 7, 1941; named for 1st Lt. Frank B. Tyndall, WW I fighter pilot, killed July 15, 1930, in crash of P-1 near Mooresville, N. C. Area 28,000 acres. Altitude 18 ft. Military 4,250; civilians 1,198. Payroll $90 million. Housing: 142 officer; 929 NCO. 80-bed hospital.

US Air Force Academy, Colo. 80840; 10 mi. N of Colorado Springs. Phone (303) 472-1818; AUTOVON 259-3110. Direct reporting unit; activated Apr. 1, 1954, at Lowry AFB, Colo. Moved to permanent location Aug. 1958. Tenant units include 1876th Communications Sqdn.; Frank J. Seiler Research Lab (AFSC); DoD Medical Exam Review Board; Det. 470 of AF Audit Agency; 557th Flying Training Sqdn. (ATC). Area 18,000 acres. Altitude 7,280 ft. Military 2,758; civilians 1,795. Payroll $134 million. Housing: 622 officer; 621 enlisted; 18 transient. 70-bed hospital.

Vance AFB, Okla. 73702; 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., native of Enid, 1939 West Point graduate, Medal of Honor recipient, killed July 26, 1944, when the air-evac plane returning him to the US went down in the Atlantic near Iceland. Area 1,811 acres. Altitude 1,307 ft. Military 1,400; civilians 1,300. Payroll $47 million. Housing: 119 officer; 111 NCO; 1 transient. Clinic.

Vandenberg AFB, Calif., 93437; 8 mi. NNW of Lompoc. Phone (805) 866-1611; AUTOVON 276-1110. SAC base. Site of 1st Strategic Aerospace Div. (SAC); Space and Missile Test Organization (AFSC); Western Space and Missile Test Center (AFSC); Shuttle Activation Task Force (AFSC). Host command conducts missile crew training and provides facilities and support for operational ICBM tests. Vandenberg is the only base that launches operational ballistic missiles in the SAC deterrent force. WSMC is responsible for conducting R&D testing of USAF space and ballistic missile programs, and unmanned polar-orbiting space operations of DoD, USAF, NASA, contractors, and others. This includes development, testing, and evaluation of the MX and the Space Transportation System. MX testing is scheduled to begin in early 1983. Site Alteration Task Force (SATAF) is responsible for facility construction, equipment installation, and validation for future Vandenberg Space Shuttle launches beginning in late 1985. Approximately 1,493 launches have taken place from Vandenberg since Dec. 1958. Originally Army's Camp Cooke. Activated Oct. 1941. Base taken over by USAF June 7, 1957; renamed for Gen. Hoyt S. Vandenberg, USAF's second chief of staff, died Apr. 2, 1954. Area 98,400 acres. Altitude 400 ft. Military 6,415; civilians 7,905. Payroll $207 million. Housing: 393 officer; 1,575 enlisted; 172 mobile trailer spaces; 20 transient. 45-bed hospital.

Warren AFB (*see Francis E. Warren AFB*).

Wheeler AFB, Hawaii 96854; near center of the island of Oahu, adjacent to Army's Schofield Barracks. Phone (808) 655-1414; AUTOVON 430-0111. PACAF base. 15th Air Base Sqdn., base host unit; 326th Air Div. (Air Defense Control Center), 22d TASS, a subordinate unit, and the 169th ACWS (Hawaii Air National Guard–Air Defense Direction Center); US Army flying activities from Schofield Barracks; and several other tenant units. Base activated Feb. 1922; named for Maj. Sheldon H. Wheeler, who became CO of Luke Field, Hawaii, in 1919 and was killed there July 13, 1921, when his biplane crashed during aerial exhibition. Area 1,369 acres. Altitude 845 ft. Military 720; civilians 112. Payroll included in entry for Hickam AFB. Housing: 102 officer; 390 NCO. Dispensary.

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 Army Air Forces airman to be shot down in WW II. Area 3,384 acres, plus missile complex of about 10,000 sq. mi. Altitude 869 ft. Military 3,178; civilians 373. Payroll $54.7 million. Housing: 209 officer; 783 NCO; 57 transient (incl. 19 VOQ, 4 guest houses, and 34 VAQ). 10-bed hospital.

Williams AFB, Ariz. 85224; 16 mi. SE of Mesa. Phone (602) 988-2611; AUTOVON 474-1001. ATC base. 82d Flying Training Wing, largest undergraduate pilot training base; also provides F-5 combat crew training for foreign students. Home of AFSC Human Resources Lab/Flying Training Div., doing extensive research on flight simulators. Base activated July 1941; named for 1st Lt. Charles D. Williams, killed in crash of a bomber near Fort De Russy, Hawaii, July 6, 1927. Area 4,762 acres. Altitude 1,385 ft. Military 3,300; civilians 1,070. Payroll $72 million. Housing: 310 officer; 496 NCO; 40 transient. 25-bed hospital.

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 Div. (AFSC); 4950th Test Wing (AFSC); Foreign Technology Div. (AFSC); AF Institute of Technology; USAF Medical Center, Wright-Patterson; US Air Force Museum; AF Acquisition Logistics Div.; AFLC International Logistics Center; 2750th Air Base Wing (AFLC); 906th Tactical Fighter Gp. (AFRES); plus more than 75 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 in Area C of present base. Area 8,174 acres. Altitude 824 ft. Military 7,900; civilians 16,000; contracted service and contractor employees 8,000. Payroll $695 million. Housing: 1,090 officer; 1,245 NCO; 40 transient. 285-bed hospital.

Wurtsmith AFB, Mich. 48753; 3 mi. NW of Oscoda. Phone (517) 739-2011; AUTOVON 623-1110. SAC base. 40th Air Div.; 379th Bomb Wing. Base activated 1924 as Camp Skeel, gunnery camp for Selfridge Field; became Oscoda Army Air Field during WW II; renamed in 1953 for Maj. Gen. Paul B. Wurtsmith, killed Sept. 13, 1946, in a B-25 crash near Asheville, N. C.; assigned to SAC Apr. 1, 1960. Area 5,200 acres. Altitude 634 ft. Military 3,152; civilians 399. Payroll $43 million. Housing: 290 officer; 1,065 NCO; 59 transient. 20-bed hospital.

GUIDE TO ANG AND AFRES BASES

NOTE: This section of the Guide consolidates major Air National Guard (ANG) and Air Force Reserve (AFRES) bases into a single listing. Most ANG locations are listed alphabetically, according to the city where they are located. AFRES units are listed by the names of their bases and are designated as AFRES facilities. There are, in addition, some ANG and AFRES units that are located on active-duty bases. These may be found in the main "Guide to Bases" section, beginning on an earlier page.

Anchorage, Alaska (Kulis ANG Base at Anchorage IAP) 99502. Phone (907) 243-1145; AUTOVON 752-5215. 176th Tac Airlift Gp. (ANG). 144th Tac Airlift Sqdn. (ANG). Named for Lt. Albert Kulis, killed in training flight in 1954. Area 101 acres. Altitude 124 ft. Military 643, civilians 173. Payroll $8 million. 6-bed hospital.

Atlanta, Ga. (McCollum Airport, Kennesaw, Ga.) 30144; 27 mi. N of Atlanta, 10 mi. from Dobbins AFB. Phone (404) 422-2500; AUTOVON 925-2474. 129th Tac Control Sqdn. Area 13 acres.

Altitude 1,060 ft. Military 276, civilians 32. Payroll through Dobbins AFB.

Atlantic City, N. J. (Federal Aviation Administration Technical Center) 08405; 10 mi. W of Atlantic City. Phone (609) 641-8200; AUTOVON 234-1980. 177th Fighter Interceptor Gp. (ANG). Area 119 acres. Altitude 76 ft. Military 866, civilians 277. Payroll $9.4 million.

Baltimore, Md. (Glenn L. Martin State Airport) 21220; 8 mi. W of Baltimore. Phone (301) 687-6270; AUTOVON 235-9210. 175th Tac Fighter Gp. (ANG); 135th Tac Airlift Gp. (ANG). Area 750 acres. Altitude 89 ft. Military 1,616, civilians 305. Payroll $11.9 million.

Bangor International Airport, Me. 04401; 4 mi. NW of Bangor. Phone (207) 947-0571; AUTOVON 476-6210. 101st Air Refueling Wg. (ANG). Area 1,094 acres. Altitude 192 ft. Military 938, civilians 245. Payroll $10.7 million. Dispensary.

Battle Creek ANG Base, Mich. 49016; located adjacent to W. K. Kellogg Airport. Phone (616) 963-1596; AUTOVON 889-3691. 110th Tac Air Support Gp. (ANG). Area 89 acres. Altitude 941 ft. Military 736, civilians 156. Payroll $6.3 million.

Birmingham Municipal Airport, Ala. (Smith ANG Base) 35217. Phone (205) 591-8160; AUTOVON 694-2260. 117th Tac Recon Wg. (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. Military 1,175, civilians 264. Payroll $11.4 million.

Boise Air Terminal, Idaho (Gowen Field) 83701; 6 mi. S of Boise. Phone (208) 385-5339; AUTOVON 941-5011. 124th Tac Recon Gp. (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 (467 acres military). Altitude 2,858 ft. Military 947, civilians 232. Payroll $8.6 million. Limited transient facilities available during Army Guard camps.

Buckley ANG Base, Colo. 80011; 8 mi. E of Denver. Phone (303) 390-9011; AUTOVON 877-9011. 140th Tac Fighter Wg. (ANG) and 154th Tac Control Gp. Also host to Navy Reserve, Marine Corps Reserve, ARNG, and Air Force units. Base activated Apr. 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 in the Argonne, France, Sept. 27, 1918. Area 3,262 acres. Altitude 5,663 ft. Military 1,110, civilians 517. Payroll $16.4 million. Dispensary.

Burlington, Vt. (Burlington International Airport) 05401; 3 mi. E of Burlington. Phone (802) 658-0770; AUTOVON 689-4310. 158th Defense Systems Evaluation Gp. (ANG). Area 326 acres. Altitude 371 ft. Military 764, civilians 207. Payroll $7.7 million.

Charleston, W. Va. (Kanawha Airport) 25311; 4 mi. NE of Charleston. Phone (304) 342-6194; AUTOVON 366-9210. 130th Tac Airlift Gp. (ANG). Area 218 acres. Altitude 981 ft. Military 900, civilians 165. Payroll $7.7 million. Dispensary, clinic.

Charlotte, N. C. (Douglas Municipal Airport) 28219. Phone (704) 399-6363; AUTOVON 583-9210. 145th Tac Airlift Gp. (ANG). Area 49 acres. Altitude 749 ft. Military 973, civilians 183. Payroll $8.3 million. 4-bed dispensary.

Cheyenne, Wyo. (Cheyenne Municipal Airport) 82001. Phone (307) 772-6201; AUTOVON 943-6201. 153d Tac Airlift Gp. (ANG). Area 46 acres. Altitude 6,156 ft. Military 707, civilians 180. Payroll $6.7 million.

Dallas Naval Air Station, Tex. (Hensley Field) 75211. Phone (214) 266-6111; AUTOVON 874-6111. 136th Tac Airlift Wg. (ANG). Area 49 acres. Altitude 495 ft. Military 871, civilians 187. Payroll $8.3 million.

Des Moines Municipal Airport, Iowa 50321; in city of Des Moines. Phone (515) 285-7182; AUTOVON 939-8210. 132d Tac Fighter Wg. (ANG). Area 112 acres. Altitude 957 ft. Military 949, civilians 232. Payroll $8.8 million.

Dobbins AFB, Ga. 30069; 2 mi. S of Marietta; 16 mi. NW of Atlanta. Phone (404) 424-8811; AUTOVON 925-1110. AFRES base. Hq. 14th Air Force (AFRES); 94th Tac Airlift Wg. (AFRES); 116th Tac Fighter Wg. (ANG). Base activated in 1943, named for Capt. Charles Dobbins, WW II pilot killed in action near Sicily. Area 2,214 acres. Altitude 1,068 ft. Military 375, civilians 1,100, Reserve 3,150. Payroll $34.5 million. Housing: 3 officer, 6 NCO. Dispensary.

Duluth International Airport, Minn. 55811; 5 mi. NW of Duluth. Phone (218) 727-6886; AUTOVON 825-7210. 148th Tac Recon Gp. (ANG). USAF base also located at airport. Area 152 acres. Altitude 1,429 ft. Military 937, civilians 229. Payroll $8.8 million.

Fargo, N. D. (Hector Field) 58105. Phone (701) 237-6030; AUTOVON 362-8110. 119th Fighter Interceptor Gp. (ANG). Area 133 acres. Altitude 900 ft. Military 1,200, civilians 264. Payroll $10.5 million.

Forbes Field, Kan. 66620; 5 mi. S of Topeka. Phone (913) 862-1234; AUTOVON 720-4210. 190th Air Refueling Gp. (ANG). Area 486 acres. Altitude 1,079 ft. Military 775, civilians 245. Payroll $8.8 million.

Fort Smith Municipal Airport, Ark. (Ebing ANG Base) 72906. Phone (501) 646-1601; AUTOVON 962-8210. 188th Tac Fighter Gp. (ANG). Area 95 acres. Altitude 468 ft. Military 815, civilians 209. Payroll $7.7 million.

Fort Wayne, Ind. (Fort Wayne Municipal Airport) 46809, 5 mi. SSW of Fort Wayne. Phone (219) 747-4141; AUTOVON 889-1550. 122d Tac Fighter Wg. (ANG). Area 87 acres. Altitude 800 ft. Military 1,013, civilians 242. Payroll $9.3 million.

Fresno Air Terminal, Calif. 93727; 5 mi. NE of Fresno. Phone (209) 252-4041; AUTOVON 949-9210. 26th NORAD Region and 26th Air Div. (TAC); 194th Fighter Interceptor Sqdn. (TAC); 144th Fighter Interceptor Wg. (ANG). Area 139 acres. Altitude 332 ft. Military 994, civilians 283. Payroll $10.1 million.

Gen. Billy Mitchell Field, Wis. 53207; SE of Milwaukee. AFRES base. Altitude 722 ft. ANG and AFRES have separate phones and facilities. ANG phone (414) 747-4410; AUTOVON 580-8410. 128th Air Refueling Gp. (ANG). ANG area 65 acres. Military 922, civilians 222. Payroll $8.7 million. AFRES phone (414) 481-6400; AUTOVON 786-9110. 440th Tac Airlift Wg. (AFRES). AFRES area 99 acres. Military 8, civilians 230, Reserve 950. Payroll $12.8 million.

Greater Peoria Airport, Ill. 61607; 7 mi. SW of Peoria. Phone (309) 697-6400; AUTOVON 724-9210. 182d Tac Air Support Gp. (ANG). Area 27.9 acres. Altitude 640 ft. Military 859, civilians 159. Payroll $6.3 million. Dispensary.

Greater Pittsburgh International Airport, Pa. 15231; 15 mi. NW of Pittsburgh. Altitude 1,203 ft. AFRES base. ANG and AFRES have separate phones and facilities. ANG phone (412) 264-3380; AUTOVON 936-1760. 171st Air Refueling Wg. and 112th Tac Fighter Gp. (ANG). ANG area 90 acres. Military 1,448, civilians 367. Payroll $13.5 million. AFRES phone (412) 264-5000; AUTOVON 277-8000. 911th Tac Airlift Gp. (host unit). AFRES area 165 acres. Military 21, civilians 180, Reservists 1,010. Payroll $10.4 million. Other units include 1998th Communications Installation Gp. (AFCC). Base activated 1943. 50 VOQ; 230 enlisted qtrs.

Great Falls International Airport, Mont. 59404; 5 mi. SW of Great Falls. Phone (406) 727-4650; AUTOVON 279-2301. 24th NORAD Region and 24th Air Div. (TAC); SAGE Control Center (NORAD); 120th Fighter Interceptor Gp. (ANG). Area 139 acres. Altitude 3,674 ft. Military 847, civilians 293. Payroll $10.8 million. Dispensary.

Gulfport-Biloxi Regional Airport, Miss. 39501; within city limits of Gulfport. Phone (601) 863-8624; AUTOVON 363-8210. Training site; also host to 255th Combat Communications Sqdn. and the Army National Guard Transportation Repair Shop. An air-to-ground gunnery range is located 70 mi. due north of site. Area 211 acres. Altitude 28 ft. ANG military 340, civilians 18. Payroll through Jackson. 2-bed dispensary.

Harrisburg-Olmstead International Airport, Pa. 17057. Phone (717) 944-0471; AUTOVON 454-9210. 193d Electronic Combat Gp. (ANG). ANG area 72 acres. Altitude 310 ft. Military 1,031, civilians 219. Payroll $12.1 million.

Houston, Tex. (Ellington AFB) 77209; 17 mi. SE of Houston. Phone (713) 481-1400; AUTOVON 954-2110. 147th Fighter Interceptor Gp. (ANG). Other tenants: NASA Operations, US Coast Guard, Army National Guard, FAA, Military Sealift Command, ANG Transition Caretaker Force. Named for Lt. Eric L. Ellington, a pilot killed Nov. 1913. Area 2,283 acres. Altitude 40 ft. Military 837, civilians 392. Payroll $13.1 million.

