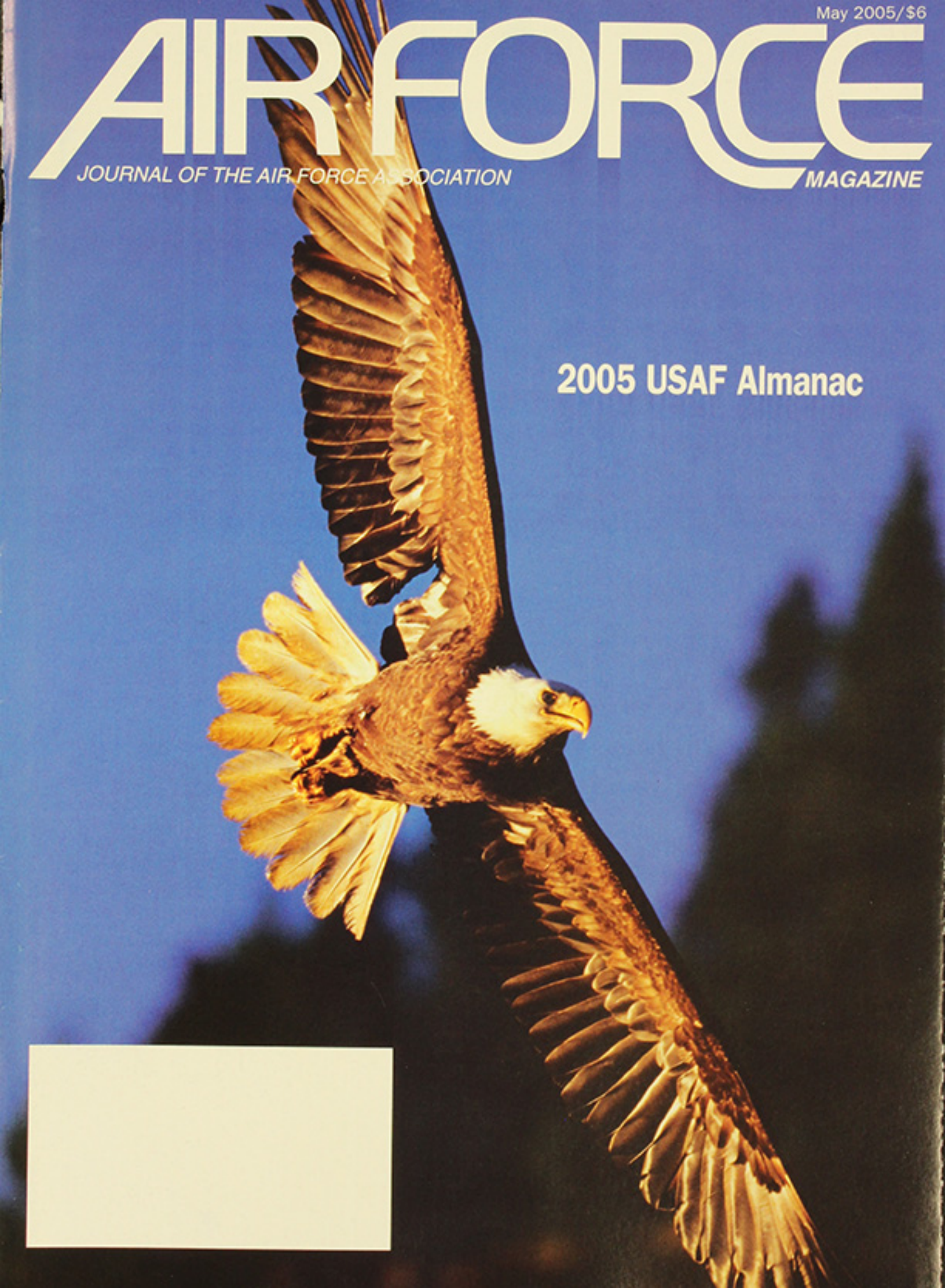
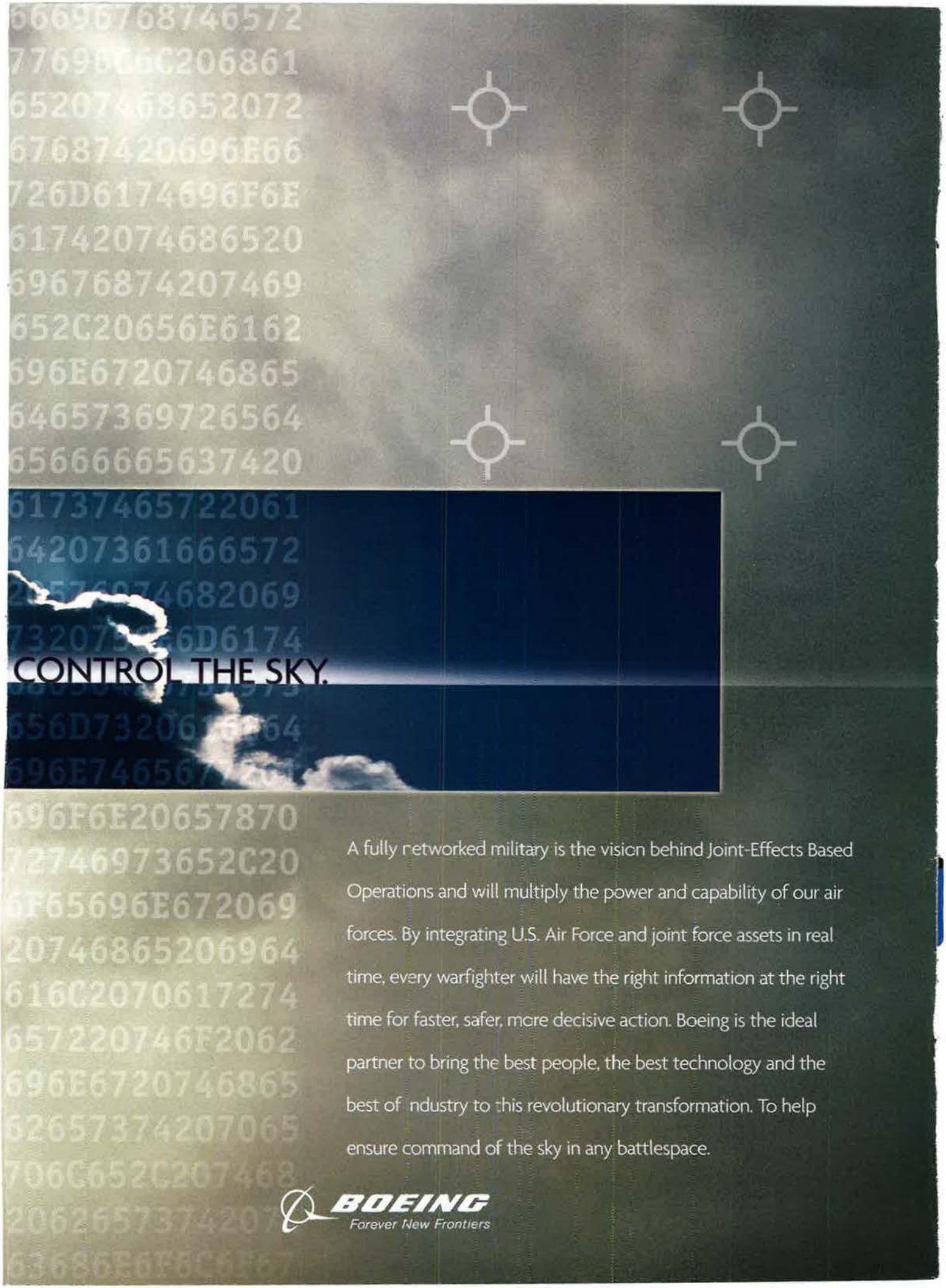
May 2005/$6

AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION

2005 USAF Almanac





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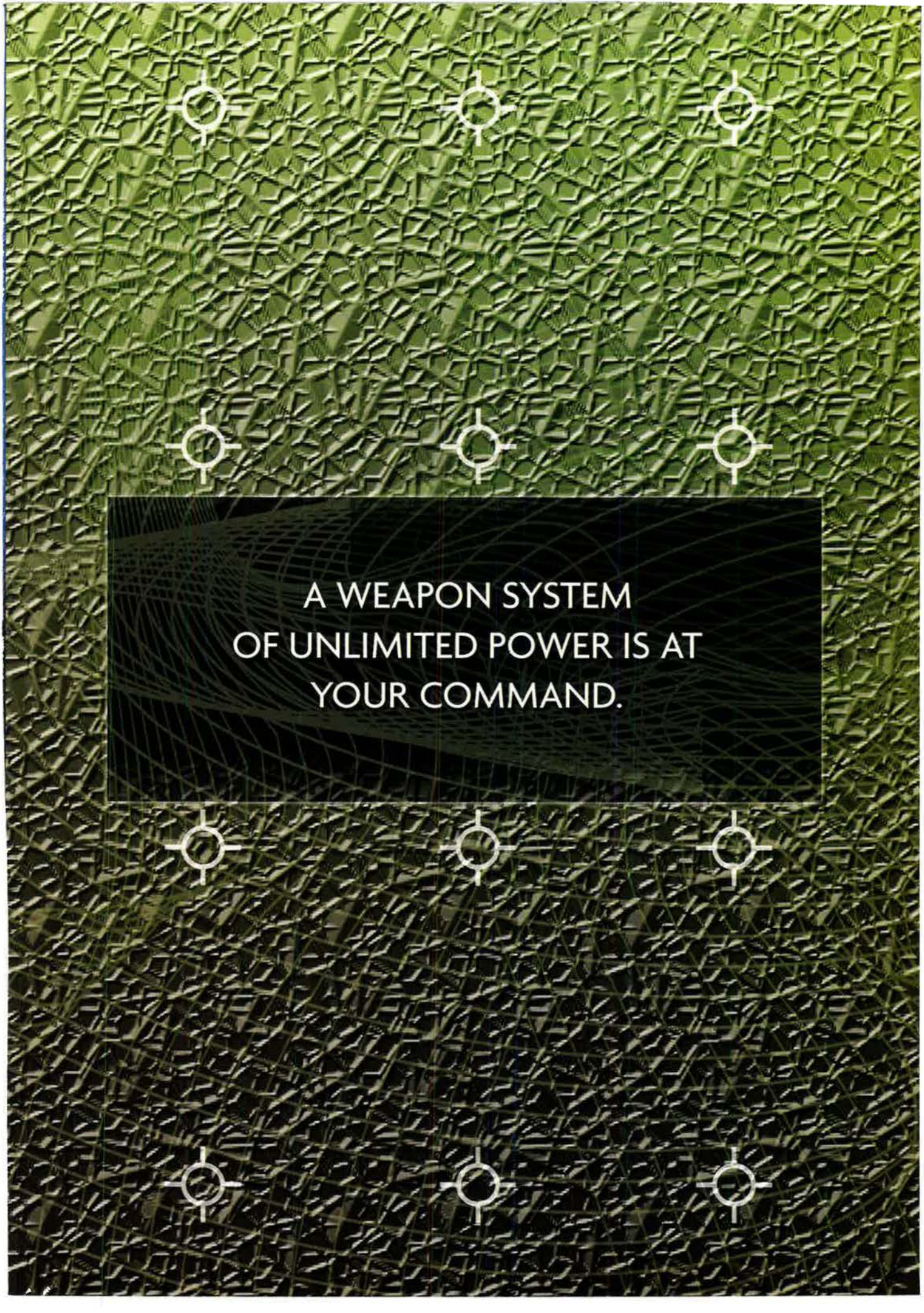
A WEAPON SYSTEM
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May 2005, Vol. 88, No. 5

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About the cover: This bald eagle was photographed in British Columbia by Tom and Pat Leeson. "USAF Almanac 2005" starts on p. 42.

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Editorial

By Robert S. Dudney, Editor in Chief

Fighters Under a Microscope

ARMY Lt. Gen. David Barno, the commander of coalition forces in Afghanistan, had the task of covering that huge country with just 18,000 troops. It was possible to do so, he observed, because "airpower from all the services ... have given ground forces ... the ability to operate in smaller units and respond quicker, with more accurate weaponry, than at any other point in history."

Over the last 15 years, many have come to regard airpower as the key to victory, in war zones ranging from the Gulf to the Balkans, from Afghanistan to Iraq. Fighter forces, in particular, have proved to be effective, destroying defended targets, supporting fast-moving land forces, and dominating the skies.

Yet serious questions keep cropping up. Is the size of the tactical fighter fleet about right or is it "excessive"? The USAF fighter force has fallen from 37 to 20 wings. Navy and Marine Corps aviation arms have shrunk, too. For all that, DOD still hankers to squeeze tactical forces.

Top Pentagon leaders claim that the armed services invest too much in fighters. They see air dominance as one area in which the US has "excessive overmatch." The new National Defense Strategy, released March 1, suggests cutting some of the "overmatch" so as to better fund new capabilities and expand ground forces.

According to *Inside the Navy*, Deputy Defense Secretary-designate Gordon R. England recently told reporters that he sees great potential in "integrating" Air Force, Navy, Marine Corps, and Army aviation. England left no doubt about the basic objective: "If you can gain efficiencies in [tactical forces]," he said, "what else can you do with the money?"

The integration concept seems to presuppose a contraction of tactical air. Indeed, we have seen its precursor. England, as Navy Secretary, presided over the recent integration of Navy and Marine Corps aviation arms. That move slashed $35 billion and 500 fighters from their plans.

Any such move now could pit the Air Force, the Navy/Marine team, and, to a degree, the Army against each other, conceivably igniting a roles and missions dustup.

The last such tussle came in the mid-1990s. It was sparked by Sen. Sam Nunn (D-Ga.), the chairman of the Senate Armed Services Committee, who lamented, among other things, that America's was "the only military in the world with four air forces." A blue-ribbon Commission on Roles and Missions, or CORM, spent more than a year pondering the matter.

The integration concept seems to presuppose a contraction of tactical air.

We are skeptical of the integration idea, and believe all signs are that DOD should think, and think again, before going down the road toward contraction of tactical air. Indeed, that 1994-95 roles and missions review provides good cause for wariness.

First, the supposed "problem" proved to be largely illusory. CORM in 1995 reported, "Inefficiencies attributed to the so-called 'four air forces' [were] mostly in the infrastructure, not on the battlefield."

Second, CORM concluded that a little redundancy isn't a bad thing, because forces can turn out to be valuable in unexpected ways. A recent case in point: the pivotal role played by naval air in the first weeks of war in Afghanistan—a remote, landlocked nation far outside the Navy's usual mission focus.

Third, overlap fosters interservice competition, often resulting in better systems or concepts of operations, whether they concern close air support, long-range strike, or something else. CORM Chairman John White called for a balance between the "high value" of competition and efficiency measures.

We don't believe aviation integration is inevitable, but, if it comes, it should proceed on a sensible course. "Perhaps," suggested one air officer, "it's time to [consider] the idea of putting the four separate 'air forces' in DOD into the one and only US Air Force."

The Air Force does not now nor has it ever claimed a right to monopolize military aviation. The other services have modern and powerful capabilities—rightfully so. As the CORM pointed out a decade ago, they usually complement, rather than conflict with, those of the Air Force.

Even so, there are sound reasons to make the Air Force the "keeper" of the tactical aviation art. The air arms of the other services are limited; their primary purpose is to perform missions tied directly to their basic landpower, seapower, or amphibious roles.

Marine aircraft, for example, historically have tended to stick close to USMC ground units. Naval air has typically faced range and payload limitations.

Great airpower advances of recent decades—stealth, precision, supercruise, innovative operational concepts—tended to emerge from the work of professionals for whom airpower is a paramount concern rather than an adjunct to the main event.

Military aviation, always dynamic, has been particularly so during the past decade. Maybe those changes have been so far-reaching as to justify a major reshaping of tactical air.

Yet Pentagon officials should be cautious before tampering too much with the current size, structure, and working arrangements of the services' tactical air forces. They would do well to heed the admonition of Gen. Gregory S. Martin, who has commanded US Air Forces in Europe and Air Force Materiel Command and who recently warned:

"Nothing works without air and space dominance. Nothing. We don't want to assume that we will always have it. We want to always understand what it takes to get it, and we want to make sure we are building the systems that will give it to us." ■

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Letters

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Regarding Airpower ...

I was struck by the clarity and focus of your editorial. *[See "Airpower Fiction and Fact," April, p. 2.]*

The United States Air Force is the only service to develop, maintain, modernize, and hold in ready status capabilities that can be brought to bear rapidly and against any leader who might threaten US interests across the globe. USAF capabilities could destroy that which a prospective opponent holds dear—or that which enables the enemy actor. The fact that we Americans can focus on non-strategic threats posed by terrorists is a luxury made possible by our nation's Air Force. It troubles me to hear American leaders, military and otherwise, complain about being too busy in Iraq and Afghanistan to worry about North Korea, for example. There are other ways to deal with such troubles than trying to out-infantry them.

Consider the outcome, had Gen. Tommy Franks had the wisdom to slow the "race to Baghdad," requiring the ground forces to consolidate their gains while continuing to deplete the Iraqi capabilities with air and space power. Instead we too early harnessed our air and space power to the vision of a land force commander and missed the opportunity of a truly strategic victory. Then the ground forces that have been warned since QDR 97 to prepare for "post-conflict operations" complained that they were fighting an enemy that they had not trained for.

Now, in QDR 05, we find the major issues are the "size of the Army" and "air dominance," with air dominance often described in terms of "over-matching capabilities" excess to needs. While it is true that our Air Force works to ensure air dominance—because it enables all other operations—the term does not convey the extent to which modern air and space capabilities hold all significant surface targets at risk. Hard-won improvements in range, speed, precision, and lethality—coupled with reductions in vulnerability of air-breathing platforms through stealth and supercruise—combine to widen the utility gap between air and space capabilities and those military capabilities whose very characteristics tether them to the Earth's surface. If we trade off our extraordinary advantages in order to populate the land forces, we will have done them the greatest disservice.

At the same time, I agree with General Shinseki—we needed more troops.

Maj. Gen. Charles D. Link,
USAF (Ret.)
Vienna, Va.

An Untenable Position?

Your March editorial *["Airpower and Optical Illusions," p. 2]* quotes Army Col. Harry Summers decrying "the fanciful notion that a war can be won quickly and decisively by the use of airpower alone." For 14 years you have bristled at suggestions that airpower alone doesn't work. It is not logical to read such suggestions as discounting airpower, unless you believe that airpower can win wars alone. It is good that you stop short of this untenable position, because the bulleted examples of what airpower has accomplished do not support it.

You correctly point out that 42 days of bombing destroyed much of Iraq's infrastructure and many tanks. It is not correct that "land forces, coming in at the end, pushed Iraq's battered units out of Kuwait." Land forces fought and destroyed the unbattered Iraqi tanks that stood their ground against attacks by air and land alike.

It is also correct that no land forces were deployed to threaten, let alone engage, Serbian forces in Kosovo. The Serbian forces that survived 78 days of bombing withdrew from Kosovo after completing their mission.

We are missing the bigger point. We could only declare victory in the Gulf War and in Kosovo by redefining the mission after the fact. Both military missions were stated by the Commander in Chief. President Bush said we had to take out Saddam. President Clinton said we had to stop ethnic cleansing. We did neither.

Both air and land forces deserve credit for their respective accomplishments. Neither can win a war alone. It is pointless to bicker over the credit for real victories.

Maj. James McLoughlin,
US Army Reserve
Boston

Networked War

As the chief of the USAF Link 16 Network Design Facility, I found your article on network-centric warfare (NCW) of keen interest. *[See "The Network Way of War," March, p. 26.]* My office is responsible for all USAF Link 16 network designs and subsequent initialization files for each USAF platform that employs Link 16.

The statement concerning the power and bandwidth of Link 16 being unable to support imagery is incorrect. Link 16 does support imagery. We currently employ a still imagery capability in our operational networks and are advancing this capability aggressively. Granted, this still image is not nearly as robust as streaming video, but the imagery capability is available on Link 16 nonetheless.

As far as bandwidth and capacity are concerned, I've personally briefed members of the Scientific Advisory Board to provide them data on throughput and capacity available on Link 16. New technologies and a dramatic increase in users have stressed Link 16 enough to concern our leadership. Based on all the factors involved, I believe it is safe to say that Link 16 will be the tactical execution node of our NCW construct for at least 15 to 20 years, maybe beyond that should budgetary constraints limit the fielding of capabilities that help attain a true operational Global Information Grid.

I salute our senior leadership for their visionary concept of how USAF

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should promulgate the huge amounts of data it takes to conduct modern warfare. However, we've a long way to go in our realization of true NCW.

SMSgt. Nicholas E. Kropp
Langley AFB, Va.

Air Commandos

I found the article on air commandos of extreme interest since I was in the 606th Air Commando Squadron, 56th Air Commando Wing, in 1966-67. *[See "The Air Commandos," March, p. 32.]* This is the first article I remember seeing about this elite group. I have no idea if what we did was ever declassified, so I would just as soon not say, but we worked for Col. Harry Aderholt. He was quite a guy—a type of Patton.

CMSgt. Harry Brash,
USAF (Ret.)
Montgomery, Ala.

Rolling Thunder

Thank you for the fine review of the bombing policy of the Vietnam War. *[See "Rolling Thunder," March, p. 58.]* Finally, the truth is told about how messed up our leadership was.

I was just a sailor on Yankee Station in 1967 aboard USS *Hancock* (CVA-19) with VF-51. We flew F-8 Crusaders used for CAP and bombers for strikes in the north. I remember that someone had posted two pictures of the same beach on a bulletin board. One of the pictures showed an empty beach with nothing to show that there were people anywhere near. The second showed the same beach on one of the "stand-down" days. There were two or three ships and a bunch of sampans going between the ships and the shore. On the shore were 20 or 30 trucks lined up to be loaded. We couldn't touch them because it was a stand-down day.

That was the day that I began to realize that we were not in the war to win. In all the World War II history that I had read, there were no times that enemy targets were left alone to complete their missions. They were destroyed as soon as they were spotted. In 1967, we had to leave the ships and trucks alone because it wasn't our day to shoot. Hopefully, our military will never be lead by such incompetent people again.

Al Joyce
Apple Valley, Minn.

Using one of today's expressions, your article was "right on." The tight control from Washington caused many more losses than would have happened had the commanders in the theatre had more flexibility in dealing with the war. The men who fought this war did it under extremely trying circumstances. It has been stated many times by the American press that the bombing of North Vietnam had no effect on the war or on bringing the North Vietnamese to the peace table. That's right, because of the dim-witted way the war was fought. Had Johnson and McNamara let the guys who were trained to run a war do so, it would have been a whole different situation.

The air war against North Vietnam is a textbook example of how it should not be done. The Thai Nguyen steel mill is a typical example. We went back there day after day. The North Vietnamese had moved tons of anti-aircraft guns there. If the Air Force had been given the choice, it would have been a terrific opportunity to hit another lucrative target in the area.

The disgraceful way the Vietnam air war was fought has left countless scars on many brave men who fought it. From reading about and listening to what Robert McNamara has said, I don't believe he still understands what was wrong with the way the air war was fought.

Col. Howard C. Johnson,
USAF (Ret.)
Palm Beach Gardens, Fla.

At least one important piece of information concerning the Rolling Thunder operation was not included. What is not widely known is that, as it was originally developed, it was a sensible and viable air attack plan for the use of the resources available at the time, and its impact on the North Vietnamese war-making capacity would have been substantial, if not decisive. The Rolling Thunder plan, as it was originally approved, was most definitely "built to succeed." Admittedly, however, that was before it was hijacked and prostituted to the point where it was totally unrecognizable as a sensible military concept.

The hijacking of Rolling Thunder took place at a meeting in Saigon which occurred immediately after the Pleiku incident and which was convened for the express purpose of requesting clearance from the President for initiation of the Rolling Thunder plan. It had already been approved all the way up and down the line. This meeting was attended by Ambassador Maxwell Taylor, his deputy, Alexis Johnson, General Westmoreland, General Thieu, the Vietnamese Army Chief of Staff, General Ky, the Vietnamese Air Force Chief of Staff, plus representatives from the various other US and Vietnamese gov-

ernment agencies which had some degree of input to this critical discussion. Also included were McGeorge Bundy, President Johnson's national security advisor, and John McNaughton, who sat at Mr. McNamara's right hand in DOD. Both of these gentlemen were visiting Vietnam at the time and were, of course, invited to attend the meeting.

The Rolling Thunder operation, as originally written, included many, if not all, of the high-value military targets at the heart of the North Vietnamese war-making capability, and these targets were scheduled to be hit during the early phases of the air campaign. The plan had already been approved by CINCPAC, the Joint Chiefs of Staff, and in fact, also by the President. It had been periodically updated with the latest target information, force availability, and other pertinent items. Thousands of man-hours had been invested in the preparation, coordination, and updating. Theoretically, all that remained to be done was for General Westmoreland and Ambassador Taylor to recommend to the President that Rolling Thunder operations should commence.

The meeting got off to a relatively good start and there appeared to be a fairly strong consensus among the attendees that a recommendation to begin Rolling Thunder immediately should be forwarded to President Johnson. There was also a general feeling of optimism that this request would be approved. That was prior to the time that Mr. Bundy and Mr. McNaughton injected themselves into the process and essentially took over the meeting. They proceeded to map out a scheme which bore not the slightest resemblance to the Rolling Thunder plan under discussion. What they were propounding was what eventually turned out to be the philosophy of the US government for conducting bombing of North Vietnam during much of the remainder of the war.

The concept of "measured response" was unveiled to a shocked and disbelieving audience, totally unprepared for this sudden turn of events. Instead of the sharp, heavy strikes against targets of high military value, Bundy and McNaughton were outlining a cute little game of cat-and-mouse. It would commence with light raids by the Vietnamese Air Force against relatively minor targets. Theoretically, this would send a message to the other side that we did not approve of what the VC/NVA forces had done to our troops and facilities at Pleiku. Then we would wait to see whether the message had been received and properly digested. If the enemy took another shot at us, then we would up the ante, but ever so delicately, adding a few more planes, penetrating a little deeper into North Vietnam, or perhaps increasing the armament load in some degree. We would then be sending another message to the other side that would then hopefully react in a predictable and civilized manner.

The Washington "field marshals" kept passing the conversational ball back and forth to each other, each feeding off the other's enthusiasm. Ambassador Taylor and General Westmoreland did their very best to get the meeting back on track, but were unsuccessful. Others did the same, with the same results. After their remarkable performance, the two Washington representatives requested to be led to a secure phone so they could pass all this directly to the President for his approval. At the same time that Mr. Bundy and Mr. McNaughton were selling their idea to the President, the Ambassador was on another secure phone begging General Wheeler, the JCS Chairman, to intervene in this crisis. It was all in vain. When everyone returned to the room, the deed was done. President Johnson had approved the Bundy-McNaughton air plan. There was little left of the original Rolling Thunder plan.

It took almost two years to work the air campaign up from the kinds of targets which predominated in the areas just north of the DMZ to substantive military objectives in the northern areas of the country. It took that long to work our way up to targets whose damage or destruction, had we been able to attack them in early 1965, would have had a substantial, if not critical, impact on the enemy's ability to wage war in the south. And while we were wasting our time, effort, money, and, most important, American lives in this misguided effort, the North Vietnamese were busily learning the many arts that were to come in so handy for them years later when our bombing sorties finally reached the more important targets.

Unfortunately, as Mr. Correll's article has shown, Rolling Thunder has acquired a universally bad name. But in any discussion of that program, it is only fair to note that before it received the Bundy-McNaughton treatment, the Rolling Thunder program was a vastly different operation. Had the air campaign been executed as originally planned, it would have produced substantially different results.

Brig. Gen. Alan Edmunds,
USAF (Ret.)
Spokane, Wash.

The Administration completely ignored the age-old advice of the master tactician, Sun Tsu, who advised in effect: The military commander can be successful if he has the capability and the sovereign does not interfere. The war in Vietnam was doomed to failure because of President Lyndon Johnson's micromanaging of every aspect of the action.

As an ex-Air Force jet fighter pilot, I seethed at the egotistical atitude of Johnson as he became so stubbornly involved in the day-to-day activities of the armed forces. As a civilian completely ignorant of war strategy, he doomed many of our best airmen and soldiers to death or capture because of his pathetic insistence on making all the decisions. Not permitting the bombing of the ports to interdict the supply routes forced our soldiers to try to stop the flow by attacking individuals in the horde of coolies carrying the supplies on their backs.

President Johnson's inept management of a war should serve as warning to all of our executives to let the military handle the details to achieve the goals established by the Administration.

Lt. Col. Robert J. Eichenberg,
USAF (Ret.)
Newport Beach, Calif.

"Rolling Thunder" was interesting, and I enjoyed reading it since I was a participant. As a Wild Weasel, I differ with Mr. Correll on the designation of the F-105 models. I was trained on the F-105F at Nellis AFB, Nev., in July-August 1968. I was sent to Kwang-Ju AB, South Korea, en route to Tahkli AB, Thailand. We flew the F-105F there in Korea and Tahkli, as did all the other units.

My point is this: The G model F-105 Wild Weasel was not the first version of that capability in the inventory. The F-105F was just that, an "F" that had some modifications to allow it to detect, find, and destroy the surface-to-air missiles. The G was an F on which there were permanently mounted electronic jammers mounted in "bump-outs" on the side of the airplane below the wings. The G performed the Wild Weasel mission with more weapon capability because the jammer pods were no longer carried on the wing stores station.

Lt. Col. James E. Bradley,
USAF (Ret.)
Westmoreland, Kan.

I would like to make two additions to John Correll's very informative article. It stated that "by war's end, more than half the F-105 force was gone." This is only true for the number of F-105D and F aircraft built (753 equal 52.7 percent). The F-105 force consisted of a total of 833 aircraft, meaning 47.7 percent of it was lost in Southeast Asia—still, an incredible number! By the way, 285 F-105s were lost over North Vietnam, versus 188 F-4s.

Also, the original Weasels were F-100Fs, which subsequently were replaced by two-seat F-105Gs in the Weasel role. In itself this is true, but the G was not introduced in theater until October 1970. Wild Weasel I F-100Fs were replaced by Wild Weasel III F-105Fs, starting in late May 1966.

Theo van Geffen
Utrecht, the Netherlands

Creech's Way

"Creech" *[March, p. 70]* brought back some wonderful memories. I was fortunate enough to serve at TAC in the combat analysis shop from 1981 to 1984. Our tasking was to develop and build briefings and presentations for General Creech, and I often delivered them. We spent many hours in his conference room listening to his ideas and visions while getting guidance as to how he wanted something constructed. It was a fascinating education for a junior officer, as Creech was the master at convincing skeptics that his vision for TAC was the correct path to take.

Lt. Col. Stephen. C. Mish,
USAF (Ret.)
Corinth, Tex.

After General Creech died, I felt that the Air Force and the nation had lost a giant in the world of airpower. I still do. Walter Boyne's piece captures the true essence of the man. I learned that Creech was flying combat missions in Vietnam at the same time I led an explosive ordnance disposal (EOD) team in Nha Trang. After Vietnam, I had an assignment to Spain and as a young captain in the 401st Tactical Fighter Wing, as the Munitions Maintenance Squadron commander, I served under wing commander, Col. Bill Creech.

In wartime, the F-4E fighter wing was assigned to conduct air operations from bases at Incirlik, Turkey, and Aviano, Italy. As we prepared for an impending operational readiness inspection (ORI), Colonel Creech orchestrated assemblies in the base theater for all wing personnel. He opened his remarks with a chilling documentary of Russian military forces performing simulated assault operations, dropping paratroopers and cargo on

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an unsuspecting country. At the end of his inspiring speech, he left the audience with a final thought: "In the unlikely possibility that the wing fails the forthcoming ORI, everyone on temporary duty to Turkey and Aviano will stay there until the retest is conducted 60 days later."

In the darkened theater a loud gasp reverberated from all the maintenance troops, and I could hear them muttering amongst themselves as they filed out. But in the days to come I recognized a determined, positive attitude in my weapons personnel.

As Boyne points out in his piece, "In its very next ORI, the wing achieved USAFE's highest score on record." Some may consider what Creech did in the theater to motivate the troops prior to an ORI to be a use of fear. I know it to be a bold stroke of motivational leadership.

Lt. Col. Karl R. Bossi,
USAF (Ret.)
Venice, Fla.

The C.B.I. Theater

Your photo coverage of the CBI theatre of operations was superb. *[See "C.B.I.—China, Burma, India," March, p. 48.]* It was the best I have ever seen of that far-off corner of World War II activity and brought back almost forgotten memories of China and an early association with the Flying Tigers.

Sixty years ago, I was an Army buck sergeant Signal Corps radar maintenance man attached to the Army Air Corps in the CBI. Arriving in Calcutta by ship, we waited there for airlift over the hump to Kunming, China. When space finally was available, we departed in a C-47 from an airfield outside Calcutta. It was the first time I had ever set foot in an aircraft. I have since often reflected on taking my first plane ride in a gooney bird over the world's highest mountains. Thank you for a most enjoyable and nostalgic look back.

Col. Everett G. Hopson,
USAF (Ret.)
Fairfax, Va.

Your focus on the C-46s, C-47s, and the converted B-24s in flying the "Hump" to support the air units in China did a fine job of pointing out the conditions that existed during that period. Fourteenth Air Force and the Chinese Air Force would have had an impossible task without this support. This area was, as you point out, "literally at the far end of the world for US troops" and the "forgotten" one.

The article pointed out many "firsts," including the first B-29 combat missions flown from India to targets in Indonesia and Thailand. Each of the four B-29 groups headquartered at four fields in India also each had an advanced field with a rock runway in China. The initial B-29 mission was flown from the four fields in India on June 5, 1944, to Bangkok, Thailand; the next three were flown from the fields in China. I was a crew member of one of the original B-29s of the four groups of XX Bomber Command, 58th Wing, Twentieth Air Force. The supply problem hit the four groups hard, as each group was required to fly "Hump trips" between combat missions to build up a supply of fuel, ammo, parts, and other items in China.

The 58th Wing combat planes by necessity had to be used to fly supply missions to the lower island of Japan, Manchuria, Formosa, and occupied cities of China. During the seven months prior to the 73rd Wing being able to be located on Saipan, the 58th Wing from bases in China flew 21 missions, plus a high number of "Hump trips." With the newness of the 3350 engines and the supply need, all B-29s experienced a great deal of maintenance and replacement. Getting needed supplies just to India was bad enough, but adding the additional need for China missions increased the problem.

I just thought those members of the XX Bomber Command, 58th Wing, and the old Hellbirds of the 462nd Group were being shortchanged by not being saluted for their work of Hump flying to supply our needs for missions under trying circumstances.

W. Hanes Lancaster Jr.
Johnson City, Tenn.

I believe there is an error in the CBI photo article. I believe the rifle is a 1941 Johnson semi-automatic rifle. US Marine parachutists became interested in the design and it was adopted for use in the Solomon Islands Campaign.