Jackson Municipal Airport, Miss. (Allen C. Thompson Field) 39208: 7 mi. E of Jackson. Phone (601) 939-3633; AUTOVON 731-9310. 172d Tac Airlift Gp. (ANG). ANG area 84 acres. Altitude 346 ft. Military 799, civilians 182. Payroll $8.3 million. 6-bed dispensary.

Jacksonville International Airport, Fla. 32229; 15 mi. NW of Jacksonville. Phone (904) 757-1360; AUTOVON 460-7210. 125th Fighter Interceptor Gp. (ANG). Area 158 acres. Altitude 30 ft. Military 961, civilians 272. Payroll $10.6 million. 5-bed dispensary.

Knoxville, Tenn. (McGhee Tyson Airport) 37901; 10 mi. SW of Knoxville. Phone (615) 573-0111; AUTOVON 588-8210. Host unit is 134th Air Refueling Gp. (ANG). Tenants: 228th Combat Communications Sqdn. and ANG's I. G. Brown Professional Military Education Center. Area 287 acres. Altitude 980 ft. Military 1,142, civilians 288. Payroll $11.2 million. Dispensary.

Lincoln Municipal Airport, Neb. 68524; 1 mi. NW of Lincoln. Phone (402) 471-3241; AUTOVON 720-1210. 155th Tac Recon Gp. (ANG). Also hosts Army National Guard unit. Area 163 acres. Altitude 1,198 ft. Military 1,015, civilians 250. Payroll $8.3 million. Dispensary.

Louisville, Ky. (Standiford Field) 40213. Phone (502) 566-9400; AUTOVON 989-4400. 123d Tac Recon Wg. (ANG). Area 65 acres. Altitude 497 ft. Military 1,048, civilians 232. Payroll $8.9 million.

Mansfield Lahm Airport, Ohio 44901; 3 mi. N of Mansfield. Phone (419) 524-4621; AUTOVON 889-1520. 179th Tac Airlift Gp. (ANG). Named for aviation pioneer Brig. Gen. Frank P. Lahm. Area 210 acres. Altitude 1,296 ft. Military 790, civilians 175. Payroll $6.7 million. Dispensary.

Martinsburg, W. Va. (Eastern West Virginia Regional Airport) 25401; 4 mi. S of Martinsburg. Phone (304) 263-0801; AUTOVON 242-9210. 167th Tac Airlift Gp. (ANG). Area 279 acres. Altitude 556 ft. Military 861, civilians 172. Payroll $6.8 million. Dispensary.

McEntire ANG Base, S. C. 29044; 12 mi. E of Columbia. Phone (803) 776-5121; AUTOVON 583-8201. 169th Tac Fighter Gp. (ANG). Also host to Army Guard aviation unit. Base named for Brig. Gen. B. B. McEntire, Jr. (ANG), killed in an F-104 in 1961. Area 2,394 acres. Altitude 250 ft. Military 1,047, civilians 219. Payroll $8.7 million. Dispensary.

Memphis International Airport, Tenn. 38118; 10 mi. S of Memphis. Phone (901) 363-1212; AUTOVON 966-8111. 164th Tac Airlift Gp. (ANG). ANG occupies 227 acres. Altitude 332 ft. Military 806, civilians 170. Payroll $6.7 million. Clinic.

Meridian, Miss. (Key Field) 39301; within city limits. Phone (601) 693-5031; AUTOVON 363-

9210. 186th Tac Recon Gp. (ANG). Area 74 acres. Altitude 297 ft. Military 1,129, civilians 242. Payroll $9.4 million. 2-bed dispensary.

Minneapolis-St. Paul International Airport, Minn. 55450; in Minneapolis, near junction of Mississippi and Minnesota Rivers. AFRES base. Altitude 840 ft. ANG and AFRES have separate phones and facilities. ANG phone (612) 725-5011; AUTOVON 825-5681. 133d Tac Airlift Wg. (ANG). ANG area 126 acres. Military 1,139, civilians 235. Payroll $8.2 million. AFRES phone (612) 725-5011; AUTOVON 825-5100. 934th Tac Airlift Gp. (AFRES). AFRES area 300 acres. Reservists 888, civilians 350. Payroll $9.6 million for ANG, $13 million for AFRES. Other units include 210th Electronic Installation Sqdn.; Navy Readiness Comd. Region 16; Naval Air Reserve Center; Marine Wg. Support Gp., Det. 47; Defense Investigative Service and USAF-CAP/NCLR and CAP MNLO.

Moffett Naval Air Station, Calif. 94035; 2 mi. N of Mountain View. ANG phone (415) 966-4700; AUTOVON 462-4700. 129th Aerospace Rescue and Recovery Gp. (ANG). Area 12 acres. Altitude 34 ft. Military 778, civilians 178. Payroll $10.2 million.

Montgomery, Ala. (Dannelly Field) 36105; 7 mi. SW of Montgomery. Phone (205) 281-7770; AUTOVON 485-9210. 187th Tac Recon Gp. (ANG). Hosts 232d Combat Communications Gp. Named for Ens. Clarence Dannelly, Navy pilot killed at Pensacola, Fla., during WW II. Area 42 acres. Altitude 221 ft. Military 1,089, civilians 264. Payroll $12.7 million. Dispensary.

Nashville Metropolitan Airport, Tenn. 37217; 6 mi. SE of Nashville. Phone (615) 361-4600; AUTOVON 446-6210. 118th Tac Airlift Wg. (ANG). Area 66 acres. Altitude 597 ft. Military 1,101, civilians 270. Payroll $11 million.

New Orleans Naval Air Station, La. (Alvin Callender Field) 70146; 15 mi. S of New Orleans. ANG and AFRES have separate phones and facilities. ANG phone (504) 394-2818; AUTOVON 363-3399. 159th Tac Fighter Gp. (ANG). ANG military 813, civilians 216. Payroll $9 million. AFRES phone (504) 393-3292; AUTOVON 363-3292. 926th Tac Fighter Gp. (AFRES). AFRES 700, civilians 90. Payroll $8.5 million. NAS New Orleans was the first joint Air Reserve Training Facility. Named for Alvin A. Callender, who served with the British Royal Flying Corps during WW I and was shot down over France in 1918. Area 3,245 acres. Altitude 3 ft. Dispensary.

Niagara Falls International Airport, N. Y. 14304; 6 mi. E of Niagara Falls. Phone (716) 297-4100; AUTOVON 489-3011. AFRES base. 914th Tac Airlift Gp. (AFRES), 107th Fighter Interceptor Gp. (ANG). Base activated in Jan. 1952. Area 979 acres. Altitude 590 ft. Military 18, civilians 528, Reservists/Guardsmen 1,664. Payroll $8.9 million.

O'Hare Air Reserve Forces Facility, Ill. 60666; 22 mi. NW of Chicago's Loop. Phone (312) 694-3031; AUTOVON 930-1110. AFRES base. 928th Tac Airlift Gp. (AFRES), 126th Air Refueling Wg. (ANG). Defense Contract Administration Services Region. Base activated in Apr. 1946, named for Lt. Cmdr. Edward H. "Butch" O'Hare, USN Medal of Honor recipient, killed Nov. 26, 1943, during battle for the Gilbert Islands. Area 391 acres. Altitude 643 ft. Military 1,228, civilians 243, Reservists 1,271, ANG 1,268. Payroll $10.1 million.

Oklahoma City, Okla. (Will Rogers World Airport) 73169; 7 mi. SW of Oklahoma City. Phone (405) 681-7551; AUTOVON 956-8210. 137th Tac Airlift Wg. (ANG). Area 71 acres. Altitude 1,290 ft. Military 1,088, civilians 212. Payroll $8.5 million.

Ontario International Airport, Ontario, Calif. 91761. Phone (714) 984-2705; AUTOVON 898-3870. 163d Tac Air Support Gp. (ANG). Area 39 acres. Altitude 900 ft. Military 789, civilians 135. Payroll $7.2 million.

Otis ANG Base, Mass. 02542; 7 mi. NNE of Falmouth. Phone (617) 968-4667; AUTOVON 557-4667. 102d Fighter Interceptor Wg. (ANG) and 6th Missile Warning Sqdn. (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 22,000 acres, incl. ANG 4,000 acres. Altitude 132 ft. Military ANG 975, civilians 577. Payroll $16.4 million. 1,193 housing units on base. USCG administers 601 (10 Command, 45 Officer, 546 other ranks).

Phelps Collins ANG Base, Mich. 49707; 7 mi. W of Alpena. Phone (517) 354-4141; 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, Mar. 1918. Area 3,217 acres. Altitude 689 ft. Military 49. Payroll paid through Battle Creek; seasonal during field training. Housing: 86 officer, 40 NCO, 14 transient. 10-bed hospital. Dispensary.

Phoenix, Ariz. (Sky Harbor International Airport) 85034. Phone (602) 244-9841; AUTOVON 853-9211. 161st Air Refueling Gp. (ANG). Area 51 acres. Altitude 1,230 ft. Military 907, civilians 225. Payroll $9.7 million.

Portland International Airport, Portland, Ore. 97218. Phone (503) 288-5611; AUTOVON 891-1701. 142d Fighter Interceptor Gp. (ANG). Also host to 304th Aerospace Rescue and Recovery Sqdn. (AFRES). 83d Aerial Port Sqdn. (AFRES). Area 394 acres. Altitude 26 ft. Military 1,622, civilians 371. Payroll $14.7 million.

Providence, R. I. (Quonset Point State Airport) 02852; 20 mi. S of Providence. Phone (401) 885-3960; AUTOVON 476-3210. 143d Tac Airlift Gp. (ANG). Area 79 acres. Altitude 9 ft. Military 908, civilians 174. Payroll $9.5 million.

Reno, Nev. (Cannon International Airport—May ANG Base) 89502; 5 mi. SE of Reno. Phone (702) 323-1011; AUTOVON 830-8310. 152d Tac Recon Gp. (ANG). Named for Maj. Gen. James A. May, state Adjutant General. Area 123 acres. Altitude 4,411 ft. Military 896, civilians 224. Payroll $8.1 million. Dispensary.

Richards-Gebaur AFB, Mo. 64030; 17 mi. S of Kansas City, Mo. Phone (816) 348-2000; AUTOVON 465-1110. Base transferred from MAC to AFRES Oct. 1, 1980. 442d Tac Airlift Wg. (AFRES); 1879th Communications Sqdn. (AFCC); Navy and Army Reserve units. 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, an F-84 pilot, was killed Aug. 29, 1952, over North Korea during his 99th mission. Area 2,418 acres. Approx. 1,900 acres declared excess and turned over to General Services Administration for final conveyance as determined by reuse studies. Some 120 acres occupied by non-Air Force military units and federal agencies. Joint-use airport facility with Kansas City, Mo. Altitude 1,090 ft. AFRES 1,466, active-duty USAF 35, civilians 381. Payroll for AFRES $5 million; USAF active-duty $618,800; DAF civilians $6.9 million. On-base, Marine Corps operated, all-services housing: 22 officer, 216 enlisted, 200 transient. 442d Tac Airlift Wg. programmed to become 442d Tac Fighter Gp. and transition from C-130E to A-10 aircraft, both effective Oct. 1, 1982.

Richmond, Va. (Byrd Field International Airport) 23150; 4 mi. SE of downtown Richmond. Phone (804) 222-8884; AUTOVON 274-8210. 192d Tac Fighter Gp. (ANG). Airfield named for Adm. Richard E. Byrd, famous Arctic and Antarctic explorer. Area 143 acres. Altitude 167 ft. Military 946, civilians 227. Payroll $9.1 million.

Rickenbacker ANG Base, Ohio 43217; 13 mi. SSW of Columbus. Phone (614) 492-8211; AUTOVON 950-1110. Base transferred from SAC to ANG Apr. 1, 1980. SAC forces are being withdrawn through Oct. 1982. 121st Tac Fighter Wg. (ANG); 906th and 907th Tac Airlift Gps. (AFRES); 160th Air Refueling Gp. (ANG). Base activated 1942. Formerly Lockbourne AFB; renamed May 7, 1974, in honor of Capt. Edward V. Rickenbacker, top US WW I ace and Medal of Honor recipient who died July 23, 1973. Area 4,100 acres. Approx. 2,000 acres to be declared excess and turned over to General Services Administration. Some 1,500 acres shared by military and civilian concerns. Altitude 744 ft. Reserve and ANG military 1,780, active-duty USAF 100, civilians 720. ANG payroll $15.7 million. On-base Capehart housing to be retained as DoD family housing.

Roslyn ANG Station, Roslyn, N. Y. 11576; 27 mi. E of New York City. Phone (516) 299-5201; AUTOVON 456-5201. 152d Tac Control Gp., 213th Engineering Installation Sqdn. Also hosts two Army National Guard units. Area 50.3 acres. Altitude 320 ft. Military 526, civilians 12. Payroll through White Plains, N. Y.

Salt Lake City International Airport, Utah 84116; 3 mi. W of Salt Lake City. Phone (801) 521-7070; AUTOVON 790-9210. 151st Air Refueling Gp. (ANG). Also hosts ANG's 130th Electronic Installation Sqdn. and 299th Communications Sqdn. Area 75 acres. Altitude 4,220 ft. Military 1,306, civilians 298. Payroll $11 million. Dispensary.

San Juan, Puerto Rico (Muniz ANG Base at San Juan IAP) 00913. Phone (809) 791-5450; AUTOVON 434-1860. 156th Tac Fighter Gp. (ANG). Base named for Lt. Col. José A. Muniz, killed in an aircraft accident July 4, 1960. Area 25 acres. Military 947, civilians 207. Payroll $10.2 million.

Savannah Municipal Airport, Ga. 31402; 4 mi. NW of Savannah. Phone (912) 964-1941; AUTOVON 860-8210. 165th Tac Airlift Gp. (ANG). Also field training site. Area 231 acres. Altitude 50 ft. Military 631, civilians 217. Payroll $10 million. Housing: 156 officer; 100 NCO. 3-bed dispensary.

Schenectady County Airport, N. Y. 12301; 2 mi. N of Schenectady. Phone (518) 372-5621; AUTOVON 974-9221. 109th Tac Airlift Gp. (ANG). Area 106 acres. Altitude 378 ft. Military 768, civilians 181. Payroll $7.1 million. Dispensary.

Selfridge ANG Base, Mich. 48045; 3 mi. NE of Mount Clemens. Phone (313) 466-4011; AUTOVON 273-0111. 127th Tac Fighter Wg. (ANG); 191st Fighter Interceptor Gp. (ANG); 403d Aerospace Rescue and Recovery Wg. (AFRES); 927th Tac Airlift Gp. (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 Michigan ANG July 1971. Named for 1st Lt. Thomas E. Selfridge, first Army officer to fly an airplane and first fatality of powered flight, killed Sept. 17, 1908, at Fort Myer, Va., when plane piloted by Orville Wright crashed. Area 3,629 acres. Altitude 583 ft. Military ANG 1,613, civilians ANG 948. Payroll $27.4 million. Housing: 12 transient. Dispensary.

Sioux City Municipal Airport, Iowa 51110; 7 mi. S of Sioux City. Phone (712) 255-3511; AUTOVON 939-6210. 185th Tac Fighter Gp. (ANG). Area 114 acres. Altitude 1,098 ft. Military 780, civilians 213. Payroll $8 million. Dispensary.

Sioux Falls, S. D. (Joe Foss Field) 57104; N side of Sioux Falls. Phone (605) 336-0670; AUTOVON 939-7210. 114th Tac Fighter Gp. (ANG). Named for Brig. Gen. Joseph J. Foss, WW II ace, former governor of South Dakota, and former National President of AFA, founder of the South Dakota ANG. Area 145 acres. Altitude 1,428 ft. Military 780, civilians 217. Payroll $7.5 million.

Springfield, Ill. (Capitol Airport) 62707; NW of Springfield. Phone (217) 753-8850; AUTOVON 631-8210. 183d Tac Fighter Gp. (ANG). Area 70

acres. Altitude 592 ft. Military 1,013, civilians 250. Payroll $9.3 million. Dispensary.

Springfield Municipal Airport, Ohio 45501; 5 mi. S of Springfield. Phone (513) 323-8653; AUTOVON 346-2210. 178th Tac Fighter Gp. (ANG). Area 113 acres. Altitude 1,052 ft. Military 1,086, civilians 240. Payroll $9.9 million. 6-bed dispensary.

St. Joseph, Mo. (Rosecrans Memorial Airport) 64503; 4 mi. W of St. Joseph. Phone (816) 364-2941; AUTOVON 720-9210. 139th Tac Airlift Gp. (ANG). Area 298 acres. Altitude 724 ft. Military 680, civilians 171. Payroll $6.8 million.

St. Louis International Airport, Mo. (Lambert Field) 63145. Phone (314) 263-6356; AUTOVON 693-6356. 131st Tac Fighter Wg. (ANG). Area 50 acres. Altitude 589 ft. Military 1,233, civilians 303. Payroll $14.7 million.

Suffolk County Airport, Westhampton Beach, N. Y. 11978; within corporate limits of Westhampton Beach. Phone (516) 288-4200; AUTOVON 456-7210. 106th Aerospace Rescue and Recovery Gp. (ANG). Area 70 acres. Altitude 67 ft. Military 755, civilians 166. Payroll $6.7 million.