SMSgt. John J. Motil,
USAF (Ret.)
Huber Heights, Ohio

Your CBI article lacked two things: C-87 and C-109. My CBI base in India was Misamari. Just 14 miles southeast from us was Tezpur—a C-87 base. Farther east, 90 miles, was Jorhat—another C-87 base. I flew C-47s up to Dec. 30, 1943, then on Dec. 31, we converted to C-46s.

Lt. Col. Milton Y. Veynar,
USAF (Ret.)
Annandale, Va.

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Pathfinders and Gliders

I enjoyed the article *["From Air to Ground," March, p. 76]* by Bruce Callander. It brought back a lot of memories—both good and bad.

I graduated as a staff sergeant pilot from Kelly Field, Tex., in 1942. The entire class was assigned to the newly formed Troop Carrier Command. We left Kelly Field for Kellogg Field, Mich., for training in transport aircraft. We were instructed by newly commissioned airline pilots in commercial airliner DC-3s. This was pretty fancy for GI pilots being trained by professional pilots.

We moved on to Selfridge Field, Mich., to train in the C-47 with Army Air Force instructors and were assigned to the 60th Troop Carrier Squadron, 63rd Troop Carrier Group. Next came maneuvers in Texas and on to Victorville, Calif., to start a CG-4 glider program for the glider pilots who were training there. My squadron got a real break when we were sent to Kansas City, Mo., where we were set up in the Hotel Phillips. Our assignment was to ferry Commonwealth Aircraft CG-3 gliders from Kansas City to Lubbock Air Field, Tex., and other bases.

We returned to Victorville and in December 1942, I found that I had been appointed flight officer. In May 1943, I received my overseas orders to North Africa to join the 316th TCG. The group participated in the invasion of Sicily, Italy, Normandy invasion on D-Day, and further missions to Holland and Germany.

Col. Allen A. Beaumont,
USAF (Ret.)
Sun City Center, Fla.

Not the First, Not Quite

In reference to the letter *["Not the First?" p. 9]* by Roy P. Gibbens in the April issue, the story of Capt. Howard Ellsworth absconding with a German Me-262 jet fighter in December 1944 is a hoax. Captain Ellsworth was in fact a P-38 pilot in the 474th Fighter Group; he was not shot down on Dec. 21, 1944; and there was no such German airfield as Sohie Bslad. He couldn't possibly have absconded with an Me-262 jet fighter, a prize any AAF Air Technical Intelligence team would have given anything to lay their hands on.

The first intact Me-262 was flown into Frankfurt airport on March 31, 1945, by defecting German test pilot Hans Fay. Subsequently Col. Harold Watson, under Operation Lusty, had nine additional reconditioned Me-262s flown out of Lager Lechfeld on June 10, 1945, which, in July 1945, were transported to the US on the British escort carrier HMS *Reaper*. All of the American pilots, known as Watson's Whizzers, who flew the German jets from Lechfeld to Melun, near Paris, then to Cherbourg-Querqueville, were former P-47 pilots from the disbanded 1st Tactical Air Force (Provisional).

The first American pilot to fly a single seat Me-262 remains 1st Lt. Robert Strobell, who, by the way, did a fantastic job leading a disparate group of German and American pilots and German jet mechanics to recover Germany's most prized jet fighter.

Col. Wolfgang W.E. Samuel,
USAF (Ret.)
Fairfax Station, Va.

Early Vietnam Warriors

I have never had occasion to draft a letter to the editor of your very excellent magazine, but, in this case, I find it necessary. My concern is your feature article entitled "The Vietnam War Almanac" *[September 2004]* by John T. Correll. I was a combat fighter pilot [in Vietnam] from November 1963 through September 1964. I flew 166 combat missions while flying a D model AT-28.

This article indicated that the war began "in earnest" in 1965. I guess I must have fought in a *different* Vietnam War. The 1st Air Commando Squadron's T-28 section lost a total of 36 pilots during *that* war. Did Mr. Correll feel like we were not involved in combat operations in 1963-64?

Under your "Notable Air Operations" on p. 52, you mention the Farm Gate program [1961-63]. Who do you think flew the actual combat missions to support South Vietnam's forces? We, the Air Force fighter pilots, did. And, we had South Vietnamese [personnel] in the backseats, just in case we got shot down and killed. [Moreover,] I personally escorted 66 Ranch Hand combat missions while flying AT-28s.

We had many gallant and heroic American combat pilots flying in both B-26s and AT-28s in South Vietnam. Many of these pilots were awarded medals for heroism while involved in extensive combat operations—from the Air Force Cross (Capt. Bernie Lukasic, AT-28 pilot) to Silver Stars, Distinguished Flying Crosses, and Air Medals. I am personally proud to have been an Air Force fighter pilot who represented my country and served with these guys in 1963 and 1964.

For the American families who lost loved ones in South Vietnam from 1962 on—and whose names are eminently displayed in the center section of the Vietnam Wall in our nation's capital—we owe lasting gratitude.

Lt. Col. W. Dean Hunter,
USAF (Ret.)
Palm Desert, Calif.

■ *We agree unreservedly with Colonel Hunter's last statement. For the record, there is no question that Farm Gate crews, air commandos, and others flew combat missions and took losses in Vietnam before the start of Rolling Thunder in 1965. The almanac did not ignore this period; it included the number of Air Force and other military personnel in South Vietnam and Thailand from 1960 onward, and its listing of "Notable Air Operations" begins with Farm Gate. When we said the Vietnam War began "in earnest" with Rolling Thunder, the term "in earnest" was meant to reflect* ***not*** *the degree of individual effort and sacrifice but the relative numbers—of aircraft, people, and sorties—intensity, stated national policy, and the nature of the commitment.*—THE EDITORS

No Substitute

You present a good strong case for the F/A-22 fighter program. *[See "Editorial: The Fighter Force You Have," February, p. 2.]* There is no substitute for airpower. Anything that reduces that politically or financially is a mistake. It's been proved day after day in Iraq and other theaters of operations now and in the past.

I am proud and appreciative of the Air Force's part in Iraq and elsewhere. Working closely with the ground forces is an unbeatable combination.

I support the efforts of those who do not want to waste funds or unnecessary expenditures, but to close their eyes when it suits personal and/or political agendas is not acceptable. Projecting airpower is expensive, but loss of life of service personnel who make the supreme effort and sacrifice is a greater expense and unacceptable.

The lack of dialogue by Senator McCain in the case of the tanker acquisition shows only poor judgment on his part. Mr. Sambur clearly points out the facts of the matter. It is unfortunate that the Senator chooses to look the other way.

I can only hope the Air Force continues to improve its control of the skies both here and abroad.

Donald S. Buck
Landrum, S.C.

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Washington Watch

By John A. Tirpak, Executive Editor

Old Aircraft Problems Need Attention; Unfunded List of $3 Billion; Teets Voices Disappointments ....

Jumper Pushes Recapitalization

Replenishing the Air Force's aged fleets of aircraft is an urgent need—and one which the service, the Defense Department, and Congress must move quickly to address, declares Gen. John P. Jumper, the Air Force Chief of Staff.

"Recapitalization is our No. 1 concern right now," Jumper said in a late March interview with *Air Force* Magazine.

He emphasized that the last-minute budget cuts proposed by the Administration would worsen the problem of aging aircraft, bringing onerous expenses in maintaining and repairing them. Even if the service's planned buys of new aircraft had been left untouched, the average age of Air Force aircraft would have grown from today's 23 years to 27 years before the new aircraft were delivered.

The Chief maintained that the situation calls for nothing less than a thorough review of how the military services replenish combat and combat-support aircraft—systems used no matter what the conflict. Among those systems, Jumper said, were transports, aerial tankers, and intelligence-surveillance-reconnaissance (ISR) aircraft.

The Pentagon leadership is focused on "transformation," which Jumper described as "this ... notion that we need to stop what we're doing now and do something different." This is indeed being done "in some cases," he said, adding, "The fact of the matter is, some of the things we do—like transportation and mobility and ISR—are going to continue in one form or another." There continues to be high demand for "the older platforms to do this job," he said.

The US should develop a formula that routinely identifies when it would be more economical to replace an aircraft than to continue propping it up with repairs and spare parts. Flying hours and airframe fatigue alone have proved not to be sufficient indicators that aircraft are beyond economical operations, Jumper asserted.

AP photo by J. Scott Applewhite

Hunter agrees it's time to fix old aircraft problem.

AP photo by Gerald Herbert

Jumper is worried about aircraft recapitalization.

"We're getting surprised by these age issues that are creeping up on us because we have never dealt with them before," Jumper said. Among the issues the Air Force has tagged as acute aging aircraft problems are corrosion, avionics obsolescence, and the disappearance of suppliers. The latter problem has obliged depots to commit a great deal of money, manpower, and time to the fabrication of parts that have long since gone out of production.

He said the shift by USAF depots from their intended mission of maintenance to "remanufacturing of parts" will mean greater and greater cost of ownership for aircraft and decreasing aircraft availability as the airplanes must spend longer and longer periods in depot.

Jumper would like to see Congress hold hearings about preserving aerospace industrial capability and not focus solely on shipbuilding. Maintaining a healthy aerospace defense industrial base is also essential to the nation's military strength, he said.

Moreover, Jumper thinks a new model of aircraft acquisition is needed to address escalation in the cost of aircraft. He noted that C-130s purchased in 1964 cost about $1.5 million a copy. Adjusted for inflation, that cost is $11.8 million today. Yet, "compare that with what we're paying for a C-130J, which is somewhere [around] $65 million apiece," he said.

Jumper acknowledged that increasing cost of labor and greater capabilities have added to rising costs, but he said a major culprit is buying airplanes in small, inefficient lots.

The Pentagon has some well-meaning people trying to address the aging equipment issue, but the approach has been to "work the problem by bits and pieces," Jumper reported. What is needed, he maintained, is to call together all interested parties and "deal with this as a holistic problem."

He has discussed the issue with House Armed Services Committee Chairman Rep. Duncan Hunter (R-Ca-

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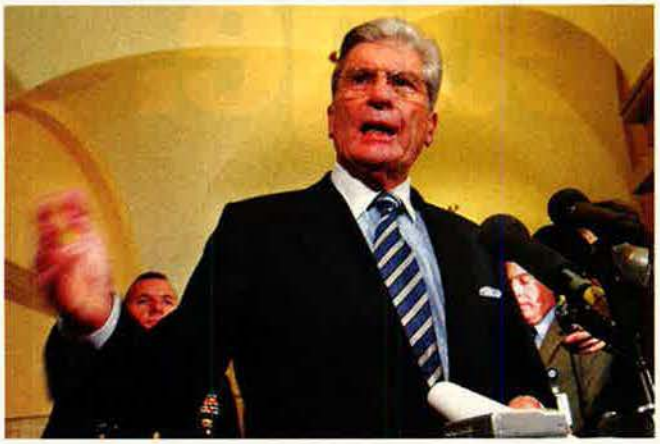
lif.) and said there is interest among the committee staffs on Capitol Hill to find a solution.

Hunter "agrees that something needs to be done," said Jumper, who has also written to Senate Armed Services Committee Chairman John W. Warner (R-Va.) to take up the issue.

"It's got to be a cooperative effort" between Congress, the military services, and the Administration, said Jumper. Urgently needed is "a good diagnosis" of why recapitalization is so expensive, followed by "a list of possible cures," he added.

AP photo by Dennis Cook



Warner will be a key player.

With the failure of the Air Force's attempt to address the tanker recapitalization problem through leasing, Jumper said he'd like Congress to say what alternative approaches it would consider.

"If what we've tried so far doesn't work, what would be acceptable?" Jumper asked.

The issue of aging aircraft has been prominent for at least the last 10 years, but it has not been dealt with by the Pentagon leadership in a definitive way. When asked what the Pentagon's response has been to the issues of aging aircraft, Jumper said, "I don't think there has been an answer."

Industry leaders are also unhappy with the system as it is, he said.

They are, in many cases, said Jumper, "aware and upset at the fact that we tend to pay a lot more for inefficiency." Multiyear buys might be one approach to get aircraft purchases down to more reasonable costs, and increased use of contractor maintenance of systems might defray some costs as well, according to Jumper. He maintains that there need to be more "tools" in the acquisition toolbox than are there now.

Without attention, said Jumper, the fear is that whole types of aircraft could suddenly be grounded for a fleetwide problem that may not be quickly fixed. That has the potential for leaving the US without a military option in some scenarios.

The Air Force has told lawmakers that it is "approaching [the] risk threshold" with regard to aging aircraft.

For instance, failure to replace the F-15 with sufficient numbers of F/A-22s means the Air Force will not be able to gain access to enemy airspace and will have no effective defense against cruise missiles.

Current ISR and command and control aircraft do not offer adequate global coverage and lack the bandwidth to keep up with modern battlefield communications.

For mobility aircraft—airlifters and tankers—the problems include what USAF calls the "vanishing vendors syndrome," deteriorating aircraft, and the fact that more and more people, parts, and money are needed to keep each aircraft working.

Charts prepared for Congress carried the bottom line comment that the force is "Stressed Now, Broken Tomorrow."

Unfunded List Comes to $3 Billion

The annual "unfunded priorities" list that the Air Force submitted to Congress in late February included 55 items collectively worth $3 billion.

There was no attempt to regain any of the combined $15 billion slashed from the F/A-22 and C-130J programs in the Fiscal 2006 defense budget proposal. Such a move would be considered an end run around Pentagon leadership that set the Defense Department and service toplines. USAF has promised to battle those cuts during the Quadrennial Defense Review.

The top dollar item on the unfunded priorities list was $854 million in military construction to recapitalize real property and to improve mission beddown facilities. Such requests frequently take a backseat to more pressing operational or programmatic accounts.

The list is presented in order of priority, which is not necessarily in order of dollar value. The milcon item, for example, was listed as "not prioritized."

The five items the Air Force considers most urgent, beyond its stated budget, are:

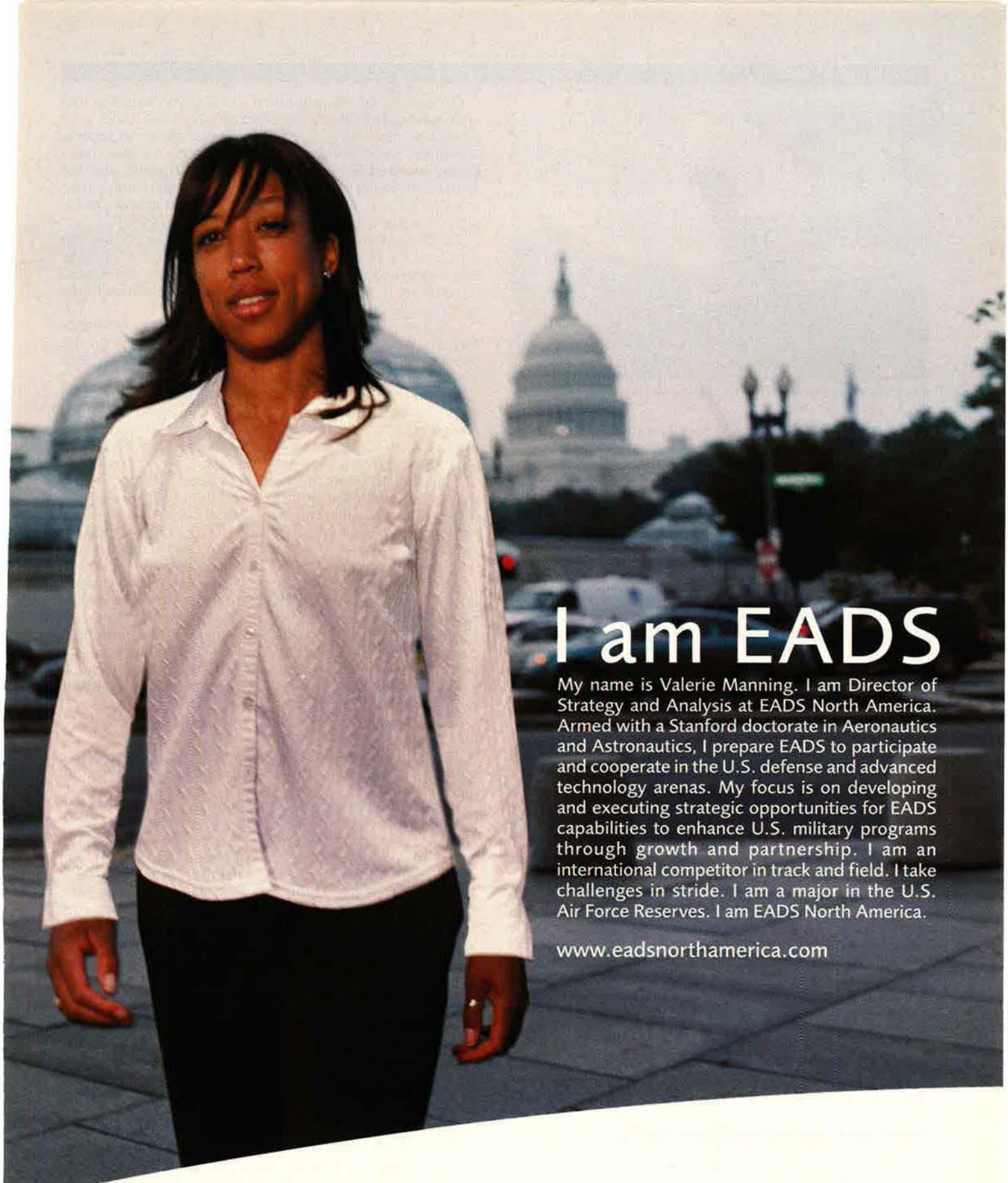
- 21 (of 100 required) advanced targeting pods for strike aircraft, at $41.9 million.
- New radar modes for Joint STARS aircraft, at $12.9 million.
- $37.7 million to buy items to fix C-130s now grounded due to cracks in their center wing boxes.
- $51.9 million worth of mobile approach control systems for aircraft operating in Iraq and Afghanistan.
- $97 million worth of defensive countermeasures for the C-17 transport to thwart surface-launched anti-aircraft missiles.