Syracuse, N. Y. (Hancock Field) 13211; 5 mi. NE of Syracuse. Phone (315) 458-5500; AUTOVON 587-9110. 174th Tac Fighter Wg. (ANG). Base operations for Hancock AFB (NORAD site on remote part of Syracuse Hancock International Airport). Area 443 acres. Altitude 421 ft. Military 911, civilians 253. Payroll $8.2 million. Dispensary.

Terre Haute, Ind. (Hulman Field) 47803; 5 mi. E of Terre Haute. Phone (812) 877-2551; AUTOVON 634-1581. 181st Tac Fighter Gp. (ANG). Area 279 acres. Altitude 585 ft. Military 883, civilians 218. Payroll $8.4 million. 5-bed dispensary.

Toledo Express Airport, Swanton, Ohio 43558; 14 mi. W of Toledo. Phone (419) 866-2078; AUTOVON 580-2110. 180th Tac Fighter Gp. (ANG). Area 79 acres. Altitude 684 ft. Military 896, civilians 215. Payroll $9 million. 4-bed clinic.

Truax Field (Dane County Regional Airport), Madison, Wis. 53704; 2 mi. N of Madison. Phone (608) 241-6200; AUTOVON 273-8210. 128th Tac Air Support Wg. (ANG). Activated June 1942 as AAF base; taken over by Wisconsin ANG in Apr. 1968. Named for Lt. T. L. Truax, killed in P-40 training accident in 1941. Area 153 acres. Altitude 862 ft. Military 856, civilians 195. Payroll $7.1 million. Housing: 7 transient. Dispensary.

Tucson International Airport, Ariz. 85734; within Tucson city limits. Phone (602) 748-1110; AUTOVON 361-1110. 162d Tac Fighter Gp. (ANG). Area 49 acres. Altitude 2,650 ft. Military 1,070, civilians 411. Payroll $13.7 million.

Tulsa International Airport, Okla. 74115. Phone (918) 836-0381; AUTOVON 956-5297. 138th Tac Fighter Gp. (ANG) and 219th Electronic Installation Sqdn. Area 78 acres. Altitude 676 ft. Military 752, civilians 209. Payroll $7.1 million.

Van Nuys ANG Base, Calif. (Van Nuys Airport) 91409. Phone (213) 781-5980; AUTOVON 873-6310. 146th Tac Airlift Wg. (ANG), 147th Combat Communications Sqdn. (Contingency). Area 62 acres. Altitude 799 ft. Military 1,465, civilians 323. Payroll $12.8 million.

Volk Field ANG Base, Wis. 54618; 90 mi. NW of Madison. Phone (608) 427-3341; AUTOVON 884-3480. ANG permanent field training site, including air-to-air and air-to-ground gunnery ranges, to provide training for ANG flying units. Named for Lt. Jerome A. Volk, first Wisconsin ANG pilot killed in the Korean War. Area 7,629 acres. Altitude 915 ft. Military 51.

Westfield, Mass. (Barnes Municipal Airport) 01085; 3 mi. N of Westfield. Phone (413) 562-3691; AUTOVON 893-1470. 104th Tac Fighter Gp. (ANG). Area 133 acres. Altitude 270 ft. Military 853, civilians 188. Payroll $8.8 million.

Westover AFB, Mass. 01022; 5 mi. NE of Chicopee Falls. Phone (413) 557-1110; AUTOVON 589-1110. AFRES base. 439th Tac Airlift Wg. (AFRES). Also home of Army, Navy, and Marine Corps Reserve and Massachusetts Army National Guard. Base dedicated Apr. 6, 1940; named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938, in crash near Burbank, Calif. Area 2,500 acres. Altitude 244 ft. Reservists 2,130, civilians (AFRES and tenant units) 759. Payroll $17.5 million. Housing: 313 family quarters, 432 dormitory rooms; 25 VOQ; 174 BOQ.

White Plains, N. Y. (Westchester County Airport) 10604; 8 mi. NE of White Plains. Phone (914) 946-9511; AUTOVON 456-9210. 105th Tac Air Support Gp. (ANG). Area 692 acres; ANG base 27 acres. Altitude 439 ft. Military 751, civilians 143. Payroll $11.3 million. Dispensary.

Willow Grove Air Reserve Facility, Pa. 19090; 14 mi. N of Philadelphia. ANG and AFRES have separate phones and facilities. Altitude 356 ft. ANG phone (215) 443-1500; AUTOVON 991-1500. 111th Tac Air Support Gp. (ANG). ANG area 1,000 acres. Military 792, civilians 150. Payroll $8.1 million. AFRES phone (215) 443-1062; AUTOVON 991-1062. 913th Tac Airlift Gp. (AFRES). AFRES area 162 acres. Reservists 860, civilians 225. Payroll $8.6 million. Other units include Army, Navy, and Marine Corps Reserve. Defense Contract Administration Services Region, Philadelphia; 92d Aerial Port Sqdn. (MAC) as offbase tenant. Base activated Aug. 1958. Navy transient quarters available to Navy personnel only.

Wilmington, Del. (Greater Wilmington Airport) 19720; 5 mi. S of Wilmington. Phone (302) 322-2261; AUTOVON 455-9000. 166th Tac Airlift Gp. (ANG); Army National Guard aviation company. Area 57 acres. Altitude 80 ft. Military 837, civilians 168. Payroll $7.1 million. 2-bed dispensary.

Windsor Locks, Conn. (Bradley International Airport) 06096; 15 mi. N of Hartford. Phone (203) 623-8291; AUTOVON 636-8310. 103d Tac Fighter Gp. (ANG) and Army National Guard aviation battalion. Named for Lt. Eugene M. Bradley, killed in P-40 crash in Aug. 1941. Area 158 acres. Altitude 173 ft. Military 850, civilians 201. Payroll $8.3 million.

Youngstown Municipal Airport, Ohio 44473; 16 mi. N of Youngstown. Phone (216) 856-1645; AUTOVON 346-9211. AFRES base. 910th Tac Airlift Gp. (AFRES), 757th Tac Airlift Sqdn. (AFRES). Base activated 1952. Area 226 acres. Altitude 1,196 ft. Reservists 904, civilians 214. Payroll $10.5 million.

A GUIDE TO USAF'S R&D FACILITIES

Principal AFSC R&D Facilities

From AFSC headquarters at Andrews AFB, Md., Gen. Robert T. Marsh, AFSC Commander, directs the operations of the command's divisions, development and test centers, ranges, and laboratories. These organizations are described below.

Product Organizations

Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio—ASD directs the development and acquisition of aeronautical systems and related equipment. ASD comprises more than 7,000 officers, airmen, and civilians working in development programs and in conjunction with AFSC laboratory scientists and engineers.

Systems in development and production range from manned bombers, fighters, transports, trainers, and electronic countermeasures aircraft, to such unmanned systems as the Air-Launched Cruise Missile and tactical air-to-ground missiles. Related equipment in development includes a night-attack system, life-support gear, flight simulators, and reconnaissance and electronic warfare subsystems. Aircraft programs under way include the effort to further develop, acquire, and test the new B-1B Long-Range Combat Aircraft with plans called for production of 100 strategic bombers; production of forty-two EF-111A tactical jamming aircraft; acquisition of a Next-Generation Trainer for the Air Training Command pilot training program; full-scale development of the HH-60D combat rescue helicopter, capable of operations at night and in bad weather with battlefield survivability; reengining and other improvements to the KC-135 aerial tanker; improvements to the B-52 force through installation of a new offensive avionics system, along with modifications to carry cruise missiles; and continued production of the F-16.

Missile programs include the Air-Launched Cruise Missile, which has moved into full production and will attain initial operating capability at Griffiss AFB, N. Y., in December of this year and is completing a follow-on test and evaluation series; production of the tactical imaging infrared Maverick missile; and Advanced Cruise Missile Technology studies.

ASD's 4950th Test Wing operates and maintains the entire AFSC inventory of specially modified large aircraft for conducting flight tests and gathering and analyzing test results. These include the Airborne Laser Laboratory, located at Kirtland AFB, N. M., and the Advanced Range Instrumented Aircraft (ARIA), which deploy worldwide to receive, record, and retransmit telemetry data from missiles, satellites, and launch vehicles. The ARIA aircraft are maintained with other large aircraft testbeds at Wright-Patterson AFB. A fleet of T-39 testbed aircraft are also maintained at Wright-Patterson AFB to provide customers with a low-cost testbed option when applicable.

Armament Division (AD), Eglin AFB, Fla.—The Division is charged with the planning, research, development, and acquisition of conventional air armaments and the test and evaluation of armament and electronic warfare systems and related equipments.

The four major mission areas assigned to AD are research and technology, systems development and acquisition, test and evaluation, and host and base support. This full spectrum assigns cradle-to-grave responsibility for air armaments to one organization. This synergism is further enhanced by the using command tenant organizations assigned to Eglin AFB, Fla.

The research and technology and systems development and acquisition mission areas are organized under a single manager, the Deputy Commander for Development and Acquisition, to control centrally the efforts of AD's Air Force Armament Laboratory and the development plans, systems acquisition, and acquisition logistics organizations. This one focal point ties

together the basic research; exploratory development; advanced development; master planning; and conceptual, validation, full-scale engineering development, production, and deployment phases of acquisition. The elements of integrated logistics support are provided by a joint AFSC and AFLC office.

AD's 3246th Test Wing, equipped with a fleet of approximately forty aircraft and highly instrumented ground facilities, manages the Division's overall test and evaluation program. To accomplish its mission, the wing utilizes several large land test ranges scattered throughout the 724-square-mile Eglin complex as well as 44,000 square miles of water ranges located in the adjacent Gulf of Mexico. Major tests on or above AD's ranges cover all kinds of equipment, including aircraft systems, subsystems, missiles, guns, bombs, rockets, targets and drones, high-powered radars, and airborne electronic countermeasure equipment. Equipment is tested in a variety of environments, and combat conditions are realistically simulated. One of the Test Wing's unique capabilities is the McKinley Climatic Laboratory, capable of testing military hardware as large as a bomber in environments ranging from −65 to +165 degrees Fahrenheit with 100 mph winds, icing clouds, rain, and snow.

One AD organization, the 6585th Test Group, is located at Holloman AFB, N. M. Among its unique facilities are a 50,000-foot, high-speed test track, a radar target scatter facility (RATSCAT), and the Central Inertial Guidance Test Facility (CIGTF).

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. More than 100 projects are under way, including modernization of the North American air defense with new control centers and joint-use Air Force/Federal Aviation Administration radars; satellite communications terminals for ground and aircraft use; optical and electromagnetic sensors to warn of solar-induced disruptions of the atmosphere; a triservice secure and survivable tactical communications network for air, ground, and sea forces; upgrading of the NORAD Space Operations Center; the E-3A Sentry airborne radar/direction center for the Air Force and NATO; and the E-4 Airborne Command Post for the Strategic Air Command and the National Command Authorities. ESD also works directly with the major commands to plan for evolutionary command control and communications improvements.

Space Division (SD), Los Angeles AFS, Calif.—SD provides and manages the majority of the nation's military space systems. SD's responsibilities include:

- Providing and maintaining space-based communications, meteorological, navigation, and surveillance systems in support of combat forces on the ground, at sea, and in the atmosphere.
- Developing spacecraft, launch vehicles, and ground-terminal equipment to maintain and improve military space capabilities.
- Launching and controlling on-orbit satellites for DoD and other government agencies.
- Developing space defense and survivability technology to ensure protection of the nation's space assets.
- Managing DoD activities in the national Space Transportation System (Space Shuttle).
- Operating national test ranges and launch facilities to support space and missile programs for the Air Force, DoD, NASA, and other agencies.
- Operating a worldwide network of satellite tracking stations.
- The Space and Missile Test Organization, the Air Force Satellite Control Facility, and the Manned Space Flight Support Group, major field elements of SD, described below.

To meet these global responsibilities, SD utilizes 2,100 officers, 2,050 enlisted, and 3,100 civilian personnel. Aerospace Corporation, based adjacent to SD headquarters, also devotes the principal efforts of its highly qualified 2,200-member technical staff to SD programs.

Ballistic Missile Office (BMO), Norton AFB, Calif.—BMO is responsible for the planning, implementation, and management of Air Force programs to acquire ballistic missile systems and subsystems. In addition, BMO provides for alteration of existing intercontinental ballistic missile (ICBM) sites and launch facilities.

One of the major BMO development programs is the Advanced Strategic Missile Systems (ASMS). ASMS is responsible for providing advanced missile development efforts to ensure the effectiveness, survivability, and penetration of strategic missile systems in response to evolving missions, threats, and technologies. ASMS provides support for operational systems, and alternatives for future systems, including basing modes.

A second major program within BMO is development activities for the Minuteman missile system, which BMO initially developed more than fifteen years ago. These activities include reentry systems, emergency power sources, and command control and communications equipment.

BMO is managing the development of the MX system. The initial deployment of the MX missile will be in existing Minuteman silos. At least forty MX missiles will be deployed, with the first flight of ten missiles operational in late 1986.

In addition to continuing the development of the MX missile and its silo basing mode, the Air Force has initiated research and development to find the best long-term option for basing MX missiles to ensure survivability. By mid-1983, a decision will be made as to which long-term option is to be developed.

Test Organizations

Space and Missile Test Organization (SAMTO), Vandenberg AFB, Calif.—SAMTO has two specific functions. First is the management of field test and launch operations for all DoD-directed space programs and long-range ballistic research and development programs. The other is development, management, and operation, through the Eastern and Western Space and Missile Centers, of the national test ranges.

Western Space and Missile Center (WSMC), Vandenberg AFB, Calif.—WSMC is responsible for conducting launch and launch support of research and development ballistic missile testing, and polar orbiting space launches for DoD, USAF, and other agencies. Stretching halfway around the world from the California coast to the Indian Ocean, the Western Test Range is operated in support of ballistic and space test operations. The Range also supports Space Shuttle operational flight tests and other aeronautical tests employing the same sensors and data-gathering equipment used for ballistic and space booster flights. WSMC is responsible for planning and subsequent execution of the MX research and development flight tests beginning in January 1983, and west coast Space Shuttle launch operations scheduled to begin in late 1985.

Eastern Space and Missile Center (ESMC), Patrick AFB, Fla.—The Center is responsible for conducting launch and launch support activities for the Air Force and user agencies. In addition, it operates Patrick AFB. The Eastern Test 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 the Ascension Islands.

Air Force Satellite Control Facility (AFSCF), Sunnyvale AFS, Calif.—AFSCF develops, maintains, and operates for the Space Division a worldwide network of tracking stations to perform on-orbit tracking, data acquisition, and command and control of DoD space vehicles.

Manned Space Flight Support Group (MSFSG), Johnson Space Center, Houston, Tex.—The MSFSG is developing the capability to plan for and control DoD Space Transportation System missions and to ensure that those missions are secure. In addition, MSFSG will manage the acquisition phase of the Shuttle Operations and Planning Center portion of the Consolidated Space Operations Center. The MSFSG will also train personnel to support directly the command and control of DoD Space Shuttle missions and transition those personnel to the Space Operations Center.

Air Force Flight Test Center (AFFTC), Edwards AFB, Calif.—AFFTC conducts and supports flight testing and evaluation of manned aircraft, research vehicles, and related propulsion, weapons, avionics, and flight control systems within or entering the Air Force inventory. Similar tests and evaluations can also be carried out by AFFTC on aircraft belonging to other US military services and government agencies.

AFFTC is also the Air Force organization responsible for testing and evaluating remotely piloted vehicles, Air Force versions of air- and ground-launched cruise missiles, plus crew, cargo, and special mission parachutes.

Among the aerospace test programs currently under way at AFFTC are those related to the B-1B bomber, the F-15 Eagle, the F-16 Fighting Falcon, the A-10 Thunderbolt II, and the Integrated Weapons System (IWS) that combines test and evaluation of the Air-Launched Cruise Missile and the upgraded and modified B-52 bomber into a single test unit.

AFFTC operates the Air Force Test Pilot School at Edwards AFB, where experienced pilots and engineers are trained for flight test and aerospace research work.

AFFTC has management responsibility for the Utah Test and Training Range (UTTR), a 2,700-square-mile facility in northwest Utah, where many test and development flights of remotely piloted vehicles and cruise missiles are carried out. Units administering the UTTR are located at Hill AFB, Utah.

AFFTC is involved in the nation's Space Shuttle program by providing the landing site for the initial series of test and development flights and by carrying out the comprehensive evaluation of the Shuttle's descent characteristics for the Department of Defense. Edwards AFB will also remain a contingency landing site for the Space Shuttle when the program becomes operational.

Arnold Engineering Development Center (AEDC), Arnold AFS, Tenn.—AEDC has the largest complex of advanced aerospace flight simulation test facilities in the Western world. The Center operates more than thirty test units—including wind tunnels, altitude test cells, space chambers, 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 AEDC test work.

To meet flight simulation needs for the 1980s and 1990s, the Air Force is constructing the Aeropropulsion Systems Test Facility at AEDC, a complex expected to be completed in the mid-1980s. It is designed to test the large, advanced jet aircraft engine systems required for future aircraft.

Laboratories

Director of Laboratories (DL), Andrews AFB, Md.—The Director of Laboratories 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 Air Force Systems Command nonconventional weapons research and development in high-energy laser technology, advanced weapon concepts, and nuclear weapon technology, including nuclear survivability/vulnerability. AFWL also acts as the AFSC focal point for the technical aspects of nuclear safety and development of nuclear hardness criteria for Air Force systems.

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. AFGL scientists study the effects of the space environment on Air Force satellites; the interactions of the ionosphere and upper atmosphere with Air Force systems; the optical properties of the atmosphere, both as a transmission medium and as an emitter of radiation; the measurement of the earth's gravity field and its crustal motions to determine their effects on ballistic missiles; and new and better ways to predict the weather and measure weather elements.

• **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.

• **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.

Flight Dynamics Laboratory is concerned with the development of flight-vehicle technology. Specific technical areas include structural design and durability, vehicle dynamics, vehicle equipment, environmental control, crew escape and recovery, survivability and vulnerability, flight control, crew station design, flight simulation, performance analysis, aerodynamics, configuration synthesis, and technology integration. Testbeds for flight control technologies include AFTI/F-16, AFFC/Firefly III, and DIGITAC; X-29A forward-swept wing (jointly with DARPA) and AFTI/F-111 mission adaptive wing are testbeds for new wing designs.

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; electronic and electromagnetic materials; laser-hardened materials; computer-aided manufacturing; and nondestructive evaluation.

Avionics Laboratory conducts research and development programs for reconnaissance, weapon delivery, electronic warfare, electronic technology, and avionics systems.

Aero Propulsion Laboratory conducts Air Force exploratory and advanced development programs in turbine engines, ramjets, fuels, turbine engine lubricants, aircraft fire protection, synthetic fuels, 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 Systems Command Laboratories, 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.—RADC 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 missile subsystems, bombs, dispensers, fuzes, guns, and ammunition. AFATL also provides consulting services in aircraft munition compatibility and analysis, and prediction of munition subsystem performance and weapon effects. AFATL is organizationally assigned to the Armament Division at Eglin AFB, Fla.

• **Air Force Engineering and Services Center, Research and Development Division (AFESC/RD),** Tyndall AFB, Fla.—AFESC/RD 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. The Division 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.

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. AFCMD evaluates contractor performance and manages the administration of contracts executed by Air Force, Army, Navy, Defense Logistics Agency, NASA, and other government purchasing agencies. The division also operates one detachment, the Contract Administration Services/European System Office (CASEUR), in Brussels, Belgium, in support of the F-16 multinational coproduction program.

Aerospace Medical Division (AMD), Brooks AFB, Tex.—AMD is charged with management and conduct of research and development in aerospace biotechnology 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 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 primary mission of patient care, in clinical specialties, it provides more than fifty-five percent of all postgraduate medical training in the Air Force. In the Center's mission of clinical research, investigations have resulted in unprecedented advances in surgical and treatment procedures in such areas as dental work, drug therapy, internal medicine, psychiatric treatment, cancer treatment, experimental surgery, and organ transplants. As a worldwide referral center, Wilford Hall offers such sophisticated procedures as open-heart surgery, kidney and corneal transplants, cancer therapy, and reconstruction of various parts of the body. Its care unit for newborn infants has one of the lowest infant mortality rates in the world. A computerized Tomographic Scanner, the latest in diagnostic X-ray equipment, is located here.

• **Air Force Aerospace Medical Research Laboratory (AFAMRL),** Wright-Patterson AFB, Ohio—AFAMRL is part of the Aerospace Medical Division. It conducts behavioral and biomedical research to enhance human performance under the conditions of environmental stress. AFAMRL 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 re-

search 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 USAF Hyperbaric Treatment Center and a twenty-four-hour worldwide consultation service.

• **AFSC NCO Academy/Leadership School,** Kirtland AFB, N. M.—The Air Force Systems Command (AFSC) Noncommissioned Officer Academy and Leadership Schools are located at Kirtland AFB, N. M. The AFSC NCO Academy has been in continuous operation for more than twenty-five years—longer than any other Air Force NCO academy. Both the Academy and Leadership School are important phases of the Air Force's five-tier professional military education program offered to the NCO corps.

• **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.

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), RPRVs (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, weather 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 Support Office 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.

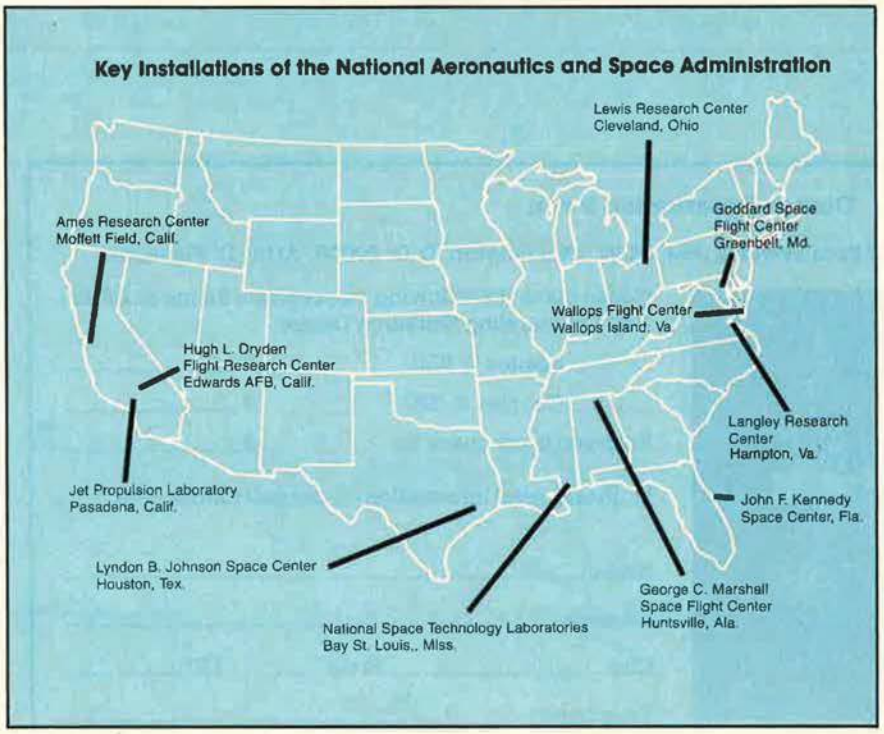
George C. Marshall Space Flight Center, Huntsville, Ala.—Marshall serves as one of NASA's primary Centers for the design and development of space transportation systems, orbital systems, scientific payloads, and other means for space exploration. The Center has major responsibilities for Space Shuttle 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 in New Orleans. 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 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. It is the main NASA center engaged in energy activities for the Department of Energy. 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. ■



May 29 at The Broadmoor, Colorado Springs, Colo.

THE TWENTY-THIRD ANNUAL OUTSTANDING SQUADRON DINNER

Saluting the 1982 Outstanding Squadron at the United States Air Force Academy
Cosponsored by the Air Force Association and its Colorado Springs Chapter

More than 600 guests—including parents and friends of the cadets, together with aerospace, AFA, and government leaders from throughout the country—will pay tribute to the top Academy Squadron, selected for excellence in all elements of cadet life, from academic standings and military leadership to drilling and intramural athletics. This is the Academy's most outstanding award of the year.

Reception 6:00 p.m., Dinner 6:45 p.m., Dancing 10:00 p.m.; The International Center of the Broadmoor

Dress: Black-tie for civilians
Summer Mess Dress for Military

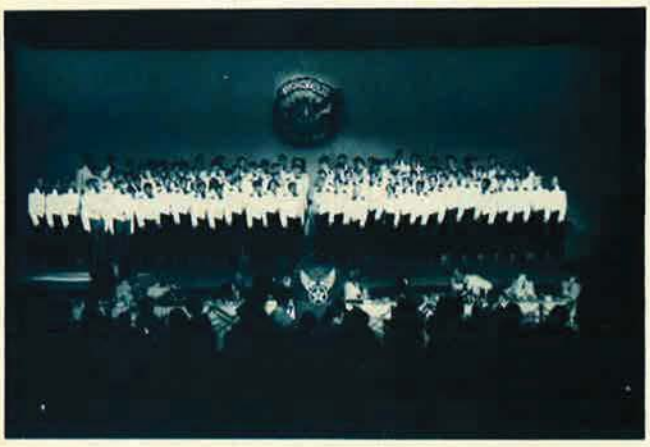
Cost: $50 single, $90 per couple

Hotel reservations may be made direct with: The Broadmoor, Colorado Springs, Colo. 80901, telephone (303) 634-7711. Singles $100–$150, Doubles $105–$135, or the Four Seasons Motor Inn, 2886 S. Circle Drive, Colorado Springs, Colo. 80906, telephone (303) 576-5900. Singles $42, Doubles $50, or the Antlers Plaza (under Broadmoor management and providing regular shuttle to and from The Broadmoor) for $53 Single, $58 Twin. Be sure to mention AFA when writing or calling for reservations.

A golf tournament will be conducted at The Broadmoor on Friday, May 28.
Please write AFA for details.

Dinner Reservation Form

Return to Air Force Association, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006, Attn: D. Flanagan



Please make the following reservations for me at AFA's 1982 Outstanding Squadron Dinner:

_____ Singles @ $50 $_____

_____ Couples @ $90 $_____

Enclosed is my check for $_____

☐ Please send information on the golf tournament.

Name _____

Address _____

City _____ State _____ ZIP _____

Telephone ( ) _____

Skewed reportage from the scene coupled with the lingering legacy of Vietnam and artificial self-imposed limits have all conspired to cloud good judgment on the El Salvador situation. US leaders should recall . . .

If It's Worth Doing, Do It Right

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

FOR those who have never been there, El Salvador is a beautiful place, with green hills, lakes, long sandy beaches, and a climate reminiscent of Hawaii's. The people in El Salvador, whether because of the salubrious climate or some happy genetic mix, are evidently born with good manners and a strong work ethic. As we have seen, they are also capable of extraordinary violence, even by Latin American standards. A result, perhaps, of the frustrations that have come about from living in one of the world's most densely populated countries.

Nothing we have done since the last years of Vietnam has so stirred opinion, both here and abroad, as has our modest venture in El Salvador. Our fifty military training people in the country have somehow become the equivalent of our troops in Vietnam, and we are once more hearing the bleats of those curious fellow citizens who, while enjoying freedom and the comforts of capitalism at home, seem to want Marxists to win everywhere else.

The Salvadoran guerrillas are unquestionably winning the propaganda war both in the US and in Europe. Congressmen up for election this year will learn from the public-opinion polls that there are few votes tied to support for the Salvadoran government. The reason for this swift forming of opinion among a public that scarcely knew of El Salvador's existence a year ago can be found, in large part, in the reporting. The press, both electronic and printed, took sides very early this time.

The Camino Real, a luxury hotel in San Salvador, is this year's version of Saigon's Caravelle. Like their forebears in Saigon during the sixties, the journalists covering the Salvadoran tragedy are mostly young, generally contemptuous of the military no matter whose, and fiercely competitive. They sense there are reputations to be made in this war.

To give them unwitting help in their reportorial bias, the Salvadoran military has been singularly inept in its press relations, not an uncommon failing in countries where military men are normally shielded from contacts with the undisciplined and irreverent world of news reporting. Nonetheless, these poor press relations have been a real drawback to a government that desperately needs United States support. The insurgents, on the other hand, are playing the press like a violin as, we can recall, Castro did in his early days.

When the Dutch television crew was killed the middle of March, there was fury among the press corps. The army's story that these people died in a firefight with the guerrillas is widely disbelieved, even though there were four undeniable guerrillas killed in the same skirmish. What has not been given any press play is the simple fact that it is very dangerous business in any war to associate with one side while maintaining a residence under the auspices and protection of the other.

There has been more bias, more disinformation, to use intelligence jargon, about the situation in El Salvador than about any situation in my memory, even including Vietnam. The truly important facts have been obscured by emotional and shallow accounts of a war fought between a villainous army controlled by right-wing oligarchs and the poor *campesinos* as represented by the guerrillas.

The truth is far more complicated. Undoubtedly, there have been some atrocities committed by the Salvadoran Army, just as there have always been in any war. So have there been by the guerrillas. But since the insurgents have made their operations a family affair, women and children are sometimes, and inevitably, victims of the shootouts—and we see it all on the evening news.

Our contribution thus far has been money, a modest sum compared to what we spend in Israel, for instance, and a few military trainers. That term is used to differentiate them from our advisors in Vietnam, for these trainers are not permitted to go along with their pupils into areas where they might get involved.

And so, with fifty or so young professional military in the country, plus a small training effort at Howard AFB in Panama, Fort Benning, and Fort Bragg, the United States has become the target for protesters from San Francisco to Berlin. A soldier from Fort Carson even turned up, in combat fatigues, to join the usual band of dropouts protesting US policy in El Salvador when NATO's Defense Ministers met in Colorado Springs last March. Granted, this is a free country, but sometimes, it seems a trifle too free.

Meanwhile, some real soldiers are putting in long and apparently thankless hours in El Salvador trying to make a combat force out of the Salvadoran military. It is hard work, for the young men of that country have been going to war without the basic skills a soldier needs to survive, let alone win. The one reward our trainers receive is the willingness, even eagerness, of the Salvadorans to learn everything the gringos want to teach them.

In time, all this teaching is going to help, providing we have the will to keep at it. Our self-imposed limitation of fifty-five military people is an arbitrary figure that makes no sense. We should have the number of people there it takes to do the job, whether it is fifty-five or 500. The howls from the likes of Ed Asner will not be any louder if we try to do the job right. ■

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By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

Weight/Fitness Reemphasized

New Air Force programs in several areas are all zeroing in on one basic objective—reemphasis on keeping the force fit and lean.

For example, test programs at Minot AFB, N. D., and Carswell AFB, Tex., ending this month, are gauging the suitability of substituting riding a stationary bicycle for six minutes in place of the annual aerobics mile-and-a-half run or three-mile walk. The heart rate observed at a known work load on the bicycle, along with other computations involving weight and sex, gives a composite score that measures fitness.

Air Force officials note that the current aerobics test "is stressful for those who have not been regularly participating in an exercise program." No surprise is their further observation that "many do not exercise regularly, but just 'gut it out' in an attempt to pass the test."

The exercise bike is expected to prove less stressful and more objective, and also take less total time for testing—perhaps fifteen minutes vs. the current sometimes two-hour requirement to suit up, run or walk, cool down, and clean up. The tests will tell. A decision will be made in late summer.

Meanwhile, at the base gym, they want to tailor a weight control and conditioning program "just for you." Although the service is not available at all bases yet, it is hoped that it will be by year's end.

Regional training programs are currently being set up to teach gym personnel how to understand a person's level of physical fitness and then how to set up an exercise program to be effective on that level. The week-long training session gets into body structure and function, conditioning techniques, and the role of physical activity in health and weight control, among other subjects. The goal is to get at least one Recreation Services person from each Air Force base up to speed so that he or she can train the rest of the gym staff.

Col. Irv R. Gerrow, Air Force Director of Morale, Welfare, and Recreation, says that "we're currently experiencing renewed attention to physical fitness in connection with readiness." He emphasized that the new "Life, Be In It" five-year MRW-centered program, which has the major objective of enhancing leisure-time activity, fits right in with this fitness emphasis, and helps ensure "personal and force readiness in the 1980s."

There's no question that USAF is pursuing this seriously. Just announced is a new policy for attendees at the Senior NCO Academy. All will be weighed on the first day of class. Those found to be overweight "will be returned to their unit of assignment."

MSgt. John F. Eckert, Historian, 509th Bombardment Wing, Pease AFB, N. H., proudly displays the plaque naming him Air Force Wing Historian of the Year. He is the first in the eleven years of the award to receive it twice, previously winning in 1978. In conjunction with the Air Force Historical Foundation, the award is presented annually in recognition of the essential role played by the wing-level historian in contributing to the recording of Air Force history. Gen. Bennie L. Davis (left), Commander in Chief, SAC, made the presentation to Sergeant Eckert. Also participating in the ceremony were Dr. Richard H. Kohn, Chief, Office of Air Force History, and John T. Bohn (right), SAC's Command Historian.

National Cemetery Use Broadened

In an imaginative move, four California national cemeteries will be reopened by the Veterans Administration this summer for the burial of cremated remains. By designing garden niches in cemetery land unsuitable for casket interment, some relief of closed cemetery space is possible. California was chosen for this initiative since the VA found "the call to bury cremated remains is particularly strong" there.

Meanwhile, on the East Coast, another innovative program is upgrading Civil War veterans' gravesites. There, in the Poughkeepsie, N. Y., Rural Cemetery, the VA is replacing deteriorating marble headstones marking the graves of ninety-nine Civil War veterans with flat granite markers. In an unusual move, the funds—some $7,000—came from the citizens of New York's Dutchess County through the County legislature.

Uncle Sam Wants You—Again; Maybe!

The Army has recently sent some 86,000 Regular Army retirees "pre-assignment orders for recall to active service in the event of mobilization." While the Army stressed that the mailing "has no relationship to current world events," receipt of the orders surprised some former soldiers and triggered a flurry of phone calls to the Records Centers of *all* services.