Other notable items in the list include $360 million to buy 28 additional MQ-1 armed Predator unmanned aircraft, along with supporting onboard equipment and handling gear, and $511 million to fix up airfields worldwide that have been "degraded" by age or by an aggressive operating tempo.

The 48th item on the list was $130 million to complete the purchase of two F-15E aircraft to be delivered in

USAF photo by SrA. Aaron D. Allmon II

Cracks grounded older C-130s, like this E model.



I am EADS

My name is Valerie Manning. I am Director of Strategy and Analysis at EADS North America. Armed with a Stanford doctorate in Aeronautics and Astronautics, I prepare EADS to participate and cooperate in the U.S. defense and advanced technology arenas. My focus is on developing and executing strategic opportunities for EADS capabilities to enhance U.S. military programs through growth and partnership. I am an international competitor in track and field. I take challenges in stride. I am a major in the U.S. Air Force Reserves. I am EADS North America.

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USAF photo

Congress pushes USAF to re-engine the E-8C.

Fiscal 2008. No. 49 was $13.5 million to re-engine Joint STARS aircraft.

Congress has said the Air Force is not moving fast enough to re-engine the Joint STARS aircraft, which suffer from poor reliability and don't meet international standards for noise and emissions control.

The service also made a general request (not prioritized) for $88.9 million to get USAF investment in science and technology up to the level of three percent real growth recommended in the Pentagon's Strategic Planning Guidance.

E-10 Postponed Five Years

As part of the Fiscal 2006 defense budget, DOD directed the Air Force to restructure the service's E-10A airborne battle management aircraft program, cutting it by more than $600 million over two years. Consequently, USAF announced in March that it would delay the start of the project until 2010.

The E-10 is one of USAF's emerging top priorities. The service expects it to be the successor to both the E-8 Joint STARS aircraft, which tracks the movement of ground objects, and the E-3 AWACS air battle controller. The new aircraft may also serve as the replacement for the RC-135 Rivet Joint signals intelligence aircraft.

Under a new timeline, USAF has delayed initial operational capability from 2015 to 2018.

According to Gen. John P. Jumper, opponents of the program believe that sensors on unmanned aircraft and in space, supported by analysts in reachback facilities in the US, can perform the E-10 mission at less cost. The Chief of Staff maintains that the E-10 is vital to preserve line-of-sight communications and command and control with combat aircraft over the battlefield. Jumper also has acknowledged that opponents may simply be waiting for him to retire, which should be this fall, to kill the program entirely.

The Air Force plans to use the five-year program delay to further explore the role of the E-10 in conjunction with new systems such as the Space Radar, which is also slated to observe anc track air and ground traffic.

Teets Sees More Headaches in Space

Current problems in military space programs will continue into the near future, said outgoing Undersecretary of the Air Force Peter B. Teets in March, because they were structured inadequately in the beginning.

He called that situation and the lack of a "breakthrough" propulsion system for cheaper, easier, and faster access to space the biggest disappointments of his tenure.

On the eve of his retirement, Teets, who was the first undersecretary to also bear responsibility as the Pentagon's executive for space, said he expects more turbulence ahead on some key space programs such as the Space Based Infrared System, known as SBIRS High, and the Advanced Extremely High Frequency communications satellite system. SBIRS High is intended to provide warning of a nuclear missile launch against the US.

Teets said the fundamental problem facing the Air Force on these and other programs stems from "improperly formed contracts." He added, "I think we can expect to continue to see a few surprises on that because these programs have long gestation periods."

Contractors put in lowball bids to secure the contracts and got away with it, according to Teets, because the government failed to have good cost-estimating processes in place to validate the bids.

He said the Air Force has taken big steps in restoring a "solid" cost-estimating capability. He does not think new programs will face the same problems as SBIRS High, which Teets called "a snake-bitten program" that has seen repeated big cost overruns.

"The SBIRS High program, if properly formed at the outset, and with the right work content in it and everything else, ... would probably have run out somewhere in the vicinity of the $10 billion point," Teets observed.

Instead, he said, "it was bid at four [billion dollars] and it's probably going to run out at 11 to 12 [billion dollars]."

He said it's difficult to cancel a program "when you are three ... or five billion dollars" into it—and even harder when the sunk cost is up to $8 billion, as is the case with SBIRS High now. Fortunately, he said, the Defense Support Program satellites that SBIRS High will replace are lasting longer than expected. There is also one available to replace any that fail. The Air Force has time to get the program working right, he said.

Nevertheless, SBIRS High will provide an essential capability.

"We are talking about the early warning system for the country," Teets pointed out. "You can't go blind" in that mission area.

Still, he said that he put discipline into the contracting program to avoid future SBIRS-like headaches. Teets said that if a contractor says a new design doesn't need to be tested before it's committed to hardware, "you don't believe it; you insist upon [it]." He believes there is a "healthier relationship" between the government and its space systems contractors than there has been for some time.

Teets added that he's "somewhat disappointed" that he has seen no new technology as revolutionary for spaceflight as the jet engine was for aviation. He is also leaving without a "solid roadmap" in place to advance US launch capability in the future.

He believes that a "hybrid" vehicle consisting of a disposable booster and a "fully reusable" spacecraft will be available by 2020, but the hoped-for single-stage-to-orbit capability is still well in the future.

The hybrid he described is able to take 40,000 pounds to low Earth orbit or 10,000 to 12,000 pounds to geostationary orbit.

Teets said he thinks it's "very important" for the undersecretary to function as DOD and Air Force executive agents for space and head of the National Reconnaissance Office, welding single-point authority on military space programs.

"It's vitally important to maintain that focus" on space that the reshaped job has in its portfolio, said Teets. ■

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Aerospace World

By Adam J. Hebert, Senior Editor

Nine Airmen Killed in Crash

An MC-130H Combat Talon II special operations aircraft on March 31 crashed in Albania, killing nine airmen. The crash occurred during a nighttime training mission in a remote, mountainous region about 35 miles southeast of Tirana, the capital of Albania, according to a USAF news release.

The aircraft was assigned to the 352nd Special Operations Group, based at RAF Mildenhall, Britain. Eight of the airmen were with the 352nd SOG's 7th Special Operations Squadron and one with the 25th Intelligence Operations Squadron.

The airmen were: Capt. Todd Bracy, 34, of Murphysboro, Ill.; Capt. James Cronin, 32, Elk Grove Village, Ill.; TSgt. James Henry, 30, Valparaiso, Fla.; Capt. Surender Kothakota, 30, Fayetteville, N.C.; CMSgt. Lawrence Gray, 40, Chester, S.C.; TSgt. Glenn Lastes, 39, Southington, Conn.; SSgt. Patrick Pentico, 32, Hanksville, Utah; and Capt. Gil Williamson, 31, Dike, Tex.

US and Albanian rescue crews assisted in the recovery operation. The Combat Talon II aircraft was participating in joint training with the Albanian military when it went down.

Officials are investigating the cause of the accident.

USAF photo by SSgt. Michael R. Holzworth

Airmen with USAF's 321st Special Tactics Squadron, RAF Mildenhall, Britain, move on to the next task after directing an Army Black Hawk helicopter to a new landing zone in Albania, where a USAF MC-130H crashed. (See story at left.) Helicopters ferried in search and rescue teams to the remote site.

USAF Faces $3 Billion Shortage

The Air Force began scaling back spending for the rest of 2005 to overcome what would otherwise be a $3 billion operation and maintenance shortfall, officials announced in March. The service also expects to be about $733 million short in personnel funding for the year.

"Based on our current burn rates, we project a $3 billion shortfall in our O&M funds by the end of the year," wrote Gen. John P. Jumper, Chief of Staff, in a memo to USAF's major commands. Unbudgeted war on terror expenses are the primary cause of the financial crunch.

To overcome the funding shortage, service leaders plan to cut lower priority functions while maintaining readiness.

"We must continue to support requirements of the global war on terrorism and ongoing operations in the theater," Jumper said. "We must also protect efforts supporting the next rotation" of forces to support ongoing operations.

Lower priority "bill payers" will include administrative functions, business operations, facilities spending, new contracts, nondeployment-related training, and travel.

As part of this belt-tightening move, officials said the Air Force would trim its presence at the international Bright Star exercise in Egypt and cancel the annual Guardian Challenge space and missile competition. (See related items on p. 22.)

An Air Force press release noted that the Air National Guard and Air Force Reserve Command will "not immediately be affected," because Guard and Reserve funding is separate from the active duty system.

B-2s Deploy to Guam

For the first time, B-2 stealth bombers have deployed from Whiteman AFB, Mo., to Guam for an air and space expeditionary force rotation. A detachment of B-2s deployed Feb. 25 for a four-month tour at Andersen Air Force Base on the western Pacific island.

The 393rd Expeditionary Bomb Squadron brought along more than 270 airmen, among them many with specialized maintenance skills.

The B-2 gives "the combatant commander an airplane to use in instances that other aircraft can't be used," noted Col. Curtiss Petrek, 36th Expeditionary Operations Group commander. "This comes at some price, however, because it takes quite a bit of work" to maintain the bomber's low observable characteristics.

B-2s have previously been based at Guam for short stays but not extended deployments.

Teets Retires

Peter B. Teets, who began serving as acting Air Force Secretary when James G. Roche stepped down Jan. 20, retired at the end of March. At the time, Teets was also serving as De-

fense Department executive agent for space, director of the National Reconnaissance Office, and Air Force acquisition executive. Most of his positions—including Teets' original post of Air Force undersecretary—were not immediately filled.

DOD announced March 28 that defense acquisition chief Michael W. Wynne had been designated to oversee all of the Air Force's major acquisition programs. Wynne said the action was "not a punitive one" and was intended to assist the service "during a time of transition."

Michael L. Dominguez, the assistant secretary of the Air Force for manpower and reserve affairs, has stepped up as acting Secretary of the Air Force.

Navy Names Ship for Chapman

The Navy in April named a 670-foot-long ship after Air Force TSgt. John A. Chapman, the combat controller who was killed in 2002 in Afghanistan. The pre-positioning ship, used to forward deploy Air Force munitions and other supplies, is one of 35 of its type that the Navy's Military Sealift Command operates.

Chapman posthumously received the Air Force Cross, the second-highest military honor, for his heroism in Operation Anaconda. (See "Aerospace World: Combat Controller Receives Posthumous Honor," February 2003, p. 11.)

The Navy has at times named "prepo" ships for a war hero who served in ground combat. Several of the ships have been named for Special Forces soldiers who received Medals of Honor for their service in Vietnam and Somalia.

Wolfowitz Out, England Steps Up

The President on March 16 nominated Paul D. Wolfowitz, the deputy secretary of defense, to head the World Bank. Wolfowitz was confirmed as the 10th bank president on March 31 and is slated to take his new post on June 1.

Defense Secretary Donald H. Rumsfeld praised Wolfowitz, who has been the deputy since March 2001, in a statement, saying he is "thoughtful, astute, and broadly experienced in world affairs." Rumsfeld said, "I will miss his daily counsel."

To fill the No. 2 civilian position at the Pentagon, President Bush on April 1 nominated Navy Secretary Gordon R. England. England has served twice as Navy Secretary, serving for nine months in between as deputy secretary of homeland security.

In addition to his work as Navy Secretary, he has been overseeing

The Perils of the QDR

Senior Air Force officials say the service faces a challenging task in the Quadrennial Defense Review. A long-term problem, planners say, is that air dominance is now often taken for granted. It is therefore the Air Force's job in the QDR to ensure that senior DOD leaders understand how USAF's pieces fit together and how critical they are to the overall defense effort.

There is "too little understanding of what goes into joint air dominance," said Maj. Gen. Ronald J. Bath, USAF director of strategic planning. The other military services seem to operate with an "expectation" that the Air Force will be providing its capabilities, added Brig. Gen. S. Taco Gilbert III, Bath's deputy.

Unfortunately, outside of the Air Force there appears to be little appreciation of what it takes to provide those capabilities. Airlift, space, and intelligence-surveillance-reconnaissance functions—heavily used by all the military services—consume ever increasing shares of the Air Force budget. Long-range Air Force modernization plans look to the force and capabilities needed in 2025. But to get there, the service needs to begin recapitalizing now.

"Joint air dominance has costs," Bath said during an interview with both senior planners.

Asked if money spent on F/A-18 Hornets would be better invested in F/A-22s or F-35s, Gilbert responded that DOD "may not want to replace old, legacy aircraft with new legacy aircraft."

Bath added that USAF's requirement for 381 F/A-22 Raptors is backed by solid analysis and should be validated in the QDR.

The overall defense topline, however, is likely locked in. If, during the QDR, it is determined that more money is needed for air dominance capabilities, the Air Force will have to "either get more resources" or pull money out of other USAF accounts. Yet to be determined is whether the Air Force's overall share of the defense budget will remain the same, Bath said.

The QDR discussions "have the potential to get in too close," cautioned Bath. By that, he meant that there is a risk that near-term operational needs—what the ground forces in Iraq need—could generate a short-term perspective at the expense of long-term needs.

Bath added that the Air Force's QDR approach is not merely a validation of the service's existing programs. Current program plans are a "snapshot in time," he noted, and "if you accept that the last 25 years" of planning were a good process that resulted in a quality Air Force, then now is the time to extend the planning for the next 20 years.

"This is not a defense of the status quo," Bath said.

New Home for 13th Air Force

After 14 years on Guam, Pacific Air Forces' 13th Air Force is relocating to Hawaii. The numbered air force headquarters will be moved from Andersen AFB, Guam, to Hickam Air Force Base, near Honolulu, where it will set up near the headquarters for PACAF and US Pacific Command.

"The habitual relationships that can be developed between the warfighters [are an] important reason to locate [13th Air Force] at Hickam," said Maj. Gen. Edward A. Rice Jr., the NAF commander.

Thirteenth Air Force will also stand up a regional warfighting headquarters at Hickam to focus on preparing for combat in the Pacific area of responsibility (AOR).

The physical move will occur this month, and the warfighting headquarters should be up and running this fall, according to press reports. PACAF plans to set up a second warfighting headquarters in South Korea.

Officials said 77 personnel, most of them military, will move to Hickam. Andersen's 36th Air Expeditionary Wing, with about 1,800 members, is staying put, and officials have said the overall USAF presence on Guam is likely to increase in the coming years.

Thirteenth Air Force, with an AOR that covers most of the Pacific Theater, was placed at Clark Air Base in the Philippines shortly after World War II. It remained there until 1991 when it was relocated to Andersen after Clark's closure, following the eruption of Mt. Pinatubo.

STRATCOM Outlines New Structure

Recognizing that it needed to abandon its centralized organizational structure to best address a host of new missions and threats, US Strategic Command has reorganized its basic setup.

STRATCOM recently added worldwide global strike, information warfare, integrated missile defense, and other new missions to its portfolio and is dealing with unconventional, fast-moving threats. The command risked paralysis if decisions had to work through a layered, top-down command structure, said Marine Corps Gen. James E. Cartwright, STRATCOM commander, at AFA's Orlando, Fla., air warfare symposium. (See box "The New and Improved Style of US Strategic Command," p. 35, in "Headwinds for the Air Force," April, p. 30.)

The goal, wrote STRATCOM officials in a fact sheet, "is to decrease the decision cycles for these operations and to increase effectiveness of the products and services" that STRATCOM provides to the unified combatant commanders.

To that end, Cartwright has delegated much of his decision-making authority to a group of functional subordinates. Responsibility for nuclear weapons missions will remain with STRATCOM's headquarters staff, but operational execution of non-nuclear missions is being pushed out to four joint functional component commands (JFCCs).

The new functional commands are:

- **Space and Global Strike,** led by USAF Maj. Gen. Michael W. Peterson on the STRATCOM staff at Offutt AFB, Neb. This component coordinates the command's overarching global strike and space operations. In mid-March, STRATCOM was debating whether to permanently assign control of this function to the three-star commander of USAF's 8th Air Force or the four-star chief of Air Force Space Command.
- **Integrated Missile Defense,** led by Army Lt. Gen. Larry J. Dodgen, commander of US Army Space and Missile Defense Command.
- **Intelligence-Surveillance-Reconnaissance,** led by Vice Adm. Lowell E. Jacoby, head of the Defense Intelligence Agency.
- **Network Warfare,** led by Air Force Lt. Gen. Michael V. Hayden, director of the National Security Agency. (Hayden has been nominated to become the deputy national intelligence director.)

A STRATCOM spokesman added that the command may soon add a fifth functional command. The Pentagon recently gave STRATCOM the mission of combating weapons of mass destruction, which may require its own JFCC.

Cartwright noted in February that much of the command's headquarters personnel will be relocated to the functional components. According to the fact sheet, "migration of billets to the JFCCs" will take place over three years, primarily through the normal military assignment process.

USAF photo by MSgt. Val Gempis

From left, SrA. Randy Willets, SSgt. John Jacobs, and SrA. James Casselman, 509th Bomb Wing, Whiteman AFB, Mo., inspect the landing gear door of a B-2 bomber departing Andersen AFB, Guam, on an early April mission. The stealth bombers deployed to Guam in February to help enhance regional security.

the Pentagon's implementation of the new National Security Personnel System.

England's nomination has to be approved by the Senate.

US To Return to Bright Star

Air Force Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, said in March that, later this year, the US would join in Egypt's Bright Star wargame for the first time since 2001. However, he added, the Pentagon's current financial and operational demands would limit US participation.

Bright Star is a massive international wargame: 14 countries will take part this year. Myers said US ground participation will not be "at the same levels" as in past years "because our ground forces are tied up doing other things."

He indicated, though, that US air and naval participation may be increased. Myers said that "given what US forces are doing around the world right now, there is not going to be as large a contingent as there has been in the past."

Guardian Challenge Canceled

Air Force Space Command has canceled its annual Guardian Challenge space and missile competition, citing excessive financial and operational pressures. "The nation's space and missile warfighters are fully tasked," AFSPC commander Gen. Lance W. Lord said in a press release.

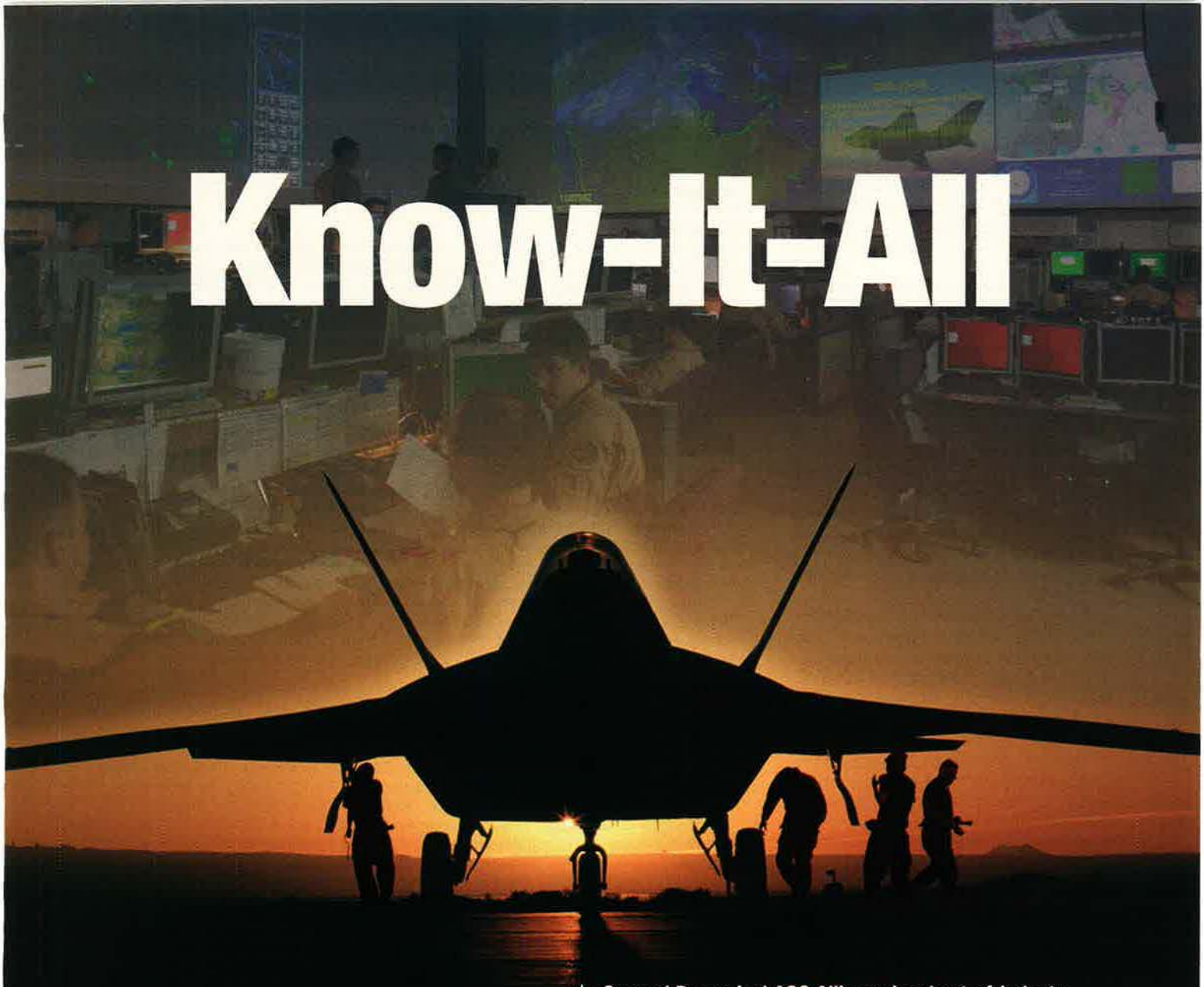
Canceling Guardian Challenge will allow airmen to focus on real-world deployments, said AFSPC officials. "Given the budget and ongoing overseas commitments, we feel it is prudent to cancel this year's event," said Col. John Stocker, the Guardian Challenge commander.

This year's event, which was to have been the 38th Guardian Challenge, was scheduled for May 1-6 at Vandenberg AFB, Calif. This is the third time the challenge has been canceled for similar reasons. The 1968 and 2003 events were also shut down.

Boeing Unveils F-15K

Boeing in March unveiled the first of 40 advanced F-15K Strike Eagles bound for South Korea's Air Force. The rollout was held shortly after the fighter completed a Mach 2 test flight.

South Korea selected the Strike Eagle in a 2002 modernization competition. According to Boeing's press release, South Korea is spending $4.2 billion for 40 of the aircraft, a unit cost of $105 million. Deliveries will begin this year and run through August 2008.



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The F-15K cost, coincidentally, is about the same as the per-aircraft cost of the 100 F/A-22s the Administration recently slashed from the Air Force's long-range spending plan. The December Raptor cuts totaled $10.5 billion—$105 million per fighter.

SBIRS Has New Cost Overrun

The estimated cost of the Space Based Infrared System High program recently increased by more than 15 percent. Before stepping down as acting Air Force Secretary in March, Peter B. Teets informed lawmakers of the event, commonly known as a Nunn-McCurdy breach.

SBIRS High will possibly go 25 percent over budget, according to the notification letter Teets sent to Congress, reported the defense newsletter *Inside the Air Force*. This is the third Nunn-McCurdy breach for the program.

Teets said he lacked confidence even in the new cost estimates. "I do not have the degree of confidence I want," he said, adding that "alternative acquisition strategies" will be considered during an independent DOD cost review.

Teets explained to Senate authorizers at a March 16 hearing that the Defense Department is "still suffering from the effects of a program that was not founded properly, not scoped properly, [and] not set up with proper incentives to the contractor," Lockheed Martin.

SBIRS High satellites are slated to replace the Defense Support Program missile early warning system.

Bush Nominates BRAC Board

President Bush in March named former Veterans Affairs Secretary Anthony J. Principi and eight other individuals to serve as commissioners for the 2005 base realignment and closure (BRAC) actions. All must receive Senate confirmation.

Principi would serve as chairman of the commission, whose job it is to review the Pentagon's proposed list of facility closures or realignments and make independent recommendations to the President.

The other nominees are:

- James H. Bilbray, former US representative from Nevada.
- Philip E. Coyle, a senior advisor to the Center for Defense Information and former defense official.
- Retired Adm. Harold W. Gehman Jr., the former NATO supreme allied commander, Atlantic.
- James V. Hansen, former US Congressman from Utah.

The War on Terrorism

Operation Iraqi Freedom—Iraq

Casualties

By April 7, a total of 1,543 Americans had died in Operation Iraqi Freedom. The total includes 1,539 troops and four Defense Department civilians. Of those fatalities, 1,174 were killed in action by enemy attack, and 369 died in noncombat incidents such as accidents.

There have been 11,664 troops wounded in action during OIF. This includes 5,645 who returned to duty within 72 hours and 6,019 who were unable to quickly return to action.

Two Years of Iraqi Freedom

March 19 marked two years since the US-led invasion of Iraq was launched to overthrow Saddam Hussein's ruthless regime. Senior defense officials used the anniversary to highlight some of the achievements in Iraq since Hussein's dictatorship was toppled.

Officials noted that, during Iraq's free elections Jan. 30, "more than eight million Iraqis exercised their right to choose their new government."

Reconstruction of the nation's infrastructure is continuing, and Baghdad now receives roughly 13 hours of electricity daily, roughly the same as other urban areas in Iraq. "It's getting better every day," said Marine Corps Col. Patrick Kanewske, chief of current operations for US Central Command.

Appearing on NBC's "Meet the Press," Air Force Gen. Richard B. Myers, Joint Chiefs Chairman, said Iraq now has about 142,000 security forces—of all types—trained and equipped. Myers noted that "it takes all kinds of security," including "police and special forces, to go after the insurgents."

Troop Cuts May Come in 2006

The Army may begin a troop drawdown in Iraq in 2006, assuming the new Iraqi security forces are able to take on a greater share of the country's security burden. Asked if the presence in Iraq would be numerically smaller in 2006, Gen. Richard A. Cody, Army vice chief of staff, told reporters, "I would think so, but your definition of smaller and my definition of smaller may be different."

The next force rotation into Iraq will likely "be smaller than the force that's in there right now," Cody told the Defense Writers Group March 17. The next rotation will consist of soldiers relieving the troops just now beginning one-year tours.

In mid-March, there were about 150,000 US troops in Iraq. That consisted of 138,000 scheduled to be in place before the Iraqi elections and additional forces that were kept in theater to beef up security. Cody said Gen. George W. Casey Jr., the Army commander in Iraq, would discuss force requirements with the DOD leadership in April.

Operation Enduring Freedom—Afghanistan

Casualties

By April 7, a total of 176 US troops had died in Operation Enduring Freedom, conducted primarily in Afghanistan. The total includes 70 troops killed in action and 106 who died in nonhostile incidents.

A total of 439 troops have been wounded in Enduring Freedom. They include 142 who were able to return to duty within three days and 297 who were not.

USAF Makes Emergency Repairs at Bagram

Air Force civil engineers are rebuilding the decrepit runway at Bagram AB, Afghanistan. The 9,800-foot runway has suffered "severe damage" from heavy use, said Maj. Bobbie Moore, commander of Bagram's 455th Expeditionary Civil Engineering Squadron. That forced the Air Force to "look for an immediate solution," Moore said.

Bagram is still Afghanistan's busiest airfield, and shutting it down for repairs was not an option. Therefore, said an Air Force news release, "the answer was precast concrete." Precast concrete is "poured and cured ... away from the runway and put into place when ready."

Engineers poured 28 concrete slabs, each 12 feet by 13 feet and more than a foot thick. One by one, the 12-ton slabs are being moved into place to replace damaged sections of the original runway.

More than 30 years old, Bagram's runway was built by the Soviet Union and poorly maintained over the years. US forces are constructing a new runway at the base, but, according to USAF, it will not be completed until June 2006.

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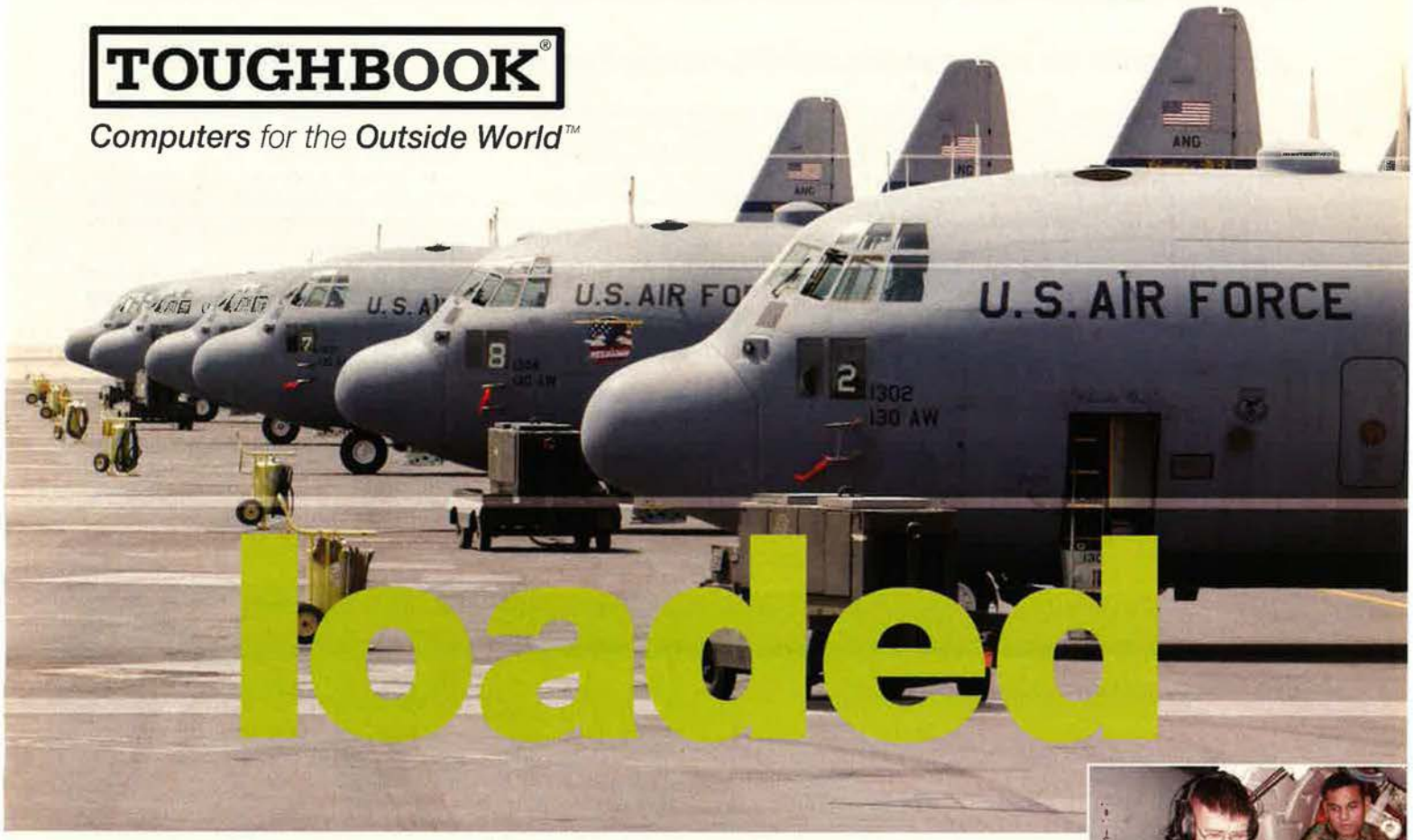

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Chu Outlines New Sexual Assault Reporting Policy

The Pentagon has revised its sexual assault reporting policy to allow victims to report attacks confidentially. The new policy, which takes effect in June, should encourage victims to come forward and offers the option of seeking prosecution at a later date, said Defense Department personnel chief David S.C. Chu.

Chu said he is hopeful the new policy will increase "willingness to come forward ... and to pursue an investigation, eventually."

According to a new survey conducted by the DOD inspector general covering all three service academies, out of 302 sexual assault incidents cited by female cadets, less than a third had been reported to authorities.

Some victims are not ready to immediately launch a formal investigation, so confidential reporting will accomplish two things, Chu said. First, it will "give them access to medical care, to counseling, and to victim advocacy." (In the past, only chaplains could offer confidential support.)

Second, the policy will give commanders knowledge of sexual assault problems—even when reports are kept confidential. Commanders "will be informed of offenses that had previously gone unreported," Chu said. They will be notified about incidents within 24 hours, but will not be given any identifying information about the victim.

News Notes

By Tamar A. Mehuron, Associate Editor

■ USAF announced Feb. 28 that President Bush nominated Lt. Gen. William R. Looney III as the next commander of Air Education and Training Command. If the Senate confirms his nomination, he would succeed current AETC Commander Gen. Donald G. Cook, who retires in August.

■ President Bush in early March nominated Adm. Michael G. Mullen to be the next Chief of Naval Operations. Mullen is currently the commander of US Naval Forces, Europe, and head of the Allied Joint Forces Command, Naples, Italy. The nomination requires Senate confirmation.

■ Air Mobility Command activated a new wing March 1 at McGuire AFB, N.J., devoted to fast base set up and operations. Replacing the 621st Air Mobility Operations Group, the 621st Contingency Response Wing consolidates personnel that previously had been tapped from different units. They include individuals from key specialties such as command and control, security forces, aerial port operations, and maintenance.

■ Prospective maintainers for the F/A-22 Raptor will begin in January 2008 training in a brand-new schoolhouse now under construction at Sheppard AFB, Tex. Officials broke ground for the building in a ceremony Feb. 18.

■ The Air Force chose 124 officers to undergo training to become pilots, navigators, and air battle managers. Out of 322 applications, the Feb. 8-11 selection board tapped 75 airmen for pilot training, 46 for navigator training, and three to attend air battle manager training. Some officers will begin training this year, others in 2006.

■ Hamilton Sundstrand Corp., Windsor Locks, Conn., received a $250 million contract for work on weapons systems, spare parts, and service support for a wide variety of aircraft, including the A-10, B-1, B-52, C-130, C-5, E-3, F-15, F-16, and KC-135.

■ Lockheed Martin's Joint Air-to-Surface Standoff Missile (JASSM) made successful test flights and target strikes on March 3 and 16, according to a company news release. USAF and Lockheed Martin officials conducted the verification test flights and target strikes at the White Sands Missile Range, N.M. JASSM's test flight program had been halted after one missile failed to strike its target in a July 2004 test.

■ NATO will hand off air patrols of the airspace over three Baltic states—Latvia, Lithuania, and Estonia—to US aircraft in a routine rotation scheduled for October, the Lithuanian Defense Ministry announced March 16. The three countries lack the ability to patrol their airspace, so NATO has stepped in with patrols since March 2004, when it gained the three countries as its newest members.