SPEAKING OF PEOPLE

The Case for Per Diem Equity

By Ed Gates, CONTRIBUTING EDITOR

Sooner or later, gross inequities in military personnel policies usually are corrected. Enough heat is generated by rank and file service personnel, or by their military leaders, to bring about the overdue changes.

But there are a few notable exceptions, such as the "per diem equity" issue which, like Ol' Man River, just keeps rolling along. And enlisted travelers continue to be victimized.

In recent years, the Air Force has moved to correct the problem, but the Defense Department dragged its feet for much of that time. The Air Force Association lit a fire under the issue more than a decade ago, and support gradually increased. Late last year, the battle appeared won. It seemed certain that enlisted members on temporary duty would no longer suffer both humiliation and a kick in the pocketbook.

Air Force missions have traditionally required flyers, inspectors, and others, both officers and enlisteds, to be away from home base, sometimes for months at a time. But when a crew or team arrived at a base, often at odd hours, the officer members went one way—to the VOQ and the O-club (or commercial restaurant). Officers collected per diem and their regular subsistence allowances.

Enlisted temporary duty (TDY) travelers, on the other hand, received no subsistence allowance; they were expected to eat at the local mess hall, which wasn't always open or was far away; transportation sometimes wasn't available. Frequently the NCO wound up eating at the BX and paying out of his own pocket. Besides receiving no subsistence allowance, he often got no per diem because, technically, a dining hall was "available"—even if it had closed, was five miles across the base, or he couldn't get there in time because he had to bed down the aircraft.

In some cases, commanders and finance officers did approve per diem TDY vouchers submitted by enlisted aircrew members; others didn't. The practice varied, confusion reigned.

There followed, over a period of years, general agreement that the rules for officers and enlisted persons should be standardized. Finally, last November, Air Force and Defense Department officials believed TDY equity had been obtained via legislation. That's what the Uniformed Services Pay Act of 1981 said, that enlisted people would receive both the current $135 monthly subsistence and the food portion of per diem. The latter amounts to $9.30 per day when a government mess is available, $19.50 when one is not.

Enactment of those provisions on November 1 prompted the Air Force to say it was "confident that its intensive effort to provide similar treatment to all Air Force people when on temporary duty had finally been achieved."

But shortly thereafter, the House Appropriations Committee, headed by Rep. Joseph Addabbo (D-N. Y.) tossed a monkey wrench into the works. It ruled that payment of both a subsistence allowance and the food portion of per diem to enlisted members constituted "dual payment" for the same expenses. Instead, the committee (in the FY '82 military appropriations bill) held that enlisted TDYers could collect the subsistence allowance or the per diem for food, whichever is higher, but not both.

Part of the lawmakers' rationale for their decision was based on the fact that enlisted persons, because their subsistence allowance is pegged at $135 a month compared to $94.39 for officers, would outdraw the latter during travel. They felt that was reverse discrimination—though in the interests of long-range justice it might have been appropriate to let enlisteds outdraw officers by $1.35 a day.

To compound the confusion, the Defense Department's General Counsel early this year ruled that the limitation imposed by the committee (on EM electing subsistence or the food portion of per diem, but not both), applies to permanent-change-of-station (PCS) travelers as well as to TDY travel. This means that enlisted PCSers, who were receiving the same per diem and mileage as officers, are now receiving $4.50 a day less.

So what's next? The Air Force is once again working with Congress in hopes of overturning the House Committee's restrictive language for EM on TDY and removing the application to PCS "as soon as possible." And there are voices on Capitol Hill endorsing quick action. But after years of waiting for the government to get its act together, enlisted travelers will be forgiven if they aren't holding their breath.

In any event, the government's dreadful performance on the per diem equity matter is not the stuff of which favorable retention statistics are created.

AFA is continuing to speak out on this problem. "People do make a difference" is AFA's membership campaign slogan for 1982. Because they do make the difference, AFA strongly believes that the inequity of per diem is unconscionable. ■

AIR FORCE Magazine asked the Air Force if it were contemplating similar action. A Pentagon personnel official had a short answer—"No." He pointed out that Air Force mobilization planning allows for the possible recall of up to about 160,000 Regular retirees, depending on the size of the contingency. However, pre-identification of assignments is not considered practical. Assignments will be made at the time of mobilization, depending on the needs for particular skills at that time. Current mobilization planning does include, however, continuing identification of skills needed in various contingencies, so matching skills to resources could be quickly done. There is one exception to this general rule. About 800 Air Force retirees with health professional and medical administrative experience—all volunteers—already hold pre-assignment orders for wartime augmentation of Armed Forces Examination and Entrance Stations.

Meantime, Army officials state that retiree reaction to the program appears to be running "about ninety-five percent favorable," and say that many want "to return to active duty now."

Women in the News

In a late March luncheon address at Bolling AFB, Secretary of the Air Force Verne Orr both startled and pleased a group of Washington-based Air Force women by announcing that the Air Force would accept women volunteers for assignment to AWACS duties.

Hitherto barred from performing in the E-3A Sentry Airborne Warning and Control System aircraft, the women cheered and applauded as the Secretary said, "I'm proud to announce that one tiny barrier that has been in the way of women has come tumbling down. . . . Effective today, the AWACS is removed from the list of restricted aircraft. If your interests and your talents want you to be in the front or the back end of an AWACS, with the exception of a very few limited missions that plane flies, stand in line tomorrow."

Reacting immediately, Air Force messaged the field with details, pointing out that, among officers, pilots, navigators, and air weapon director jobs were available; and, for enlisted women, flight engineers, air sur-

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veillance technicians, radio operators, computer display maintenance technicians, communications technicians, and airborne radar technicians positions were open. At press time an Air Force spokesman told AIR FORCE Magazine that "it's too early to tabulate response, but a positive reaction is expected. In fact, we've already had twenty phone calls."

US Air Force AWACS aircraft are presently based at Tinker AFB, Okla., with some operating locations outside the United States. Women are expected to begin AWACS training by late summer at Tinker AFB.

On another front, Iva F. Ward is the first civilian female to be appointed as a commissary complex director. With more than twenty-five years in the commissary system, she recently took over as Director of the Trier Area Complex, which includes Bitburg, Spangdahlem, Pruem, and Trier, all in Germany. She had been serving as the Deputy Complex Director since 1979.

"It's a big responsibility," said Mrs. Ward, but she expressed confidence that, with support of the commissary managers, she could set an example that would allow others to say "other women can also do it."

It all started for her in 1957 when she first worked as an accounting clerk (GS-3) at Nellis AFB, Nev. She worked her way up to commissary office manager and, in 1974, became the store manager.

Basketball Teams Place

In an unusual happening, both the Air Force Men's and Women's Teams finished second in this year's interservice competition, which found the Army winning both, and the Navy and Marines winding up third and fourth, respectively, in both groupings.

From the men's roundball group, Air Force placed four players on the 1982 Interservice Basketball Team to participate in the AAU National Basketball Championship. They are Maj. Ted Albers, co-coach; Lt. Thomas Schneeberger, and Lt. Reginald Jones, all of Edwards AFB, Calif.; and Lt. Timothy Harris, USAFA.

Four Air Force women also were selected for AAU tournament play; Sgt. Lynn Chapman, Kelly AFB, Tex.; A1C Janet Dixon, Maxwell AFB, Ala.; and AB Karen Whaley and Kim Farward, both of Chanute AFB, Ill.

In winding up the Air Force's internal season, the Air Training Command women won the Air Force Basketball Title, and the Air Force Systems Command team (coached by Albers) captured the 1982's Men's Basketball Championship.

Short Bursts

The Air Force is looking for a bunch of good people for **AFROTC faculty duty** in the 1983 school year. More than 200 vacancies are projected at the 152 host schools across the country. Volunteers whose rank is between captain through lieutenant colonel are encouraged to apply by this August.

The latest edition of "**Federal Ben-**

Gilbert Turner was recently sworn in as Chairman of the National Committee for Employer Support of the Guard and Reserve, in a Pentagon ceremony. William Howard Taft IV, General Counsel, administers the oath as Mrs. Turner assists. Secretary of Defense Caspar Weinberger observes. (Official DoD photo by Frank Hall)

efits for Veterans and Dependents," a well-researched, easily-used reference book of all vet benefits, is now available at $4 a copy from the Superintendent of Documents, GPO, Washington, D. C., 20402.

Remember when you got married? Remember where? If it was at the **Outpost Wedding Chapel,** an "immediate-marriage" establishment near **George AFB, Calif.,** you might want to check with your lawyer. The Air Force is alerting its members that a civil investigation has revealed that some of those ceremonies may not be valid.

Latest cost figures on **training Air Force pilots** surfaced at a recent congressional hearing. **Lt. Gen. Andrew P. Iosue,** when he was asked the question, replied that—depending on the aircraft—**"between one-half and one-and-a-half million dollars."** The General also noted that the multiengine and transport pilots are most in demand by civilian airlines, but that furloughed civilian pilots are returning to the Air Force "in droves."

It took the **passage of DOPMA** to force the Navy to start using the one-star rank again. It's just promoted **its first "commodores"** since World War II. For more than thirty years, it's been getting away with promoting **direct to two-star rank** (calling them upper-half and lower-half rear admirals), a move that has long rankled the other services who felt the O-7 Navy two-stars gained an unfair advantage in joint service assignments.

Senior Staff Changes

PROMOTIONS: To be **Major General:** Richard D. **Murray;** Thomas C. **Richards.**

To be **Brigadier General:** Charles S. **Cooper** III; Thomas A. **Facelle,** Jr.; Thomas A. **LaPlante;** Donald C. **Smith.**

RETIREMENTS: B/G Robert E. **Buhrow.**

CHANGES: Col. (B/G selectee) Thomas A. Facelle, Jr., from Staff JAG, Hq. NYANG, White Plains, N. Y., to ANG Ass't to USAF JAG, Hq. USAF, Washington, D. C. . . . **B/G Winfield S. Harpe,** from Vice Cmdr., AFMPC & Dep. Ass't DCS/M&P for Mil. Personnel, Randolph AFB, Tex., to Cmdr., USAF Recruiting Service & DCS/Recruiting, Hq. ATC, Randolph AFB, Tex., replacing B/G (M/G selectee) Thomas C. Richards. . . **Col. (B/G selectee) Thomas A. LaPlante,** from Dir. of Materiel Management, Warner Robins ALC, AFLC, Robins AFB, Ga., to Vice Cmdr., AFALD, Hq. AFLC, Wright-Patterson AFB, Ohio, replacing M/G Marc C. Reynolds . . . **B/G (M/G selectee) Richard D. Murray,** from Dep. Cmdr., Army & Air Force Exchange Service, Dallas, Tex., to Cmdr., Army & Air Force Exchange Service, Dallas, Tex.

M/G Don H. Payne, from Cmdr., Keesler TTC, ATC, Keesler AFB, Miss., to Spec. Ass't to Cmdr., Hq. ATC, Randolph AFB, Tex. . . . **M/G Marc C. Reynolds,** from Vice Cmdr., AFALD, Hq. AFLC, Wright-Patterson AFB, Ohio, to Cmdr., AFALD, Hq. AFLC, Wright-Patterson AFB, Ohio . . . **B/G (M/G selectee) Thomas C. Richards,** from Cmdr., USAF Recruiting Service & DCS/Recruiting, Hq. ATC, Randolph AFB, Tex., to Cmdr., Keesler TTC, ATC, Keesler AFB, Miss., replacing M/G Don H. Payne. . . **Col. (B/G selectee) Donald C. Smith,** from Cmdr., 62d MAW, MAC, McChord AFB, Wash., to Cmdr., US Forces Azores & Cmdr., 1605th ABW, MAC, Lajes Fld., Azores.

SENIOR ENLISTED ADVISOR CHANGES: CMSgt. John T. Adkins, from Police Ops. Div., Hq. AFOSP, Kirtland AFB, N. M., to SEA, Hq. AFOSP, Kirtland AFB, N. M., replacing retiring CMSgt. Robert J. McLaurine. ■

INTERCOM

Outlook for People Programs in Congress Touch and Go

Looking ahead into the second session of the Ninety-seventh Congress's "people programs" is like trying to fly through a line of thunderstorms . . . everywhere you look is trouble.

During the past two years, Congress has been good to people programs. It started with the Variable Housing Allowance (VHA), was followed by an 11.7 percent pay increase in 1980, and finally another major pay increase in 1981. These benefits added between $2 and $5 billion to the Department of Defense budget. However, this year will probably be very different. It may be a year when the budget (or deficit) will control most of the decisions affecting people programs.

The most pressing issue before this session of Congress will be how to handle the budget deficit. There are suggestions from both sides of the aisle; most include reductions in the Department of Defense budget. On the surface, these suggestions to save money by reducing DoD funds sound good. However, most of the DoD budget is allocated to the procurement of hardware—ships, planes, and tanks. Reducing these programs won't save money for several years, and the lawmakers have the problem of how to cut expenditures now. This leaves the "people programs," operations and maintenance programs, and some research and development programs as areas to cut for immediate savings.

Thus it becomes obvious that one of the major targets for defense budget cutters will be people programs. The members of the Armed Services Committees in both Houses of Congress are aware of this. They are also looking for areas that can be trimmed without hurting people programs, but it will be touch and go.

An analysis of the posture statements submitted by DoD and the services indicates the following will probably be the major people issues for this session of Congress: manpower, recruiting, and retention, compensation, retirement, PCS reimbursement, family support, health care, educational incentives, and rights of former spouses.

Air Force Secretary Verne Orr (left) accepts a check for $15,000 for the Enlisted Men's Widows Home Foundation and Air Force Village from Iron Gate Chapter President Harold W. Miller. The presentation, which took place at the Pentagon, was part of the distribution of funds raised at the 18th National Air Force Salute, held in New York City in March 1981. The Salute raised a total of $57,000.

- *Manpower:* The Air Force is still growing. Unless Congress makes some changes to the force structure, the Air Force is projected to increase by 19,200 positions. This will bring the active-duty total up to 600,000. The Air Reserve Forces will also increase, up almost 4,500 positions to a total of 161,381.

Looking ahead: Since these added spaces are necessary to support new weapon systems, such as the air-launched cruise missile, Congress will probably approve and fund these increases.

- *Recruiting and Retention:* The Air Force met all of its recruiting and retention goals last year, with the exception of engineers and some physician specialties. With the recent pay raises, the variable housing allowances, bonuses, and in light of the present economic situation, there is no reason to believe that the Air Force will have significant problems next year.

Looking ahead: Congress will expect the Air Force to continue its excellent track record without Congress providing any new incentives.

- *Military Compensation:* The Administration has requested an eight percent pay raise for members of the armed forces. However, only a five percent pay increase was requested for Civil Service personnel. Reducing the military pay raise from eight to five percent will save an estimated $1 billion.

Looking ahead: The chances that Congress will approve the eight percent pay raise are slim. If there is an increase, it will probably be five percent. Also, all entitlements will probably be frozen at the 1982 level.

- *Health Care:* The Air Force asked for funds to improve equipment, clinics, and to provide increased support for doctors. In addition, DoD requested

funds for a scaled-down CHAMPUS dental program for military dependents.

Looking ahead: Congress will probably approve the clinics and the increased support for doctors. However, there will be problems in providing money for the increased dental care.

• *Educational Incentives:* The Vietnam-era GI Bill ended on December 31, 1976, and was replaced by a contributory system that is called the Veterans Educational Assistance Program (VEAP). This contributory requirement and the low benefits have resulted in a very low participation rate. In the Air Force, only six percent of those eligible are participating. However, DoD decided that the VEAP program was "cost efficient," and provided more selective benefits for the Army, which had major recruiting problems. The GI Bill was rejected.

Looking ahead: A new GI Bill is unlikely in this session.

• *Air Force Family Support:* Recent studies demonstrated the importance of the family in the Air Force. These studies showed that the attitudes of family members and their satisfaction with Air Force life are major factors in career decisions, as well as in morale and productivity. Recognizing this, the Air Force is opening base-level Family Support Centers to provide professional, one-stop help for Air Force members. Four prototype centers began operation last year. Twelve are projected for this year, with twenty-five a year programmed for the future.

Looking ahead: The Armed Services Committees will authorize the Centers, but the Appropriations Committees may not fund them.

• *Increased Reimbursement for PCS Moves:* What used to be an almost routine event, a permanent change of station (PCS), has become a major career decision because of the significant out-of-pocket expenses involved. Even the General Accounting Office (GAO) agreed. In one of its studies, it urged Congress to take immediate steps to rectify the situation. A pivotal factor in the problem is to get certain committees to recognize that a PCS move is part of doing business, rather than compensation to the Air Force member. DoD recommended an increase in mileage payments from thirteen cents a mile to sixteen cents a mile, with concurrent increases also in mileage allowances for dependents. While many members of Congress are sympathetic, approving the program will be expensive when the moves for the Army and Navy are added to those of the Air Force.

Lt. Gen. Jerome O'Malley (center), Assistant DCS/Plans and Operations, Hq. USAF, proudly holds a photo of the West Point Cadet Chapel presented to him at a Connecticut State AFA-sponsored luncheon for Hartford-area aerospace industry executives. General O'Malley was the luncheon speaker. At left is Arthur Wegner, of Pratt & Whitney, a charter member of the Northern Connecticut Chapter. At right is Joe Falcone, National Vice President for the New England Region.