■ An F-16 from the USAF Weapons School's 16th Weapons Squadron on March 18 crashed short of the runway at Nellis AFB, Nev. The pilot ejected safely and was taken to the base hospital for evaluation. USAF officials are investigating the cause of the accident.

■ USAF is tearing down a three-mile-long wire and steel radar system in Maine, reported the Associated Press. The Cold War-inspired OTH-B radar system was designed to spot incoming Soviet bombers over the Atlantic Ocean, leaving US fighter aircaft plenty of time to scramble and intercept the invaders. Commonly known as the "backscatter radar," it could shoot a beam off the ionosphere, which then sent a scattered detection signal back to ground surface. USAF will offer the real estate to private developers. Meanwhile, advanced Navy radar technology and a "relocatable" version of the backscatter radar have replaced the old system.

■ Lockheed's Atlas V evolved expendable launch vehicle will launch the Global Positioning System satellite GPS IIF from Cape Canaveral AFS, Fla., in 2007, company officials said March 2. USAF approved the Atlas V for the launch.

■ According to an Air Force investigation report released March 18, an airman controlling an unmanned QF-4E drone during a Sept. 8, 2004, mission at White Sands Missile Range, N.M., was forced to destroy it after it failed to respond correctly to inputs. The report said that the drone stalled after going out of control when corrections from the pilot and the drone's autopilot failed. The controller used a ground-based UHF flight termination system to destroy the

■ Gen. James T. Hill, USA (Ret.), who last served as commander of US Southern Command.

■ Lt. Gen. Claude M. Kicklighter, USA (Ret.), who was an assistant secretary in the VA.

■ Samuel Knox Skinner, who was President George H.W. Bush's chief of staff and a former secretary of transportation.

■ Brig. Gen. Sue Ellen Turner, USAF (Ret.), who served as director of nursing services for the Air Force Surgeon General.

The Pentagon must submit its list to the BRAC commission and Congress by May 16. The commission, in turn, provides its list to the President by Sept. 8. The President then has until Sept. 23 to either accept or reject the entire findings.

USAF Creates UAV Center

The Air Force in March announced plans to create an Unmanned Aerial Vehicles Center of Excellence at Indian Springs Air Force Auxiliary Field in Nevada. The center will "coordinate UAV activities at all levels of war—tactical, operational, and strategic," said Maj. Gen. Stephen M. Goldfein, and "provide a common structure for our command and control systems."

The UAV center will serve as a one-stop shop to improve interoperability, develop concepts of operation, create requirements, and plan training for the Air Force's unmanned vehicles, said Goldfein, who is commander of the Air Warfare Center at nearby Nellis Air Force Base.

He said the goal is to "exploit the full potential" of the diverse UAVs operating in the global war on terror.

Pentagon Releases New National Defense Strategy

The Pentagon in March released an updated National Defense Strategy, a document intended to guide the Defense Department in meeting future threats. "This strategy emphasizes the importance of influencing events before [they] become more dangerous and less manageable," wrote Defense Secretary Donald H. Rumsfeld in the document's cover letter.

The strategy outlines a series of strategic objectives to guide planning. First among these is securing the United States from direct attack. According to the strategy, DOD will give "top priority" to preventing attacks, with a specific emphasis on defeating "extremist enemies with weapons of mass destruction."

The document notes that even while facing asymmetric challenges, DOD can accomplish its objectives partly by continuing to develop key US military strengths.

It states further that traditional strengths are not considered sacred. The strategy offers "implementation guidelines" that call for continuous transformation; a capabilities-based approach to set priorities among competing capabilities; and risk management to consider "clear trade-offs across the department."

Overseas facilities face probable realignment. "Operational experience since 1990 indicates we will surge forces" to respond to threats, the strategy notes. But Cold War basing, still focused on Western Europe and Northeast Asia, was set up to fight in place. The modern expeditionary paradigm is "driving a comprehensive realignment of [the] US global defense posture," the strategy states.

USAF photo by TSgt. Mary Smith

The 116th Air Control Wing, Robins AFB, Ga., on March 23 took delivery of the 17th and final operational E-8C Joint Surveillance Target Attack Radar System. The Joint STARS aircraft features—in addition to an advanced ground-scanning radar—state-of-the-art weather radar capability, wind shear warning system, and color digital display. Two additional aircraft are used for test and attrition reserve, bringing the total number of these surveillance aircraft to 19.

drone. No one was injured, and there was no other property damage. Officials estimated damage to the drone at $1.5 million.

■ After seven months, Operation Blue to Green has yielded the Army only about 60 airmen, USAF officials noted March 9 in *European Stars and Stripes*. The program offered bonuses to USAF troops willing to transfer into Army specialties. It was one of several measures designed to help redress an Air Force manpower surplus while helping the Army offset personnel shortages.

■ In February, USAF stopped shipping paper copies of personnel actions for airmen who are retiring or separating to the National Personnel Records Center in St. Louis, according to an official March 16 news release. The change, said officials, will save USAF about $8 million a year. Now, the service maintains such records only in permanent electronic form at the Air Force Personnel Center, Randolph AFB, Tex., and a backup electronic copy at a second location. Still retained in paper form at NPRC are medical and dental records and records of airmen who retired or separated before Oct. 1, 2004.

■ General Electric Co., Cincinnati, received a $57 million contract Feb. 28 for redesigned compressor and turbine assemblies, upgraded engine parts, and spares, for 95 engines for the F-16 fleet. Work is to be completed by June 2006.

■ Joint training in anti-terror operations and senior noncommissioned officers' training are among several instruction topics in a new DOD Internet-based training and information system. The Joint Knowledge Development and Distribution Capability system combines several discrete distance-learning capabilities among the services. It is intended to help senior NCOs prepare for deployment. The password-controlled system is also designed to lessen the need to deploy instructors abroad.

■ The Society of Military Engineers awarded its first Public Agency Award to the Air Force Center for Environmental Excellence, Brooks City-Base, Tex. The annual award recognizes organizations that have "rendered the most eminent and notable contribution to society," noted Robert D. Wolff, executive director for the society.

USAF photo by TSgt. Scott F. Reed

Army paratroopers jump from Air Force C-17s into Landing Zone Sicily at Ft. Bragg, N.C., during the Joint Forcible Entry Exercise in early April. The exercise was designed to replicate movement of troops and heavy equipment during a contingency. The Air Force provided C-17 and C-130 airlifters, A-10 and F-15 fighters, a KC-135 tanker, an E-8C Joint STARS, and a ground command and control element.

Senior Staff Changes

RETIREMENT: Maj. Gen. Richard L. **Comer.**

CHANGES: Brig. Gen. (sel.) Thomas K. **Andersen,** from Dir., Global Ops. for Intel. & Info. Ops., STRATCOM, Offutt AFB, Neb., to Vice Cmdr., 12th AF, ACC, Davis-Monthan AFB, Ariz. ... Brig. Gen. Floyd L. **Carpenter,** from Cmdr., AFOATS, AU, AETC, Maxwell AFB, Ala., to Dep. Dir., Natl. Sys. Ops., Jt. Staff, Pentagon ... Brig. Gen. David W. **Eidsaune,** from Commandant, AFIT, AU, AETC, Wright-Patterson AFB, Ohio, to Dir., Air Component Coordination Element, MNF-Iraq, ACC, Baghdad, Iraq ... Brig. Gen. Wendell L. **Griffin,** from Dir., Strat., Policy, & Plans, SOUTHCOM, Miami, to Mission Area Dir., Global Reach, Asst. SECAF, Acq., Arlington, Va. ... Maj. Gen. James A. **Hawkins,** from Cmdr., Tanker Airlift Control Center, AMC, Scott AFB, Ill., to Dir., Ops., AMC, Scott AFB, Ill. ... Brig. Gen. Ronnie D. **Hawkins** Jr., from Dir., Comm. Ops., DCS, Instl. & Log., USAF, Pentagon, to Cmdr., AFOATS, AU, AETC, Maxwell AFB, Ala. ... Maj. Gen. Thomas P. **Kane,** from DCS, United Nations Command and US Forces Korea, Yongsan, South Korea, to Dir., P&P, AMC, Scott AFB, Ill. ... Brig. Gen. Mark T. **Matthews,** from Cmdr., 48th FW, USAFE, RAF Lakenheath, UK, to Commandant, AFIT, AU, AETC, Wright-Patterson AFB, Ohio ... Brig. Gen. Robert H. **McMahon,** from Dir., Maintenance, Ogden ALC, AFMC, Hill AFB, Utah, to Dir., Log., AMC, Scott AFB, Ill. ... Maj. Gen. Loren M. **Reno,** from Dir., Log., AMC, Scott AFB, Ill., to Vice Dir., DLA, Ft. Belvoir, Va. ... Maj. Gen. Stephen T. **Sargeant,** from DCS, Strat., Plans, & Assessment, MNF-Iraq, CENTCOM, Baghdad, Iraq, to DCS, United Nations Command and US Forces Korea, Yongsan, South Korea ... Brig. Gen. Mark E. **Stearns,** from Vice Cmdr., 12th AF, ACC, Davis-Monthan AFB, Ariz., to Dir., Strat., Policy, & Plans, SOUTHCOM, Miami ... Brig. Gen. Robert P. **Steel,** from Dir., Air Component Coordination Element, MNF-Iraq, ACC, Baghdad, Iraq, to Cmdr., 48th FW, USAFE, RAF Lakenheath, UK ... Maj. Gen. Mark A. **Volcheff,** from Dir., Ops., AMC, Scott AFB, Ill., to Dir., Policy & Planning, NORTHCOM, Peterson AFB, Colo.

SENIOR EXECUTIVE SERVICE RETIREMENTS: Michael **Montelongo,** Anthony J. **Perfilio,** Raymond P. **Urtz.**

SES CHANGES: William U. **Borger,** to Dir., Propulsion Directorate, AFRL, AFMC, Wright-Patterson AFB, Ohio ... Lawrence B. **Henry,** to Dir., Financial Mgmt. & Resource Oversight, Under SECAF, NRO, Chantilly, Va. ... Walter F. **Jones,** to Dir., P&P, AFRL, AFMC, Wright-Patterson AFB, Ohio ... John J. **Thrasher,** to Dir., AFMC Law Office, AFMC, Wright-Patterson AFB Ohio. ■

Currently, USAF has one operational Global Hawk, about 60 Predators, and roughly 300 Pointer, Raven, Desert Hawk, and other small and miniature UAVs, Goldfein said.

"The idea [is] to have one place, one center, [to] carry us forward with not only what we do have, but what we will be acquiring," explained Goldfein.

The Air Force's UAV Battlelab is already located at Indian Springs and will likely continue its work of rapid innovation, though its future relationship with the UAV center has not yet been determined.

"The battlelab really becomes the core, to help us develop and expand," the general said. "Whether or not we continue to call it a battlelab, ... the mission that [it has] will definitely stay alive."

Korean War Pilot Identified

The Department of Defense earlier this year formally identified the remains of Air Force Capt. Troy Cope, shot down over China during the Korean War. Cope is to be buried in Plano, Tex., May 31.

An F-86 Sabre pilot flying out of Kimpo Air Base in South Korea, Cope was on a fighter sweep mission on Sept. 16, 1952. His flight encountered and fought enemy MiG-15s near the Yalu River, an area known as "MiG Alley" on the border between China and North Korea.

According to a Feb. 25 Air Force news release, Cope's wingman survived the encounter, but lost sight of Cope, who was thereafter listed as missing in action.

Decades later, the release explained, a "chance observation" by an American tourist began the identification process. In 1995, a tourist visiting the military museum in Dandong, China, "noticed a display" that included Cope's military dog tag. The American reported this to US authorities.

Four years later, US missing persons personnel found information in Russian archived records about Cope's shootdown. Soviet pilots flying the MiG-15s for North Korea left statements and drawings about the encounter. With this information, officials went to China "and got the green light to move forward" with a recovery operation.

In 2004, a recovery team found and excavated Cope's crash site, where there was aircraft debris and human remains. The remains were identified this year in Hawaii, at DOD's Central Identification Laboratory.

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JFK: The Unneeded Carrier?

In recent comments to lawmakers, Navy Secretary Gordon R. England strongly defended the Navy's desire to retire the aircraft carrier USS *John F. Kennedy,* rather than proceeding with a lengthy reconditioning and overhaul later this year.

"Frankly, we do not need this carrier," England told the Senate Defense Appropriations Subcommittee March 16.

England added that the Mayport, Fla.-based carrier is expensive to maintain and only offers "marginal capability."

The Navy's new budget plan would reduce the number of carrier battle groups from 12 to 11. The service leadership feels a smaller fleet can more cost-effectively meet requirements.

JFK is one of only two conventionally powered carriers that remain in the Navy fleet. The other, USS *Kitty Hawk,* is forward based in Japan and is scheduled to retire in 2008.

Officials Find Root Cause

After several months of investigation, Boeing and USAF officials determined that fluid cavitation within the liquid oxygen feed system caused the premature main engine shutdown on the Delta IV heavy-lift vehicle launched Dec. 21, 2004.

The Air Force on March 16 released the finding, which was sup-

Patriot Problems "Not Exactly a Surprise"

The Defense Science Board determined that a number of long-standing weaknesses in the Army's Patriot air defense system led to three fratricide incidents in the early days of Operation Iraqi Freedom. Notably, the Patriot's combat identification capability "performed very poorly," the DSB wrote. "This is not exactly a surprise; this poor performance has been seen in many training exercises."

During three separate incidents in OIF, Patriot systems engaged friendly aircraft. Patriots shot down one American F/A-18 Hornet and one British GR4 Tornado, killing a total of three aircrew members.

In the other incident, an Air Force F-16 fired a radar-seeking missile at a Patriot battery, destroying its antenna. The F-16 pilot thought the Patriot was an enemy surface-to-air missile site because the Patriot's radar had locked on to the fighter.

The first month in Iraq's combat zone featured 41,000 coalition aircraft sorties and only nine enemy tactical missile engagements, stated the DSB report. With 60 armed Patriot units, "even very low-probability failures could result in regrettable fratricide incidents," the DSB task force noted.

The DSB wrote that it was "puzzled" that the combat ID deficiency "never garners enough resolve and support to result in a robust fix. ... We have to fix [the combat ID system] and institute additional protection measures such as safe return corridors for our aircraft."

Another problem was that Patriot operation was largely automated, and operators were "trained to trust the system's software." Future wars likely will be more stressing than Iraq and may require simultaneous missile and aircraft engagements. The task force said more operator control is needed, but this will require improved training, software, and displays.

As a defensive system, the Patriot worked as intended, the DSB found. "All nine enemy tactical ballistic missiles" targeting defended areas were successfully engaged and caused no damage or casualties. Although the attacking missiles were not deemed "stressing targets," the task force judged "Patriot missile defense in OIF to be a substantial success."

USAF photo by SSgt. Keri S. Whitehead

Brig. Gen. Jeffrey R. Riemer, director of operations for Air Force Materiel Command, on March 18 delivers the final new US Air Force F-16 to its home at Shaw AFB, S.C. This aircraft was the last of USAF's 2,231 F-16s ordered over the past three decades. The final contract was overseen by Riemer, who was the F-16 system program director. The first USAF F-16 was delivered in 1978.

If you recognized the CV-22, F-35A, Global Hawk, CC-130J and C-37, you obviously know your aircraft. American-built Rolls-Royce engines have been powering U.S. military air forces since World War I. Today, Rolls-Royce provides nearly one-fourth of all gas turbine engines in service on America's military aircraft. The current Rolls-Royce portfolio of modern turboprop, turboshaft and turbofan engines allows you to constantly push the edge of the mission envelope. When it comes to innovative and reliable propulsion solutions, Rolls-Royce earns its Air Force wings every day.

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ported by The Aerospace Corp. in an independent review, said officials.

The 2004 launch was a demonstration flight with a dummy payload, intended to test ground and flight systems for the heavy-lift version of Boeing's Delta IV evolved expendable launch vehicle. The medium-lift version first successfully boosted a satellite to orbit in 2002.

The fluid cavitation problem "originated at the entrance of the propellant feed line, where a filtration screen and turning elbow restrict the propellant flow as it accelerates leaving the tank," said a news release. A unique combination of factors for this mission created "gaseous oxygen at this location as the tanks emptied," it said. The Delta IV flight computer initiated a shut-down sequence as it is programmed to do.

Officials said they had followed a "deliberate process" throughout the investigation to ensure they did not miss any potential causes.

Officials also said Boeing has started to select and validate potential corrective actions.

USAF Upgrades Talon I

The Air Force in late March completed the first risk reduction flight for an MC-130E Combat Talon I after making avionics improvements to the special operations aircraft.

The 418th Flight Test Squadron, Edwards AFB, Calif., conducted the test flight to ensure the new terrain-following radar and algorithms performed as expected.

The Talon I, which belongs to Air Force Reserve Command's 919th Special Operations Wing, Duke Field, Fla., is one of eight different models of C-130 Hercules aircraft that will be tested at Edwards following their upgrades.

The modifications include a glass cockpit with head-up display, flight

Pentagon Creates New Medals

The Defense Department on April 7 announced creation of two separate campaign medals for Afghanistan and Iraq. Officials said these new medals require of recipients "specific sacrifices and significant contributions."

To receive the Afghanistan Campaign Medal, a service member must have served in direct support of Operation Enduring Freedom on or after Oct. 24, 2001, to a future date yet to be determined. The area of eligibility covers all land areas of the country of Afghanistan and all air space above the land. For the Iraq Campaign Medal, a member must have served in direct support of Operation Iraqi Freedom on or after March 19, 2003, to a future date yet to be determined. The area of eligibility covers all land areas of Iraq, the contiguous water out to 13.8 miles, and all air space above the land areas of Iraq and the designated water.

There are two other primary criteria, involving either length of service or combat operations. At least one of these two primary criteria must be met for a member to receive either of these new medals.

The time requirement calls for service in these areas for either 30 consecutive days or 60 nonconsecutive days.

There are three subsets under combat operations, at least one of which must be met. The recipient must have been one of these:

- Engaged in combat during an armed engagement.
- Wounded, requiring medical evacuation outside the area of eligibility, while participating in an operation or on official duties.
- Participating as a regularly assigned aircrew member flying sorties into, out of, within, or over the area of eligibility in direct support of military operations.

Two other provisos apply. Officials said no member can receive these two new medals and the Global War on Terrorism Expeditionary Medal for the same act or period of service. Moreover, the new medals can only be awarded once per member.

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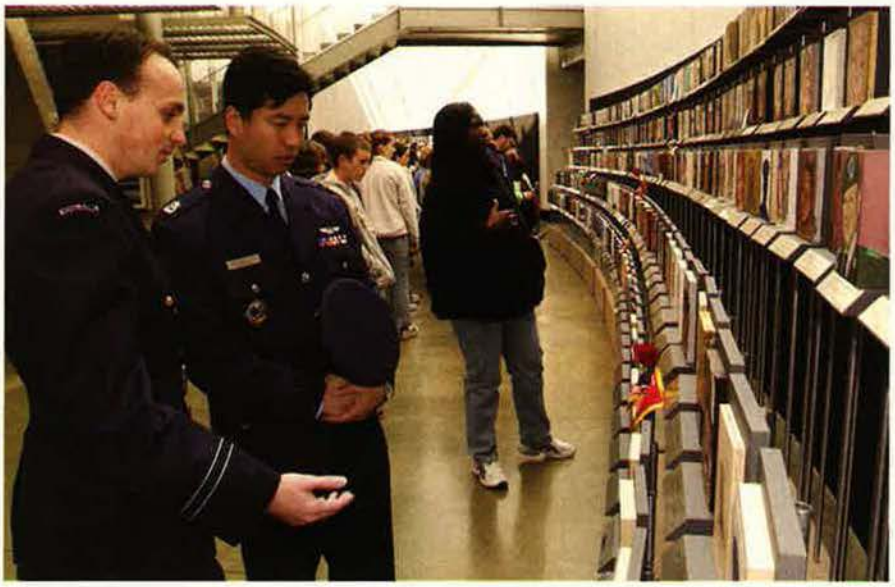

USAF photo by MSgt. Jim Varhegyi

Arlington National Cemetery in March opened its "Faces of the Fallen" exhibit, featuring more than 1,300 portraits of US service members who died in the wars in Afghanistan and Iraq. Located at the Women in Military Service Memorial, the exhibit will run until Sept. 5. Some 200 artists created the 6-inch-by-8-inch portraits from photographs. Here, visitors view the portraits, which are accompanied by plaques with the names, hometowns, and dates of death.

management system, air data computer, multifunction radar, and new communications systems.

C-130 Maintainers Keep Rates Up

Air Force maintenance personnel at Karshi-Khanabad AB, Uzbekistan, have kept the mission capable rates for C-130 tactical airlifters at their location as high as 15 percent above the Air Mobility Command standard, said USAF officials.

The aircraft maintainers with the 774th Expeditionary Airlift Squadron established MC rates of nearly 90 percent during the first few months of this year. The standard rate for the C-130 is 75 percent.

The 774th EAS comprises both active and Air National Guard personnel.

World War II Airman Identified

The Pentagon on April 12 announced that it had officially identified the remains of SSgt. Robert W. McKee, an aerial gunner on a B-24 that crashed in Hungary during World War II.

The Army Air Forces B-24 Liberator, carrying an 11-member crew, took off from Pantanella, Italy, on Dec. 17, 1944, on a mission to bomb targets in Germany. Nine of the crew safely bailed out of the aircraft, but McKee and one other were unaccounted for. After the war, remains of the other crewman were found in a cemetery in Hungary.

In 1992, an undertaker discovered remains of an American in another cemetery in Hungary. The remains included aerial gunner wings but no specific identification. Scientists of the Joint POW/MIA Accounting Command and the Armed Forces DNA Identification Lab used forensic tools, including DNA, to confirm the remains were those of McKee.

The Riddle of the Misplaced Nuclear Test

A transcription error recently set off an international furor about a supposed US nuclear test in Sudan. Such an event never happened.

According to initial transcripts from a House Armed Services subcommittee hearing held March 2, Rep. Ellen O. Tauscher (D-Calif.) referenced "the Sudan nuclear test site." The transcript continued, "In 1962 we took [a] 100 kiloton nuclear warhead, ... buried it 635 feet under the surface," and blew it up. "The Sudan test displaced 12 million tons of earth and dug a crater 320 feet deep [and] over 1,000 feet in diameter," read two transcripts, which made their way into the Nexis worldwide news database, according to the Federation of American Scientists' *Secrecy News* electronic newsletter.

Tauscher was referring to the nuclear test site in Nevada, dubbed *Sedan,* not *Sudan.* But the error was caught too late.

China's Xinhua news service reported March 10 that the Sudanese government "held the United States responsible for cancer spread in Sudan caused by US nuclear experiments in the African country."

In the article, Sudan's agriculture minister said his government would move to regain the rights of the Sudanese people who suffered from these nuclear experiments.

Things were sorted out the next day. Sudan's Suna News Agency reported that the nation "received assurances from the American Administration that the area where the nuclear experiments and explosions took place was ... not Sudan."

The hearing transcripts have since been corrected.

Obituary

George F. Kennan, a key figure in the early days of American Cold War strategy, died March 18 at the age of 101. As a top US diplomat in Moscow in 1946, Kennan authored a cable to Washington that warned of the Soviet Union's fanatical commitment to spreading communism.

The Soviet Union, with whom the US had cooperated against Hitler, had become "impervious to logic of reason," Kennan wrote in what became known as the Long Telegram. The USSR was, however, "highly sensitive to logic of force."

The next year, he anonymously published a version of his message in the journal *Foreign Affairs.* It was there that the term "containment" entered the public vernacular. "The main element of any [US] policy toward the Soviet Union must be ... a long-term, patient, but firm and vigilant containment," he wrote. ■

Action in Congress

By Tom Philpott, Contributing Editor

New Move on Death Benefits; Spousal Consent Needed?; Enrollment Fees Out for Vets ....

Death Benefits To Rise

The House in March passed a measure calling for a sharp rise in military death benefits. The Fiscal 2005 Emergency Supplemental Appropriations Act (HR 1268) increases a lump-sum death gratuity, paid to next of kin, from $12,400 to $100,000. Maximum coverage under Servicemembers' Group Life Insurance (SGLI) also would climb from $250,000 to $400,000. The total increase for the two changes would be about $238,000.

The Senate was expected to approve identical death benefit gains in its own version of the 2005 wartime supplemental. However, the Senate and House differ on whether only direct combat deaths or all deaths should qualify.

There is also disagreement within the Pentagon. DOD officials have recommended applying increases retroactively only to combat deaths in Iraq and Afghanistan. Senior uniformed military leaders want the increase applied to any active duty death on or after Oct. 7, 2001 (the date on which the US initiated the war on terrorism), unless caused by the member's misconduct or other disqualifying circumstances.

The House compromised, splitting the increase between the two approaches. Its Appropriations Committee accepted language from Rep. David Obey (D-Wis.) that directs retroactive payment of the $88,000 increase in death gratuity to the next of kin of members who died as a direct result of injury or illness incurred in Operation Enduring Freedom and Operation Iraqi Freedom. The committee would apply the $150,000 hike in SGLI more broadly to beneficiaries of any member who died on or after Oct. 7, 2001, from injuries or illness incurred in "performance of duty." The term is open to case-by-case interpretation by defense officials.

The Senate Appropriations Committee began marking up its version of the wartime supplemental legislation in early April. One bill on its agenda, the HEROES Act (S 77) introduced by Sens. Joe Lieberman (D-Conn.) and Jeff Sessions (R-Ala.),

AP photo by Karim Kadim

Lieberman wants higher death benefits.

proposes increases identical to those voted by the House, except they would go only to survivors of troops that died in combat areas since Oct. 7, 2001. (See "Action in Congress: Death Benefits," March, p. 20.)

Differences between the Senate and House legislation would be negotiated during a conference committee on the wartime supplemental.

Reserve Tax Credits

The Senate voted unanimously in March for an amendment from Sen. Mary Landrieu (D-La.) to its Budget Resolution for Fiscal 2006 to allow tax credits to employers that help close the pay gap felt by mobilized Guard and Reserve members who earn less on active duty than they did as civilians.

Landrieu's initiative would reserve a portion of the budget to provide employer tax credits equal to 50 percent of up to $30,000 in salary differential paid to mobilized employees. The tax credits would be available only for employees mobilized for six months or longer.

Her proposal also would allow small businesses up to $6,000 in tax credits to help compensate them for having to hire temporary workers during periods that permanent employees are mobilized.

Budget resolutions set broad spending and tax guidelines, so inclusion of the tax credits, even if agreed to by the House, still amounts only to a tentative endorsement. Congress would have to pass authorizing legislation supporting the tax credits. The House Ways and Means Committee so far has not signaled support for new employer tax credits.

The Senate voted 100 to 0 to make funding room for Landrieu's HOPE at HOME (Help Our Patriotic Employers at Helping Our Military Employees) Act.

"Our Guard and Reserve put their lives on the line, taking the bullets on the front lines to fight for each of us, our freedoms, and our livelihood," said Landrieu. "They should be the first in line when it comes to tax relief."

Guard and Reserve members comprise about 45 percent of US troops in Iraq and Afghanistan, and about 41 percent of those take a pay cut while deployed, said Landrieu, citing estimates from the Government Accountability Office. Last October, the Senate passed a similar measure following a three-day filibuster by Landrieu during debate over a corporate tax relief bill.

Spousal Consent Controversy

Another death benefits issue to be settled during the House-Senate conference deliberations concerns "spousal consent."

At issue are two situations: First, a military enrollee in SGLI chooses to designate someone other than a spouse to be the primary beneficiary. Second, an enrollee elects to take less than the maximum amount of coverage.

The House said that, in both cases, the enrollee must obtain the consent of his or her spouse. In so doing, it ignored warnings from military service organizations—including the Air Force Association—that such a demand was "excessively stringent." A more appropriate change, they ar-

gued, is to require only "spousal notification," not "consent."

The House agreed to require spousal consent, taking its cue from the Sessions-Lieberman bill, introduced as companion legislation in the House by Rep. Terry Everett (R-Ala.). The spousal consent provision was influenced by the story of Rachelle Arroyave who was pregnant and raising two young daughters at Camp Pendleton, Calif., in April 2004 when notified that her husband, Marine SSgt. Jimmy Arroyave, had been killed in Iraq.

Rachelle got another shock the next day, she said, when she learned that her husband, weeks before his death, had redesignated his mother, rather than Rachelle or his children, as beneficiary of $250,000 in SGLI.

"If I knew how my husband had things set up," Rachelle said, "I would have discussed it with him, and I would have taken a policy out on my own to ensure that our children and I had some sort of financial security."

The Military Coalition, an umbrella group of service associations, initially endorsed the Sessions-Lieberman bill, including the spousal consent obligation, then changed its position, agreeing with the House Veterans' Affairs Committee that "spousal notification" would be more appropriate.

During floor debate, Rep. Shelley Berkley (D-Nev.) said not all service members have the same relationships with their spouses. Some reasonably prefer to leave their insurance to, say, children from a first marriage. Berkley also said that if a spouse is addicted to drugs, the member might want to make their children primary SLGI beneficiaries to ensure that money intended for schooling or clothes doesn't feed a drug habit instead.

Rep. Steve Buyer (R-Ind.), VA committee chairman, told colleagues that spousal consent violates "the principles of contractual law and the nature of life insurance." It effectively makes SGLI an involuntary plan for married members, he said.

The House, however, declined to allow amendments and passed the spousal consent requirement within the war supplemental.

Opponents hoped to persuade the Senate to accept spousal notification as an alternative and to fight for it again during a House-Senate conference to shape a final supplemental appropriations bill.

VA Enrollment Fee

After embracing in February the Bush Administration's plan to impose a $250 annual enrollment fee on lower

DOD photo by R.D. Ward

Abell seeks drawdown tools.

priority veterans seeking VA health care, Sen. Larry Craig (R-Idaho), chairman of the Senate Veterans' Affairs Committee, had a change of heart.

In March, Craig joined with fellow Republican Sens. John Ensign (Nev.), Kay Bailey Hutchison (Tex.), and David Vitter (La.) in co-sponsoring an amendment to add $410 million to the Senate budget blueprint for the Department of Veterans Affairs, thus removing the need for the enrollment fee. Ensign freed up the additional money by agreeing to lower spending on certain international initiatives, said VA committee spokesman Jeff Schrade.

"I don't think he found the enrollment fee unreasonable," said Schrade of Craig's sea change. "But you do what you can to help veterans."

The change means the Senate budget for 2006 no longer supports collecting enrollment fees from veterans in priority categories 7 and 8, those who are neither disabled nor poor. However, the House budget continues to support a proposal that those veterans pay a sliding-scale VA medical enrollment fee, from $230 to $500 annually, depending on income.

Both the House and Senate earlier had rejected another Administration initiative that would raise co-payments on VA-provided prescription drugs for non-service related conditions from $7 to $15.

Force Shaping Tools

The Defense Department has asked Congress to revive separation incentives and forced-retirement authorities last used during the post-Cold War drawdown.

They are needed as "force-shaping tools," said Charles S. Abell, principal deputy undersecretary of defense for personnel and readiness.

Abell said the Pentagon wants Congress to allow:

- A lump-sum "buyout" bonus, possibly set as high as $25,000, to entice noncommissioned officers in overpopulated or low-demand job specialties to leave service before retirement eligibility at 20 years.
- A voluntary separation annuity that could be offered as an alternative to a cash buyout, again to entice those NCOs in overfilled specialties to leave before they reach 20-year retirement eligibility.
- New, high-year tenure gates for

AP photo by A.J. Mast

Buyer says "spousal consent" violates principles of law and insurance.

retirement-eligible officers to thin out populations in certain low-demand career fields.

■ Involuntary Selective Early Retirement Board (SERB) authority to be used as a "last resort" to retire officers involuntarily.

The Navy and Air Force are the only services currently cutting the size of active forces and therefore are more likely to use the new authorities, Abell said. The Navy will cut 25,000 sailors by 2007, and the Air Force will trim 2,300 airmen.

The force-shaping authorities sought are "not about getting rid of folks," said Abell, adding, "It's about keeping the right folks and right skill and experience mix."

During the post-Cold War drawdown, which followed the 1991 Persian Gulf War, the services enticed tens of thousands of careerists to leave with offers of either a Voluntary Separation Incentive (VSI) annuity or a Special Separation Benefit (SSB) lump-sum bonus.

VSI was set at 2.5 percent of a member's final basic pay times years served. SSB was 15 percent of a member's annual basic pay times years served. Abell said the two new authorities sought would be similar to these.

The services also need tougher high-year tenure rules to separate some retirement-eligible officers either to speed promotion of younger officers or to trim numbers in certain low-demand skill areas. In some circumstances, SERBs could be needed to review the relative performance of officers in certain year groups and specialties, identify the least capable, and retire them.

Abell said service leaders generally view SERBs as "breaking faith" with career officers, but without the SERB threat, he said, voluntary separation incentives are less effective.

"The carrot is sweeter when they know there's a stick," he said.

Early Disabled Retirees

Recent legislation that lifted the ban on concurrent receipt of military retired pay and VA disability compensation for the most seriously disabled and for all combat-injured retirees with 20 years or more years of service has widened the compensation gap between the 20-plus years group and retirees who are forced by their medical conditions to retire with less than 20 years.

To address this disparity, Rep. Mike Bilirakis (R-Fla.) has introduced HR 1366 to help disabled military members who were forced to retire short of 20 years due to combat-related or operations-related conditions.

Bilirakis said the members in that category also forfeit a dollar of military retired pay for every dollar they receive in disability compensation. His bill would allow the combat-wounded among these so-called Chapter 62 retirees to receive retired pay in addition to disability compensation.

Specifically, they would receive an amount of retired pay equal to 2.5 percent of the member's average basic pay over their highest three earning years, multiplied by total years served.

The bill had only four co-sponsors nearly a month after its introduction March 17, but service associations and thousands of combat-disabled retirees forced to leave service early now have legislation to rally around.

USAF photo by SSgt. Matthew Hannen

Some reservists can opt for Tricare.

Tricare Reserve Select

Thousands of Reserve and Guard members deactivated from post-9/11 deployments and thousands more soon to complete deployments are eligible to enroll in Tricare Reserve Select, a scaled-down version of Tricare Standard, the military fee-for-service medical plan.

Approved by Congress last fall, TRS took effect April 26, with monthly premiums announced only a month earlier.

In 2005, self-only coverage will cost $75 a month ($900 annually) and family premiums will be $233 ($2,796 annually). The rates are set to cover 28 percent of TRS costs, matching the cost-sharing formula for federal civilian employees enrolled in the Federal Employees Health Benefits Program.

Entering the program requires more than paying premiums, however. Reservists must make binding agreements to remain in the Selected Reserve for the duration of TRS coverage.

Not all drilling reservists are eligible. To qualify, reserve component members must have been mobilized under contingency orders of 30 days or longer and have served at least 90 days' continuous active service. For every 90 days served, a member will be eligible for a year of TRS. So a year's continuous deployment could qualify Guard or Reserve members for four years of coverage for themselves and their families.