Looking ahead: It will be difficult for Congress to find money for this—maybe next year.

• *Military Retirement:* A critical element of the Air Force retention program is the military retirement system. Despite its significance, this program has come under repeated attack. Although no actual restructuring has occurred, several changes have been made that erode the value of the program. These changes include the elimination of the semiannual Cost-of-Living Adjustment (COLA) and institution of the "high three" average for new service members. In recent months, the Office of Management and Budget (OMB) recommended further changes that would "round down" payments, eliminate "look back," reduce or eliminate the COLA if retirees are presently drawing more retired pay than members who retire now, and change the method of computing COLA to reduce the amount retirees receive. In an unusual move, the Joint Chiefs of Staff have written to the Secretary of Defense asking him not to forward these changes to Congress until they can be studied.

Lee Terrell (left), Florida State AFA President, praises the accomplishments of (from left to right) Bob Gates, Lake Hamrick, and Charlie Mathews in the successful Bob Hope Show held in Fort Walton Beach in 1980. The awards were presented by Mr. Terrell on behalf of John G. Brosky, AFA's National President, on February 19 at Eglin AFB. Mr. Gates received the Exceptional Service Award, while Mr. Hamrick and Mr. Mathews each received the Medal of Merit.

I N T E R C O M

Looking Ahead

Manpower	+	Up to support new weapon systems
Recruiting and retention	+	The economic situation is helping
Compensation	?	Maybe a five percent raise
Retirement	–	Reduction in COLA
PCS reimbursement	?	Touch and go
Health care	+	But no dental CHAMPUS
Air Force family support	+	Good program
Educational incentives	–	No new GI Bill this year
Executive level pay cap	–	Not this year
Rights of former spouses	–	Too many other problems

Looking ahead: Congress will be under pressure to reduce the cost of retired pay. Look for some reduction in COLA to reduce the cost.

• *Executive Pay Cap:* The legislation that increased executive-level pay was long overdue. However, unless some way is found to separate it from congressional salaries, the relief will be short-lived.

Looking ahead: In an election year, it seems almost impossible for Congress to raise its own pay. Also, in a year of a big budget deficit, it will be very difficult for Congress to raise the salaries of highly paid people—no matter how well-deserved.

• *Rights of Former Spouses:* The Senate Armed Services Subcommittee on Manpower and Personnel held hearings on this controversial subject, and there seemed to be a general consensus that something should be done. The House Armed Services Committee has not yet held hearings.

Looking ahead: With all the major issues confronting the committees, it will be late in the session before they get to this issue—if then.

After coming through the line of thunderstorms, there appears to be clear weather ahead. The congressional committees have shown an awareness of people problems and are sensitive to the hardships and sacrifices required of members of the military. As soon as this year's budget problems are solved, Congress can get back to solving people problems.

AFA Councils Meet To Frame Activities For Upcoming Year

In late February, AFA's Enlisted Council and Junior Officer Advisory Council Executive Committee held their first meeting of the new AFA year. They met in Washington, D. C., in conjunction with other AFA committees meeting at the same time.

AFA's active-duty councils advise the AFA President on matters affecting their constituencies. Also, they serve the Air Force as a resource group for exploration of various personnel matters. For example, last year's Junior Officer Advisory Council laid the groundwork for a later full-scale Air Force survey on what members felt was positive about the Air Force. This obviously tied in with the Air Force's increasingly successful retention efforts.

This first 1982 meeting served as an opportunity for both councils to plot their schedules for the coming year and also to be updated on AFA and Air Force concerns.

The councils were welcomed by AFA President John G. Brosky, who charged them with identifying significant issues worthy of support in AFA's national policy. He told the groups, "It is very important that we know what your groups are thinking and how we can best serve your interests as these interests serve the Air Force. You have significant input into the formation of AFA policy."

MSgt. Cheryl Mayner of AFA's Enlisted Council takes advantage of the Washington Council meeting to check on AFA's membership procedures. Board Chairman Vic Kregel (left) and immediate-past CMSAF Jim McCoy, currently on AFA's Membership Committee, look on. (Photo by Jill Wolf)

A memorial service for fallen airmen and women was held last December 6 at the Protestant Chapel at New York's John F. Kennedy International Airport. During the service the P-47 Alumni Association donated a model of the Thunderbolt for display at the chapel. Shown here are, from left, Bob Holland, Vice President, New York State AFA; Assistant Pastor Lisle Nicolls; Larry "Butch" Micalizzi, President of the P-47 alumni group; and Father Marlin Bowmann, pastor.

AIRLIFT — The Key to Modern Military Mobility

A NATIONAL SYMPOSIUM OF THE AIR FORCE ASSOCIATION
(conducted in conjunction with the Military Airlift Command)

June 24–25, 1982, at the Marriott Hotel/Airport, St. Louis, Missouri

AFA's Symposium "Airlift: The Key to Modern Military Mobility" will probe the equipment and trained manpower required to project US power to remote areas of the world in support of US vital interests. Key government and military leaders will discuss airlift and military mobility in light of a diminished US overseas basing structure, fewer overflight and staging rights and reduced opportunities for pre-positioning war materials in key areas where American interests could be threatened.

SPEAKERS INCLUDE:

Symposium Keynote Address by:

The Honorable Caspar W. Weinberger
Secretary of Defense (tentative)

Gen. James R. Allen
Commander in Chief, MAC,
heading up a panel of
five former MAC Commanders

Lt. Gen. O.E. DeHaven
Director, J-4/Joint Staff

Lt. Gen. Robert Kingston (tentative)
Commander, RDJTF

Gen. E.C. Meyer
Army Chief of Staff

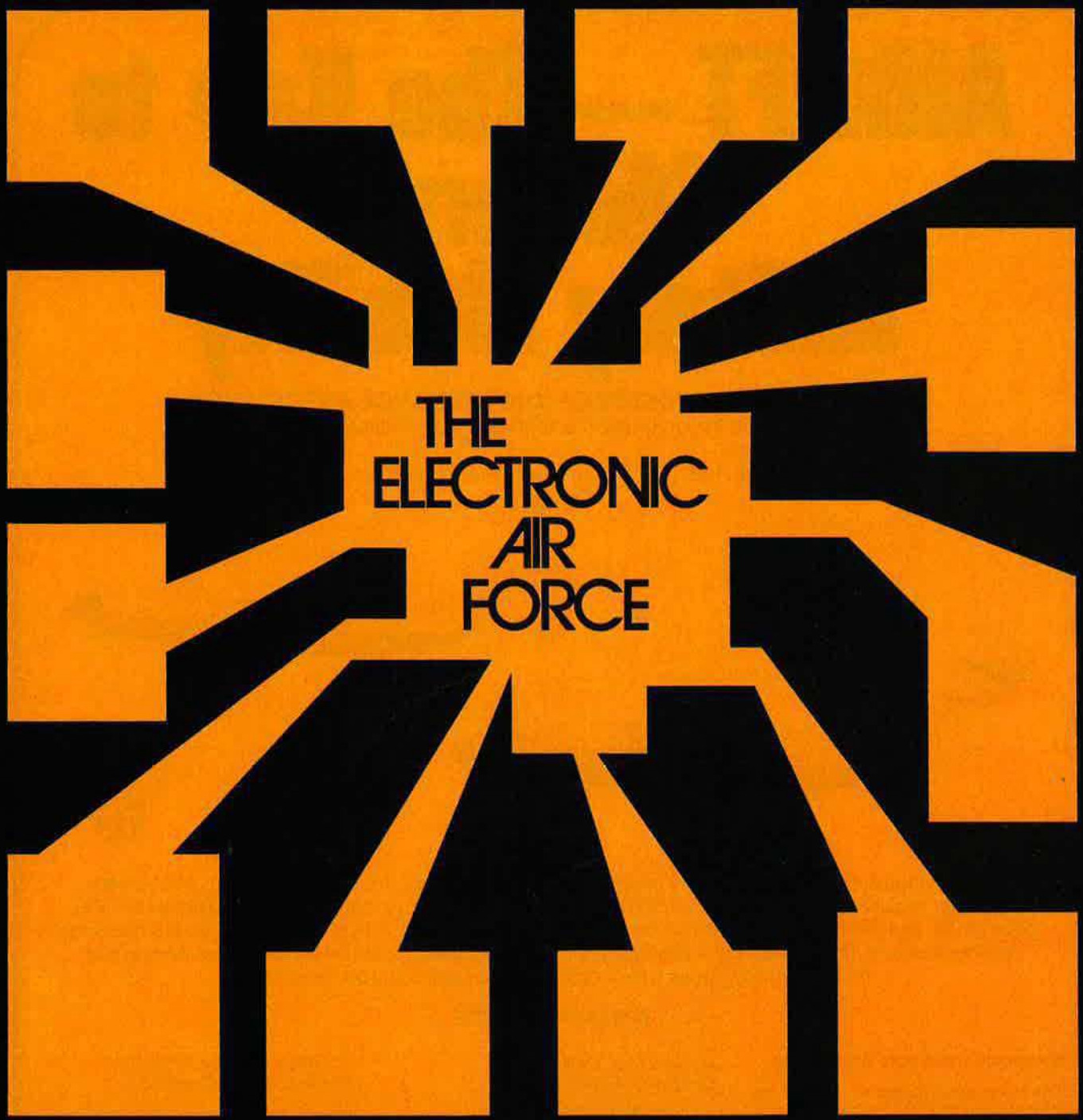
The Honorable Charles H. Percy
Senator from Illinois, Chairman of the
Foreign Relations Committee
(tentative)

Mr. John Shea
Retired MAC Senior Technical Advisor

Lt. Gen. Lawrence A. Skantze
Commander, ASD, AFSC

Dinner Speaker:
Gen. David C. Jones
Chairman, Joint Chiefs of Staff

Registration fee for all Symposium events is $150. This fee includes all presentation sessions, coffee breaks, continental breakfast, and a dinner. For information and registration, call Jim McDonnell or Dottie Flanagan at (202) 637-3300, Air Force Association, Suite 400, 1750 Pennsylvania Ave., N.W., Washington, D.



AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

In July, AIR FORCE Magazine will focus on "The Electronic Air Force" ... an in-depth look at USAF electronic developments, highlighting programs and trends. * Also included will be the latest developments in electronic warfare ... electronic countermeasures and counter-countermeasures. * A special report on the tactical electronic reconnaissance "gap" is planned as well as a checklist of major Air Force electronics projects and prime contractors. * All of the regular features of AIR FORCE Magazine will also be included, making this one of our most sought-after issues. * You can be a part of this important issue with your advertising. *Closing for reservations is May 28, copy by June 9.*

During their meeting, the councils also heard from Russell E. Dougherty, AFA Executive Director, and Maj. Gen. William Usher, Director of Personnel Plans, DCS/Manpower and Personnel, who updated them on looming personnel issues. The councils also received briefings on "Air Force 2000" and "Project Warrior" from representatives of the Air Staff's Deputy Directorate for Doctrine, Strategy and Plans Integration.

During the two-day meeting—at a dinner giving the opportunity for all council and committee members to get together—AFA honored Sen. Ted Stevens (R-Alaska) and Rep. Bill Nichols (D-Ala.) with AFA's Special Presidential Citation to each.

The councils laid the framework for continuing 1982 activities before departing. During this year they will be particularly interested in the impact of any possible changes in the military pay and retirement system, as well as the ramifications of the progress of a new GI Bill.

The Enlisted Council will also be pursuing studies on the desirability of an expansion of technical school course length, a return to institutional Air Force values through more effective discipline, and an enhancement of the NCO corps.

The councils are planning to meet during the summer and again at the AFA Convention in September. The Enlisted Council is composed primarily of the previous year's Outstanding Airmen of the Air Force. The Junior Officer Advisory Council is composed of a representative of each major command and separate operating agency.

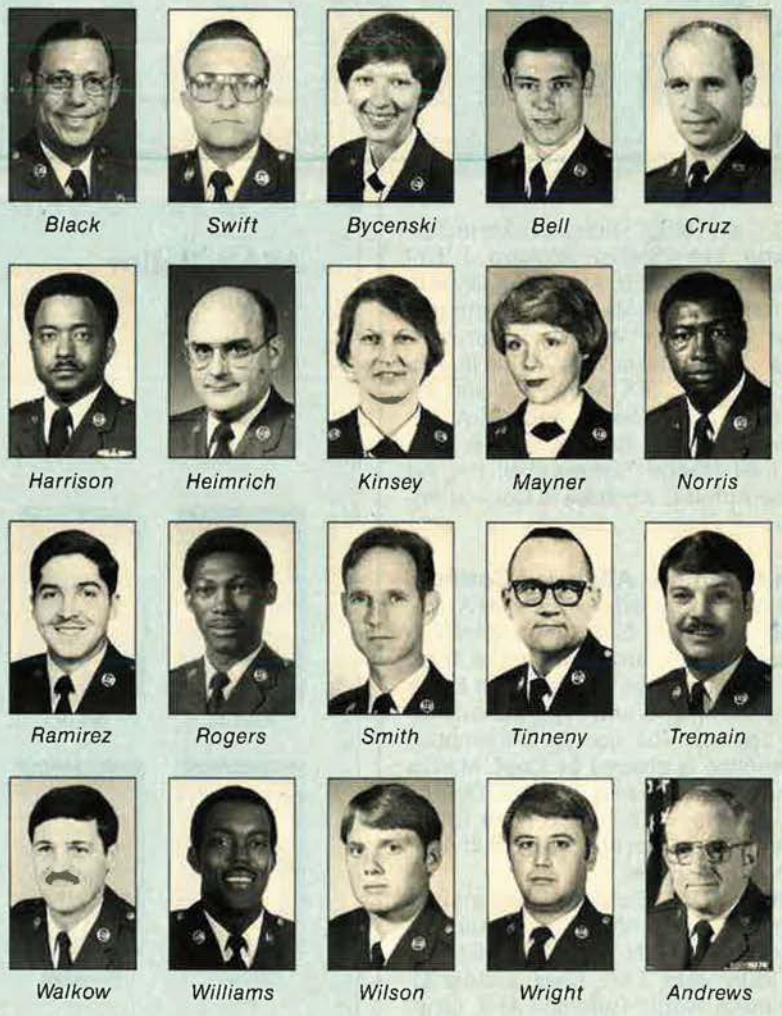
Enlisted Council

This Council, which includes a majority of the Air Force's Outstanding Airmen for 1981, advises the AFA National President on matters concerning the enlisted force. CMSgt. Kenneth A. Black, Barksdale AFB, La., is Council Chairman. SMSgt. Ralph E. Swift, Hanscom AFB, Mass., is Vice Chairman. TSgt. Deborah S. Bycenski, Randolph AFB, Tex., is Recorder.

Members are SSgt. Brian A. Bell, Peterson AFB, Colo.; MSgt. George F. Cruz, Portland IAP, Ore.; TSgt. William L. Harrison, Wright-Patterson AFB, Ohio; CMSgt. George G. Heimrich, Washington, D. C.; Sgt. Ann M. Kinsey, Ramstein AB, Germany; MSgt. Cheryl L. Mayner, Andrews AFB, Md.; CMSgt. John A. Norris, Clark AB, Philippines; Sgt. Jaime Ramirez, Travis AFB, Calif.; SSgt. Ronnie C. Rogers, McClellan

At a dinner honoring AFA's Committees and Councils, guests heard from Robert Emmerichs (center), House Armed Services Committee Professional Staff Member; and Dwight Dyer (right), Staff Director, Senate Defense Appropriations Subcommittee. With them, from left, are CMSgt. Ken Black, Chairman, Enlisted Council; Capt. Marcia Tamblyn, Chairman, JOAC; and AFA President Brosky. (Photo by Jill Wolf)

Enlisted Council



Junior Officer Advisory Council


Tamblyn | Hill | Lower | Basile | Cutler


Kohlhaas | Lacey | Loucks | Meyers | Paramore


Petrilla | Pintler | Redhead | Smith | Usher

AFB, Calif.; MSgt. Richard F. Smith, Fort Meade, Md.; SMSgt. Richard J. Tinneny, Maxwell AFB, Ala.; MSgt. John L. Tremain, Rhein-Main AB, Germany; TSgt. George H. Walkow, Tinker AFB, Okla.; MSgt. Maxie W. Williams III, Patrick AFB, Fla.; SrA. Mark E. Wilson, Elmendorf AFB, Alaska; and MSgt. Michael L. Wright, Bergstrom AFB, Tex.

Chief Master Sergeant of the Air Force Arthur L. Andrews is Council Advisor.

Junior Officer Advisory Council

This Council advises the AFA National President on matters affecting junior officers, and includes at least one representative from each Air Force major command and separate operating agency. The council's Executive Committee is chaired by Capt. Marcia J. Tamblyn, Scott AFB, Ill. Capt. Dale C. Hill, Langley AFB, Va., is Vice Chairman. Capt. Robert W. Lower, Offutt AFB, Neb., is Recorder.

Other JOAC Executive Committee members are Lt. Michael J. Basile, Niagara Falls IAP, N. Y.; Capt. Katie Cutler, Kelly AFB, Tex.; Capt. Calder D. Kohlhaas, Wright-Patterson AFB, Ohio; Capt. Sharon L. Lacey, Kelly AFB, Tex.; Capt. John A. Loucks, USAF Academy, Colo.; Capt. Robert H. Meyers, Scott AFB, Ill.; Lt. Cathy J. Paramore, Randolph AFB, Tex.; Capt. John D. Petrilla, Washington, D. C.; Capt. Curtis N. Pintler, Fairchild AFB, Wash.; Capt. Paul J. Redhead, Randolph AFB, Tex.; and Capt. Richard B. Smith, Andrews AFB, Md.

Council Advisor is Maj. Gen. William R. Usher, USAF Director of Personnel Plans.

AFA's Policy Advisors Give the AFA President Their Expert Advice

The Air Force Association's Policy Advisors, all volunteers, counsel the National President on policies and developments pertinent to their fields of expertise.

The following Policy Advisors were selected by the National President to serve during 1982 because of their expertise in areas vital to AFA's mission: CMSgt. Kenneth A. Black, AFA Enlisted Council Chairman, Barksdale AFB, La., Enlisted Advisor; Lt. Gen. John P. Flynn, USAF (Ret.), San Antonio, Tex., Veterans Advisor; Maj. Gen. Francis R. Gerard, Chief of Staff, New Jersey National Guard, Seagirt, N. J., Air National

AFA's Policy Advisors


Black | Flynn | Gerard


Kisling | Mark | Miller | Oliver | Reynolds


Rowe | Tamblyn | Thompson | Turnbull | Ware

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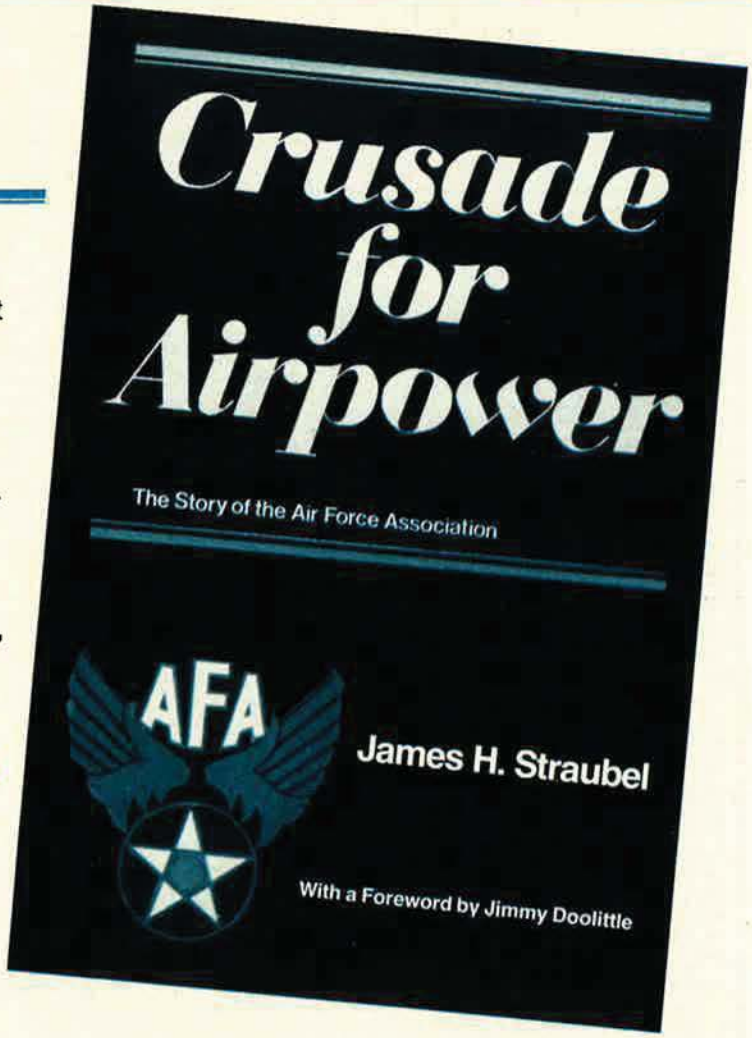
Crusade for Airpower

CRUSADE FOR AIRPOWER is continued confirmation that "what is past is prologue," and a reminder that "the heritage of the past is the seed that brings forth the harvest in the future." The educational value of this book transcends the Air Force Association, showing how concerned and dedicated Americans can educate themselves and others to achieve the basic requirements for national security.

This book is the story of AFA, with its ups and downs detailed in highly readable form, supplemented by a large collection of photos, many published here for the first time.



Crusade for Airpower

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Alamo Chapter Honors Three San Antonio AFCOMS People

The Air Force Association's Alamo Chapter recently honored three San Antonio-area Air Force Commissary Service enlisted people. The Chapter presented its annual Blue Suit Awards to MSgt. Luis Vela, TSgt. James H. Dvorak, and SrA. Cynthia M. DeAmicis.

Sergeant Vela is supervisor of the troop support warehouse at Lackland AFB, Tex. He is responsible for issuing food items to the base dining halls. In the short period of time he has been assigned to the position, he has improved the operation of the troop support section. He identified and resolved problems in storage, receiving, physical layout, and stocking to meet customer needs.

Sergeant Dvorak is NCOIC of the Special Management and Personnel Policy Branch of the Hq. AFCOMS Personnel Directorate. He manages command policy development and makes recommendations on special assignments pertaining to region and headquarters manning. Sergeant Dvorak

Several members of the Angelo State University's Robert G. Carr Squadron of the Arnold Air Society attended the recent quarterly business meeting of the AFA Concho Chapter in San Angelo, Tex. Pictured are, from left to right: AAS Maj. Paul J. Rich; Maj. Gen. Les Kearney (Ret.); AAS 1st Lt. Richard Stepheno; Capt. Steven Toalson; Angel Flight Capt. Sara Garcia; C/A1C Steve Moshier; Russell E. Dougherty, AFA Executive Director and guest speaker; AAS 1st Lt. Laura Parman; Angel Flight Maj. Anita Martinez; Commander-AAS 1st Lt. Rene Rendon; 1st Lt. Dave Ogden; and Rocky Durso, President of the Concho Chapter. The Robert G. Carr Squadron AAS attends all business meetings of the Concho Chapter in an effort to improve AFA/AAS relations. Arnold Air Society members also aided the Concho Chapter in their last, award-winning membership drive.

INTERCOM

monitors the AFCOMS Meatcutter School training program, Contingency Operations Course, command on-the-job training, and other special programs for AFCOMS personnel.

Airman DeAmicis is a commissary store worker in the administrative section of the South Texas Complex at Lackland AFB. Her orderly approach to all tasks has earned Airman DeAmicis praise from her coworkers and superiors. She is the complex cash-control inspector and travels to all eight commissaries in the complex to inspect and review cash control. After each inspection she informs the complex director of any discrepancies she may have discovered.

UNIT REUNIONS

ADCOM Reserve Civil Engineers
A reunion for the Aerospace Defense Command Reserve Civil Engineers will be held in Denver, Colo., June 19, 1982. **Contact:** Ed Schryver, 302 E. St. Elmo, #62, Colorado Springs, Colo. 80906. Phone: (303) 632-1306.

Brookley AFB
The Brookley AFB reunion and air show will be held in Mobile, Ala., on Armed Forces Day, May 15, 1982. **Contact:** Frank M. Lugo, 5 S. Springbank Rd., Mobile, Ala. 36608. Phone: (205) 344-9234.

IOAC
The International Order of Aviation Characters business meeting and aviation/aerospace symposium will be held on May 21–22, 1982, at Woodway Country Club, Darien, Conn. **Contact:** Dr. James E. Crane, 965 Hope St., Stamford, Conn. 06907. Phone: (203) 322-2323.

7th Bomb Wing
All former 7th Bomb Wing and support unit members during the B-36 era (1948–58) are invited to the first reunion in Fort Worth, Tex., May 14–16, 1982. **Contact:** B-36 Reunion Committee, P. O. Box 16337, Fort Worth, Tex. 76133.

9th Bomb Wing
Members of the 9th Bomb Wing (1956–66) will hold a dinner-dance reunion on June 12, 1982, in Boise, Idaho. **Contact:** Harvey R. McAtee, 10140 Saranac Dr., Boise, Idaho 83709.

14th Air Force Ass'n, Flying Tigers
The Flying Tigers of the 14th Air Force Association will hold their convention on July 21–24, 1982, in Seattle, Wash. **Contact:** Frank S. Palmer, 14008 13th S. W., Seattle, Wash. 98166. Phone: (206) 248-0859.

33d Photo Recon Sqdn.
The 33d Photo Reconnaissance Squadron Association will hold its reunion July 3–5, 1982, in Louisville, Ky., at the Louisville Inn, 120 W. Broadway, Louisville, Ky. 40202. Phone: (502) 582-2241. Reservations should be made directly to the hotel. **Contact:** Burl R. Stokes, 311 Glendale St., Creve Coeur, Ill. 61611. Leo E. Shelton, 610 W. Michigan Ave., Hammond, La. 70401.

49th Fighter Group
Members of the 49th Fighter Group (including the 7th, 8th, 9th, and Headquarters Squadrons) will hold their reunion on July 15–18, 1982, in San Antonio, Tex. **Contact:** Ken Payne, 5927 Wildwind Dr., San Antonio, Tex. 78239.

57th Bomb Wing
The fourteenth reunion for the 57th Bomb Wing, including the 310th, 319th, 321st, and 340th Bomb Groups, which flew out of North Africa, Sicily, Italy, and Corsica during WW II, will be held in Rapid City, S. D., at the Howard Johnson and the Holiday Inn, on July 7–11, 1982. **Contact:** Harold G.

INTERCOM

"You see, Sir, I've made these modifications to the cowling of my aircraft in order to reduce its radar cross-section and to make it virtually invisible to enemy radar head-on. I call it the Stealth-47."

Lynch, 11720 Whisper Bow Dr., San Antonio, Tex. 78230.

B-58 Hustler Ass'n
The B-58 Hustlers will hold their reunion at Green Oak Inn, Fort Worth, Tex., June 18–20, 1982. **Contact:** Bill McGlohen, P. O. Box 26058, Fort Worth, Tex. 76116, or Joe Rogers at (817) 249-5558.

82d Strategic Recon Sqdn.
The 82d Strategic Reconnaissance Squadron plans to hold its reunion on July 30–31, 1982. **Contact:** Lt. Col. Fletcher Robeson, Box 182, Bellevue, Neb. 68005. Phone: (402) 291-7483. Also, Robb Hoover at (402) 292-6616.

AC-130 Gunship
All Spectres and others associated with the 16th SOS are invited to attend the eighth annual mini-reunion to be held at the Fontenelle Hills Country Club near Omaha, Neb., May 28–30, 1982. **Contact:** Col. R. A. Wicklund, 602 Martin Dr. N., Bellevue, Neb. 68005. Phone: (402) 291-4690.

330th Bomb Sqdn., 93d Bomb Wing
The 330th Bomb Squadron and 93d Bomb Wing will hold their reunion on June 18–19, 1982, at Castle AFB, Calif. **Contact:** Mike Bogna, 525 Baker Ct., Atwater, Calif. 95301. Phone: (209) 358-5320.

355th Engineer Regiment
The 355th Engineer Regiment Reunion, Inc., of WW II, will hold a reunion on July 24–26, 1982, in Columbus, Ohio. **Contact:** Joe Cornwell, 1948 Glenn Ave., Columbus, Ohio 43212. Phone: (614) 486-0516.

381st Bomb Group (H) Memorial Ass'n
The 381st Bomb Group, including its ground unit, the 432d Air Service Group, will dedicate their memorial on August 28, 1982, at their former Station #167, Ridgewell, Essex, England. **Contact:** T. Paxton Sherwood, 515 Woodland View Dr., York, Pa. 17402.

454th Bomb Sqdn., 323d Bomb Group
Members of the 454th Bomb Squadron and 323d Bomb Group will hold their seventh reunion on July 8–11, 1982, at the Sheraton Inn, Gettysburg, Pa. **Contact:** Joe Havrilla, 1208 Margaret St., Munhall, Pa. 15120. Phone: (412) 461-6373.

464th Bomb Group
The 464th Bomb Group will hold its reunion on July 30–August 1, 1982, in Springfield, Ill. **Contact:** H. Robert Anderson, 4321 Miller Ave., Erie, Pa. 16509. Phone: (814) 866-1465.

503d Parachute Infantry Regiment
Members of the 503d Parachute Infantry Regiment will hold their reunion on July 15–18, 1982. **Contact:** Col. John "Snake" Davis, P. O. Box 53962, Fayetteville, N. C. 28305. Phone: (919) 485-1550.

556th Bomb Sqdn., 387th Bomb Group
The 556th Bomb Squadron and 387th Bomb Group will hold their reunion on July 2–4, 1982, in Dublin, Ohio. **Contact:** Paul R. Priday, 7755 Harriott Rd., Plain City, Ohio 43064. Phone: (614) 873-4378.

1141st SPACTY Sqdn.
USAF Flight Section, Det. 4 (stationed in Naples, Italy), plans to hold a reunion in June 1982 in the Dallas/Fort Worth area. **Contact:** Dan Benstrom, Box 825, Gwinn, Mich. 49841. Phone: (906) 346-3567.

6147th Tac Con Group
The 6147th Tactical Control Group "Mosquitoes" reunion will be held on July 15–19, 1982, at the Holiday Inn, Mission Valley, San Diego, Calif. **Contact:** Ed J. Damico, 2408 Cabot Ave., Erie, Pa. 16511. Phone: (814) 456-9922.

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.

OBJECTIVES

The Association provides an organization through which free men may unite to fulfill the responsibilities imposed by the impact of aerospace technology on modern society; to support armed strength adequate to maintain the security and peace of the United States and the free world; to educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind; and to help develop friendly relations among free nations, based on respect for the principle of freedom and equal rights for all mankind.

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Columbus, Ohio

INTERCOM

Veterans of the Battle of the Bulge (VBOB)

Veterans of the Battle of the Bulge organization was formed on December 16, 1981, on the thirty-seventh anniversary of the Battle of the Bulge. Membership is not restricted to those who actually participated in the battle. Associated membership is available to those with any military experience and an honorary membership is available to others.

Persons interested in joining the national chapter or forming a local chapter should write to the address below.

Veterans of the Battle
of the Bulge (VBOB)
P. O. Box 5510
Arlington, Va. 22205

Graham AB, Marianna, Fla.

We are trying to locate Primary Pilot Training students, instructors, and support personnel for a 1982 reunion. Please contact the address below.

The Committee
P. O. Box 668
Langley AFB, Va. 23665

7th Photo Tech. Sqdn.

I am attempting to contact all members of the 7th Photo Technical Squadron stationed at Camp Bally, in Calcutta, India, during WW II, for information and a possible reunion.

Adrian Atwater
1009 Saratoga Way
Carson City, Nev. 89701

Class 43–7

Will any former classmates of Class 43–7 (bombardiers) stationed at Childress AAFB, Tex., contact me for a possible reunion or just to get reacquainted?

Maj. John C. Woodley, USAF (Ret.)
819 Byrne Dr.
Montgomery, Ala. 36111

398th Bomb Group (H)

The officers, memorial committee, and membership of the 398th Bomb Group Memorial Association (including the 600th, 601st, 602d, and 603d Bomb Squadrons) wish to extend an invitation to all our support units for the dedication of our memorial to be held on September 19–26, 1982, in Nuthampstead, England. For travel arrangements, please contact the address below.

James "Dick" Frazier
Rte. 1, Box 4221
Newalla, Okla. 74857

449th Bomb Group

Will members of the 449th Bomb Group "Flying Horsemen" contact me for a possible reunion? Please send your name, address, WW II squadron number, and duty assignment to the address below.

Richard F. Downey
4859 Stanhope Dr.
St. Louis, Mo. 63128

Class 62-G

The undergraduate pilot training Class 62-G, of Moody AFB, Ga., is planning a reunion for May 1982. Please contact:

Rick Friberg
734 Dolores St.
San Francisco, Calif. 94110
Phone: (415) 574-8465

55th Fighter Group, 8th AF

After thirty-five years, we are planning our first group reunion, and we are now compiling a mailing list of all former members. Please contact me at the address below.

A. V. Rodriguez
259 W. Wildwood
San Antonio, Tex. 78212

Coming Events

May 14–15, **Tennessee State Convention,** Chattanooga . . . May 14–15, **Washington State Convention,** Seattle . . . May 28, **AFA Nominating Committee and Board of Directors Meeting,** The Broadmoor, Colorado Springs, Colo. . . . May 29, **Twenty-third Annual Outstanding Squadron Dinner,** The Broadmoor's International Center, Colorado Springs, Colo. . . . June 5, **Massachusetts State Convention,** Boston . . . June 11–13, **Alabama State Convention,** Selma . . . June 11–13, **Oklahoma State Convention,** Enid . . . June 12, **Alaska State Convention,** Fairbanks . . . June 12, **Virginia State Convention,** Arlington . . . June 12–13, **Bob Hope/AFA Charity Golf Tournament,** San Bernardino/Riverside, Calif. . . . June 18–19, **Ohio State Convention,** Columbus . . . June 24–25, **AFA Symposium, "Airlift—The Key to Modern Military Mobility,"** St. Louis Marriott Hotel at Lambert International Airport, St. Louis, Mo. . . . June 25–27, **New Jersey State Convention,** Cape May . . . June 25–27, **New York State Convention,** Garden City . . . June 26, **Illinois State Convention,** Chanute AFB . . . July 9, **Michigan State Convention,** Manistique . . . July 9–11, **Texas State Convention,** Kerrville . . . July 16–18, **Georgia State Convention,** Rome . . . July 16–18, **Pennsylvania State Convention,** Coraopolis . . . July 23–25, **Florida State Convention,** Tallahassee . . . July 31, **Louisiana State Convention,** Barksdale AFB . . . August 12–14, **California State Convention,** Riverside . . . August 13–14, **Wisconsin State Convention,** Milwaukee . . . August 27–28, **Colorado State Convention,** Vail . . . September 12–16, **AFA National Convention,** Washington, D. C.

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When a Single Accident or Illness Could Cost *You* Thousands of Dollars, You Need AFA CHAMPLUS . . . for *Strong* Protection against Costs CHAMPUS Doesn't Cover!

For military retirees and their dependents . . . and dependents of active duty personnel . . . more and more medical care is being provided through the government CHAMPUS program.

And, of course CHAMPUS pays 75% of allowable charges.

But today's soaring hospital costs—*up to $500 a day* in some major metropolitan medical centers—can run up a $20,000 bill for even a moderately serious accident or illness.

Your 25% of $20,000 is no joke!

AFA CHAMPLUS protects you against that kind of financial catastrophe *and* covers most of your share of routine medical expenses as well.

HOW AFA CHAMPLUS WORKS FOR YOU!

WHO IS ELIGIBLE?

1) All AFA members under 65 years of age who are currently receiving military retired pay and are eligible for benefits under Public Law 89-614 (CHAMPUS), their spouses under age 65 and their unmarried dependent children under age 21 (or age 23 if in college).
2) All eligible dependents of AFA members on active duty. Eligible dependents are spouses under age 65 and unmarried dependent children under age 21 (or age 23 if in college).

EXCEPTIONAL BENEFIT PLAN

(See chart at right)

FOUR YEAR BASIC BENEFIT. Benefits for most injuries or illnesses may be paid for up to a four-year period.

PLUS THESE SPECIAL BENEFITS . . .

1) Up to 45 consecutive days of in-hospital care for mental, nervous, or emotional disorders. Outpatient care may include up to 20 visits of a physician or $500 per insured person each year.
2) Up to 30 days care per insured per year in a Skilled Nursing Facility.
3) Up to 30 days care per insured per year and up to 60 days lifetime in a CHAMPUS-approved Residential Treatment Center.
4) Up to 30 days care per insured per year and up to 60 days lifetime in a CHAMPUS-approved Special Treatment Facility.
5) Up to 5 visits per insured per year to Marriage and Family Counselors under conditions defined by CHAMPUS.

YOUR INSURANCE IS NON-CANCELLABLE

As long as you are a member of the Air Force Association, pay your premiums on time, and the master contract remains in force, your insurance cannot be cancelled.

ADMINISTERED BY YOUR ASSOCIATION . . . UNDERWRITTEN BY MUTUAL OF OMAHA

AFA CHAMPLUS insurance is administered by trained insurance professionals on your Association staff. You get prompt, reliable, courteous service from people who know your needs and know every detail of your coverage. Your insurance is underwritten by Mutual of Omaha, the largest individual and family health insurance company in the world.

AFA OFFERS YOU HOSPITAL BENEFITS AFTER AGE 65

Once you reach Age 65 and are covered under Medicare, AFA offers you protection against hospital expenses not covered by Medicare through the *Senior Age Benefit Plan* of AFA Hospital Indemnity Insurance. Members enrolled in AFA CHAMPLUS will automatically receive full information about AFA's Medicare supplement program upon attainment of Age 65 so there will be no lapse in coverage.

AFA CHAMPLUS BENEFIT SCHEDULE

Care	*CHAMPUS Pays*	*AFA CHAMPLUS Pays*
	For Military Retirees Under Age 65 and Their Dependents	
Inpatient civilian hospital care	CHAMPUS pays 75% of allowable charges	CHAMPLUS pays the 25% of allowable charges not covered by CHAMPUS.
Inpatient military hospital care	The only charge normally made is a $5.00 per day subsistence fee, not covered by CHAMPUS.	CHAMPLUS pays the $5.00 per day subsistence fee.
Outpatient care	CHAMPUS COVERS 75% of outpatient care fees after an annual deductible of $50 per person ($100 maximum per family) is satisfied	CHAMPLUS pays the 25% of allowable charges not covered by CHAMPUS after the deductible has been satisfied.
	For Dependents of Active Duty Military Personnel	
Inpatient civilian hospital care	CHAMPUS pays all covered services and supplies furnished by a hospital less $25 or $5.00 per day, whichever is greater.	CHAMPLUS pays the greater of $5 per day or $25 of the reasonable hospital charges not covered by CHAMPUS.
Inpatient military hospital care	The only charge normally made is a $5.00 per day fee, not covered by CHAMPUS.	CHAMPLUS pays the $5.00 per day subsistence fee.
Outpatient care	CHAMPUS covers 80% of outpatient care fees after an annual deductible of $50 per person ($100 maximum per family) is satisfied.	CHAMPLUS pays the 20% of allowable charges not covered by CHAMPUS after the deductible has been satisfied.

NOTE: Outpatient benefits cover emergency room treatment, doctor bills, pharmaceuticals, and other professional services.

There are some reasonable limitations and exclusions for both inpatient and outpatient coverage. Please note these elsewhere in the plan description.

Against Costs CHAMPUS Doesn't Cover

APPLY TODAY!

JUST FOLLOW THESE STEPS

Choose either AFA CHAMPLUS In-patient coverage or combined In-patient and Out-patient coverage for yourself. Determine the coverage you want for dependent members of your family. Complete the enclosed application form in full. Total the premium for the coverage you select from the premium tables on this page. Mail the application with your check or money order for your initial premium payment, payable to AFA.

Get AFA's new

CHAMPLUS

QUARTERLY PREMIUM SCHEDULE

Plan 1—For military retirees and dependents

In-Patient Benefits

Member's Attained Age	*Member*	*Spouse*	*Each Child*
Under 50	$19.03	$23.30	$11.00
50-54	$23.78	$29.10	$11.00
55-59	$30.13	$36.90	$11.00
60-64	$39.65	$48.55	$11.00

In-Patient and Out-Patient Benefits

Under 50	$26.80	$31.05	$27.50
50-54	$33.48	$38.80	$27.50
55-59	$42.43	$49.18	$27.50
60-64	$55.83	$64.73	$27.50

Plan 2—For dependents of active duty personnel.

In-Patient Only	None	$ 8.80	$ 4.40
In-Patient and Out-Patient	None	$35.20	$22.00

Note: Plan II premiums are listed on an annual basis. Because of the very low cost, persons requesting this coverage are asked to make annual payments.

MITATIONS

overage will not be provided for conditions for which treatment has been received during the 12-month period prior to the effective date of insurance until the expiration of 12 consecutive months of insurance coverage without further treatment. *After coverage has been in force for 24 consecutive months, pre-existing* conditions will be covered regardless of prior treatment.

EXCLUSIONS

This plan does not cover and no payment shall be made for:

a) routine physical examinations or immunizations

b) domiciliary or custodial care

c) dental care (except as required as a necessary adjunct to medical or surgical treatment)

d) routine care of the newborn or well-baby care

e) injuries or sickness resulting from declared or undeclared war or any act thereof

f) injuries or sickness due to acts of intentional self-destruction or attempted suicide, while sane or insane

g) treatment for prevention or cure of alcoholism or drug addiction

h) eye refraction examinations

i) Prosthetic devices (other than artificial limbs and artificial eyes), hearing aids, orthopedic footwear, eyeglasses and contact lenses

j) expenses for which benefits are or may be payable under Public Law 89-614 (CHAMPUS)

APPLICATION FOR
AFA CHAMPUS SUPPLEMENT INSURANCE

Group Policy GMG-FC70
Mutual of Omaha 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 _____ Current Age _____ Height _____ Weight _____ Soc. Sec. No. _____
Month/Day/Year

This insurance coverage may only be issued to AFA members. Please check the appropriate box below:

☐ I am currently an AFA Member.

☐ I enclose $15 for annual AFA membership dues (Includes subscription ($9) to AIR FORCE Magazine).

☐ I am over 65 years of age. Please send information on AFA's Medicare Supplement.

PLAN & TYPE OF COVERAGE REQUESTED

Plan Requested (Check One)
☐ AFA CHAMPLUS PLAN I (for military retirees & dependents)
☐ AFA CHAMPLUS PLAN II (for dependents of active duty personnel)

Coverage Requested (Check One)
☐ Inpatient Benefits Only
☐ Inpatient and Outpatient Benefits

Person(s) to be Insured (Check One)
☐ Member Only
☐ Spouse Only
☐ Member & Spouse
☐ Member & Children
☐ Spouse & Children
☐ Member, Spouse & Children

PREMIUM CALCULATION

All premiums are based on the attained age of the AFA member applying for this coverage. Premium payments are normally paid on a quarterly basis (see table for rate table). Upon request, however, they may be made on either a semi-annual or annual basis.

Quarterly premium for member (age ____) $ _____

Quarterly premium for spouse $ _____

Quarterly premium for ____ children @ $ _____ $ _____

Total premium enclosed $ _____

Requests for active duty dependent coverage under Plan 2 should include annual premiums.

If this application requests coverage for your spouse and/or eligible children, please complete the following information for each person for whom you are requesting coverage.

Names of Dependents to be Insured	Relationship to Member	Date of Birth (Month/Day/Year)

(To list additional dependents, please use a separate sheet.)

In applying for this coverage, I understand and agree that (a) coverage shall become effective on the last day of the calendar month during which my application together with the proper amount is mailed to AFA, (b) only hospital confinements (both inpatient and outpatient) or other CHAMPUS-approved services commencing after the effective date of insurance are covered and (c) any conditions for which I or my eligible dependents received medical treatment or advice or have taken prescribed drugs or medicine within 12 months prior to the effective date of this insurance coverage will not be covered until the expiration of 12 consecutive months of insurance coverage without medical treatment or advice or having taken prescribed drugs or medicine for such conditions. I also understand and agree that all such pre-existing conditions will be covered after this insurance has been in effect for 24 consecutive months.

Date _____, 19____ _____
Member's Signature 5/82

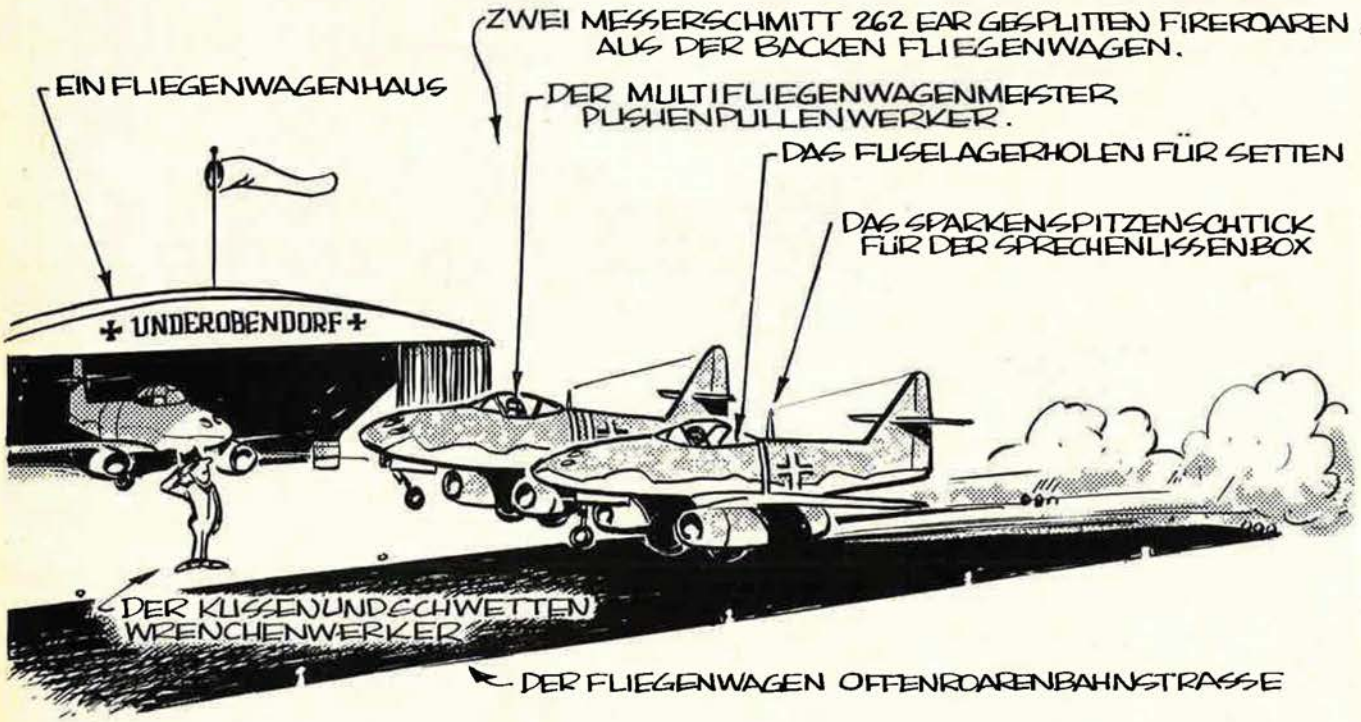
NOTE: Application must be accompanied by check or money order.
Send remittance to:
Insurance Division, AFA, 1750 Pennsylvania Ave., NW, Washington, D.C. 20006.

Form 6173GH App.

Bob Stevens'

"There I was..."

SOME TIME AGO WE RAN A COUPLE OF EPISODES CALLED "GEFRACTURED GERMAN FÜR FLIEGERS". AFTER A HIATUS OF MORE THAN TWO YEARS A GIFTED GEFRACTURED WRITER SURFACED IN CANADA – OF ALL PLACES. WE THINK YOU'LL LIKE FRED HICKS' (OF WINNIPEG MAN.) GESTORYTELLEN ...



DER GROUNDENPOUNDER GESTORYTELLEN TIME —

A seeker to find the foe in the fog...

because someone asked Sperry.

Countering atmospheric conditions is the key to countering massed armor threats in the '80's.

Sperry millimeter wave seekers are designed to solve the midcourse and terminal guidance problems that limit other seekers, with the capability of finding armor in rain, fog, low clouds, smoke, snow and battlefield debris. Tracking passively, the seeker is designed to sense the difference in natural, self-emitted radiation between the target tank and its background.

Sperry radar/sensor technology is being expanded in other areas. We're developing alarm sensors and decoys that will thwart the effectiveness of antiradiation missiles. We're researching tactical applications for spread spectrum techniques and fiber optics. And for missile and air defense, our dome radar employs a single planar array for hemispheric coverage, which is more cost-efficient than conventional systems. Our jamming modules can provide a variety of aircraft with a variety of tactical options.

Sperry advanced radar/sensor systems have been applied to a variety of fire control situations. Our lightweight Sea Archer 2 incorporates infrared, laser and TV sensors – with an optional radar – to meet the air/surface defense needs of small ships and patrol craft. Our stabilized optical sight provides precise tracking in any weather or light. And we're applying phased array techniques to extend existing fire control capabilities to permit detection and tracking of high-dive-angle missiles.

Our land warfare inertial activities range from forward observer and artillery survey to radar azimuth and moving vehicle applications.

For more information on what we're up to in advanced radar/sensor systems, just ask us...we understand how important it is to listen.

Write to: Sperry Division Headquarters, Gyroscope Marketing, Great Neck, NY 11020.
Or call (516) 574-3640.

SPERRY

SPERRY IS A DIVISION OF SPERRY CORPORATION

Reliability and performance demonstration

Eagles exceed goals in combat exercise.

F-15 Eagle pilots and maintenance crews *proved* that the nation's confidence in them is well-placed.

Proof came in Exercise Coronet Eagle, which required the Eagle-equipped 58th Tactical Fighter Squadron to demonstrate in peacetime how it would fight in wartime. The exercise began with a nine-hour, 4,500-mile nonstop deployment from Florida to West Germany. All 18 Eagles were combat-ready less than six hours after arrival.

For the next 20 days, the squadron flew 1,001 sorties—air combat, fighter maneuvers, instrument proficiency and intercepts, fully 20 percent more than planned. In Quick Turn exercises, ground crews refueled and re-armed returning Eagles in an average of *24 minutes.*

Eagles flew 100 percent of assigned sorties with 99.7 percent effectiveness. They were rated "mission capable" 80 percent of the time, and were supported by an avionics test set which averaged 95 percent full-mission capability.

Coronet Eagle proved that the F-15 Eagle is a major breakthrough in availability, reliability and mission effectiveness for the United States Air Force.

Coronet Eagle began Oct. 2, 1980, with the flight from Eglin AFB, Fla., to Bremgarten AB, West Germany. It ended Oct. 30. The 58th Tactical Fighter Squadron was supported by the 33rd Tactical Fighter Wing Component Repair and Equipment Maintenance squadrons. The units returned to Eglin AFB Nov. 5.

F-15 Eagle

MCDONNELL DOUGLAS