If a reservist stopped payment, perhaps because of new health benefits offered by a civilian employer, coverage will end, but the extended service obligation would stand. TRS users also will pay the usual Tricare Standard fees, co-payments, and annual deductibles. They will not be eligible for Tricare Prime, the military managed care program, but may have access to military treatment facilities (MTFs) on a space-available basis. They will be eligible for drugs through MTF pharmacies, mail order, and Tricare network pharmacies.

TRS does not include all Tricare Standard provisions. For instance, it does not offer Standard's Program for Persons with Disabilities to aid those who have dependents who are mentally retarded or who have a serious physical disability.

Reservists must decide to enroll in TRS before leaving active duty. If they depart without a "preliminary" TRS agreement, eligibility expires.

One defense official called TRS "technically, one of the most complex benefits that we've ever rolled out."

Most deployed reservists and families already are eligible for Tricare for six months after mobilization. Congress authorized that temporary post-mobilization benefit permanently last year. TRS coverage starts when the transition coverage ends, on the 181st day after leaving active duty.

To seal the TRS agreement, the reservist must find a slot in a Selected Reserve unit. If the service can guarantee only two years in drill status, the TRS final agreement must be limited to two years. ■

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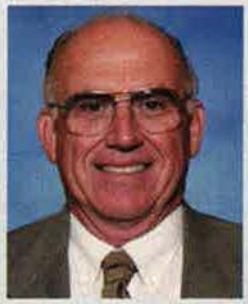

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Verbatim

By John T. Correll, Contributing Editor

They Get Worse

"Pentagon officials had better be careful what they wish for. Although we may characterize the Dear Leader as a nasty piece of work, some of his military men are nastier still."—***Bradley Martin, biographer of North Korean dictator Kim Jong Il,*** **Newsweek,** ***Feb. 21.***

Circumnavigator

"Well, that was something I wanted to do for a long time."—***Steve Fossett, pilot of the privately sponsored aircraft*** **GlobalFlyer,** ***landing March 3 after the first solo nonstop flight around the world,*** **Washington Post,** ***March 4.***

Cut Overseas Bases First

"I understand we have excess facilities, but domestic training bases, which are barely meeting required training volume now, should remain open during war. BRAC 2005 should be about realignment first and closure second, with an emphasis on eliminating excess overseas capacity. During war, domestic base closure should be only a very distant and last resort."—***Sen. Trent Lott (R-Miss.), chairman of Senate Rules and Administration Committee, signed column,*** **USA Today,** ***March 7.***

Man for the Ages

"We have to fix it or Rumsfeld may never retire."—***President Bush, referring to Social Security at Gridiron Club dinner, washingtonpost.com, March 12.***

Nazi History and Real History

"Today we grieve for the victims of war and the Nazi regime of terror in Dresden, in Germany, and in Europe. We will oppose in every way these attempts to reinterpret history. We will not allow cause and effect to be reversed."—***German Chancellor Gerhard Schroeder, after march in Dresden by several thousand neo-Nazis and others who depicted the bombing of the city in World War II as a war crime,*** **Washington Post,** ***Feb. 14.***

Message for Mischief Makers

"The world has seen, in the last 3.5 years, the capability of the United States of America to go into Afghanistan ... and with 20,000, 15,000 troops working with the Afghans do what 200,000 Soviets couldn't do in a decade. They've seen the United States and the coalition forces go into Iraq. ... That has to have a deterrent effect on people. ... If you put yourself in the shoes of a country that might decide they'd like to make mischief, they have a very recent, vivid example of the fact that the United States has the ability to deal with this."—***Secretary of Defense Donald H. Rumsfeld, House Armed Services Committee, March 10.***

Al Qaeda Not Impressed

"If you Western nations believe that these cartoon governments will protect you from our responses, then you are deluded. Your real security lies in cooperating with the Muslim nation on the basis of respect and ending aggression."—***Ayman al-Zawahiri, al Qaeda deputy leader, on Arab television network Al Jazeera,*** **New York Times,** ***Feb. 21.***

Airdrop by GPS

"I can already look at the Army concept of operations and tell you that we're going to need to develop a Global Positioning System-guided airdrop capability."—***Gen. John P. Jumper, Air Force Chief of Staff,*** **Air Force Times,** ***March 14.***

Go Get 'Em

"The United Nations must show zero tolerance of terrorism of any kind, for any reason."—***UN Secretary-General Kofi Annan, Associated Press, Feb. 13.***

Big Cheaters and Little Cheaters

"You have to think the Iranians are watching how we handle the North Koreans in the next few months. If you won't do anything with a big cheater, what are the middle and future cheaters to think?"—***Nicholas Eberstadt, American Enterprise Institute,*** **New York Times,** ***Feb. 20.***

Just Kill Something

"Former deputy CIA director Richard Kerr said the only way for [intelligence director John D.] Negroponte to establish his authority with the Defense Department is to 'early on make decisions that have a major impact,' such as changing allocation for a costly satellite collection program run by one of the Pentagon agencies."—***Walter Pincus,*** **Washington Post,** ***March 1.***

The Far Reaches of Outsourcing

"It seems we are the preferred bidder to provide supplemental lift for NATO forces. The main requirement is for equipment transport, armored vehicles, helicopters, radar units, anything associated with NATO responding to a crisis."—***Tony Bauckham, managing director of Volga-Dnepr UK, a Russian cargo transport firm,*** **London Times,** ***March 12.***

Wrong Focus

"Is it really useful that we spend money in Europe maintaining in service 11,000 main battle tanks? Would it not be better to concentrate on more modern technologies such as communications? Modern warfare depends on intelligence. ... We probably have collectively too many fighter aircraft, too many naval hulls, too many battle tanks."—***Nick Witney, British chief executive of the European Defense Agency,*** **London Times,** ***March 2.***

All But Won

"It will be some months before the news media recognize it, and a few months more before they acknowledge it, but the war in Iraq is all but won."—***Jack Kelly, former marine, former Green Beret, former deputy assistant secretary of the Air Force, now a syndicated columnist,*** **Pittsburgh Post-Gazette,** ***Feb. 27.***

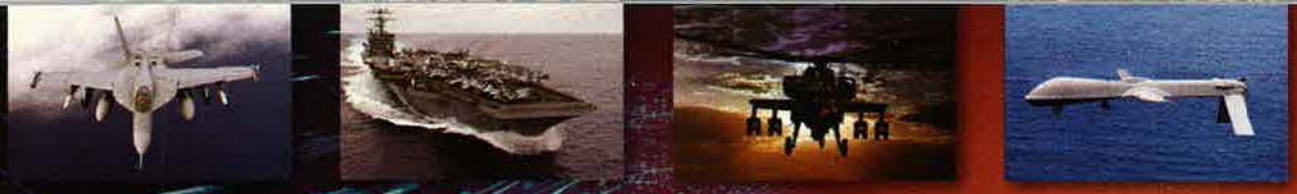
Empower the General Assembly

"The so-called UN Security Council is an ugly, forceful, and horrible instrument of dictatorship. It is an executioner's whip with no appeal against its judgment even if its judgment is unfair, biased, and harmful."—***Libyan leader Muammar Qaddafi, calling for transfer of power to the UN General Assembly, full page ad,*** **Washington Post,** ***March 9.***

Flashback

Home Front Defense

During World War II, massive numbers of American civilians volunteered for wartime duties, augmenting the work of the armed services branches. Among the largest such efforts was the Civil Air Defense, the forerunner of today's Civil Air Patrol. Five-and-a-half million men and women stepped forward to render service in tracking and identifying aircraft, patrolling coastal waters, and similiar duties. In this April 15, 1943, photo, women volunteers at the CAD filter center at Patriot Hall in Los Angeles chart and record the flights of various aircraft.



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USAF Almanac

Photo © Tom and Pat Leeson

ac 2005

About the Almanac

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, Air Staff agencies, major commands, and reserve components 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 major command, field operating agency, and direct reporting unit reports or in the "Guide to USAF Installations Worldwide") because of different cutoff dates, rounding, 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

Photo © Tom and Pat Leeson

Edited by Tamar A. Mehuron, Associate Editor

The Air Force in Facts and Figures

2005 USAF Almanac

Structure of the Force

How the Air Force Is Organized

There is considerable variation in how the major commands and subordinate units of the Air Force are organized. This overview describes both the typical organization chain and USAF's Air and Space Expeditionary Force.

The **Department of Defense (DOD)** is a Cabinet agency headed by the Secretary of Defense. It was created in 1947 to consolidate preexisting military agencies—the War Department and the Navy Department. Subordinate to DOD are the three military departments (Army, Navy, and Air Force), each headed by a civilian secretary.

The **Joint Chiefs of Staff (JCS)** constitute the corporate military leadership of DOD. The Chairman and vice chairman of the JCS serve full-time in their positions. The service chiefs are the military heads of their respective services, although JCS responsibilities take precedence.

The **Department of the Air Force** is headed by the Secretary of the Air Force, who is supported by a staff called the Secretariat. The Chief of Staff, USAF, heads the Air Staff, and the military heads of the major commands report to the Chief of Staff.

Most units of the Air Force are assigned to one of the **major commands.** Major commands are headed by general officers and have broad functional responsibilities. Commands may be divided into **numbered air forces.**

The fundamental unit of the working Air Force is the **wing**. The typical Air Force base is built around a wing. Some wings are commanded by a general officer, while others are headed by a colonel. An objective wing contains an **operations group,** which includes aircrews, intelligence units, and others; a **maintenance group,** which includes maintenance squadrons; a **support group,** which includes such functions as civil engineers, logistics readiness, and security forces; and a **medical group.**

Most individual officers and airmen are assigned to a **squadron,** which may be composed of several **flights.**

In addition to these units, there are numerous others, including centers, field operating agencies, and direct reporting units.

The Air and Space Expeditionary Force

To relieve chronic optempo problems stemming from back-to-back deployments and operations, the Air Force developed an expeditionary concept initially called the Expeditionary Aerospace Force. The term EAF has since been supplanted by the term Air and Space Expeditionary Force **(AEF).** The term AEF also refers to a basic organizational unit. USAF groups its power projection and support forces into 10 AEF "buckets of capability." The 10 AEFs are grouped into five pairs. Initially, these five pairs of AEFs rotated through a 15-month cycle, with each pair assigned to one of five 90-day periods. In fall 2004, USAF revised its AEF arrangement, extending the cycles to 20 months, divided into five 120-day periods. The Air Force also incorporated its on-call forces into the standard AEF rotation.

During each 120-day period, a designated pair of AEFs is vulnerable to deployment. Each AEF comprises combat air forces **(CAF),** mobility air forces **(MAF),** and low-density, high-demand **(LD/HD)** forces consisting of various active duty, ANG, and AFRC units.

USAF's LD/HD forces include battle management, combat search and rescue, command and control, and reconnaissance assets. They are in near constant use and, consequently, rotate more frequently than most CAF and MAF elements.

The new expeditionary system began with Cycle 1 in October 1999. Cycle 4, which began June 1, 2003, included two temporary stopgap AEFs, designated AEF Blue (June 1-Oct. 31, 2003) and AEF Silver (Nov. 1, 2003-Feb. 29, 2004), formed in the wake of Operation Iraqi Freedom. They mostly comprised forces not used in the war. During the Blue and Silver deployments, USAF was able to reconstitute its wartime forces for return to the standard rotation cycle. ■

AEF The Air and Space Expeditionary Force

AEF Cycle 5: Sept. 1, 2004-April 30, 2006

AEF Rotational Combat Air Forces

	Sept. 1, 2004-Dec. 31, 2004 AEF 1/AEF 2		Jan. 1, 2005-April 30, 2005 AEF 3/AEF 4		May 1, 2005-Aug. 31, 2005 AEF 5/AEF 6		Sept. 1, 2005-Dec. 31, 2005 AEF 7/AEF 8		Jan. 1, 2006-April 30, 2006 AEF 9/AEF 10	
	Unit	**Aircraft**	**Unit**	**Aircraft**	**Unit**	**Aircraft**	**Unit**	**Aircraft**	**Unit**	**Aircraft**
Active	81st FS	A/OA-10	75th FS	A/OA-10	74th FS	A/OA-10	354th FS	A/OA-10	355th FS	A/OA-10
	9th BW	B-1B	20th BS	B-52	23rd BS	B-52	34th BS	B-1B	37th BS	B-1B
	12th FS	F-15C	96th BS	B-52	44th FS	F-15C	27th FS	F-15C	60th FS	F-15C
	58th FS	F-15C	19th FS	F-15C	390th FS	F-15C/D	67th FS	F-15C	71st FS	F-15C
	90th FS	F-15E	493rd FS	F-15C	391st FS	F-15E	492nd FS	F-15E	336th FS	F-15E
	335th FS	F-15E	494th FS	F-15E	510th FS	F-16CG	555th FS	F-16CG	4th FS	F-16CG
	421st FS	F-16CG	523rd FS	F-16C	13th FS	F-16CJ	14th FS	F-16CJ	18th FS	F-16CG
	79th FS	F-16CJ	34th FS	F-16CG	55th FS	F-16CJ	522nd FS	F-16CJ	23rd FS	F-16CJ
	23rd FS	F-16CJ	524th FS	F-16CG	27th FS	F/A-22			389th FS	F-16CJ
			77th FS	F-16CJ						
ANG	102nd FW	F-15A	113th Wing	F-16C	103rd FW	A/OA-10	104th FW	A/OA-10	125th FW	F-15A
	159th FW	F-15A	144th FW	F-16C	111th FW	A/OA-10	110th FW	A/OA-10	142nd FW	F-15A
	131st FW	F-15C	174th FW	F-16C	175th FW	A/OA-10	124th FW	A/OA-10	154th FW	F-15A
	115th FW	F-16C	192nd FW	F-16C	119th FW	F-16A	127th FW	F-16C	120th FW	F-16C
	183rd FW	F-16C	169th FW	F-16CJ	147th FW	F-16C	181st FW	F-16C	122nd FW	F-16C
	187th FW	F-16C			148th FW	F-16C			140th FW	F-16C
					188th FW	F-16C			150th FW	F-16C
					132nd FW	F-16CG			158th FW	F-16C
					138th FW	F-16CG			177th FW	F-16C
					180th FW	F-16CG				
AFRC	442nd FW	A/OA-10	93rd BW	B-52			301st FW	F-16C		
	926th FW	A/OA-10					419th FW	F-16C		
							482nd FW	F-16C		

AEF Cycles Through the Years

Number	Dates
Cycle 1	Oct. 1, 1999-Nov. 31, 2000
Cycle 2	Dec. 1, 2000-Feb. 28, 2002
Cycle 3	March 1, 2003-May 31, 2003
Cycle 4	June 1, 2003-Aug. 31, 2004

Acronyms

AACS	Airborne Air Control Squadron
ACS	Air Control Squadron
AG	Airlift Group
AMW	Air Mobility Wing
ARG	Airlift Refueling Group
ARW	Air Refueling Wing
AS	Airlift Squadron
AW	Airlift Wing
BS	Bomb Squadron
BW	Bomb Wing
ECS	Electronic Combat Squadron
ECS	Expeditionary Combat Support
FS	Fighter Squadron
FW	Fighter Wing
LD/HD	Low Density, High Demand
RS	Reconnaissance Squadron
RQS	Rescue Squadron

USAF photo by SSgt. Matthew Hannen

At a base in Southwest Asia, airmen prepare to launch an F-15C fighter. Maintainers and operators alike rotate through a 120-day AEF cycle.

AEF Rotational Mobility Air Forces

	Sept. 1, 2004-Dec. 31, 2004 AEF 1/AEF 2		Jan. 1, 2005-April 30, 2005 AEF 3/AEF 4		May 1, 2005-Aug. 31, 2005 AEF 5/AEF 6		Sept. 1, 2005-Dec. 31, 2005 AEF 7/AEF 8		Jan. 1, 2006-April 30, 2006 AEF 9/AEF 10	
	Unit	Aircraft	Unit	Aircraft	Unit	Aircraft	Unit	Aircraft	Unit	Aircraft
Active	43rd AW	C-130	43rd AW	C-130	43rd AW	C-130	43rd AW	C-130	43rd AW	C-130
	86th AW	C-130	86th AW	C-130	86th AW	C-130	86th AW	C-130	86th AW	C-130
	317th AG	C-130	317th AG	C-130	317th AG	C-130	317th AG	C-130	317th AG	C-130
	463rd AG	C-130	463rd AG	C-130	463rd AG	C-130	463rd AG	C-130	463rd AG	C-130
	517th AS	C-130	517th AS	C-130	517th AS	C-130	517th AS	C-130	517th AS	C-130
	305th AMW	KC-10	60th AMW	KC-10	305th AMW	KC-10	60th AMW	KC-10	305th AMW	KC-10
	6th AMW	KC-135R	6th AMW	KC-135R	6th AMW	KC-135R	6th AMW	KC-135R	6th AMW	KC-135R
	19th ARG	KC-135R	19th ARG	KC-135R	19th ARG	KC-135R	19th ARG	KC-135R	19th ARG	KC-135R
	22nd ARW	KC-135R	22nd ARW	KC-135R	22nd ARW	KC-135R	22nd ARW	KC-135R	22nd ARW	KC-135R
	92nd ARW	KC-135R	92nd ARW	KC-135R	92nd ARW	KC-135R	92nd ARW	KC-135R	92nd ARW	KC-135R
	319th ARW	KC-135R	319th ARW	KC-135R	319th ARW	KC-135R	319th ARW	KC-135R	319th ARW	KC-135R
ANG	127th Wing	C-130	127th Wing	C-130	127th Wing	C-130	127th Wing	C-130	127th Wing	C-130
	130th AW	C-130	130th AW	C-130	130th AW	C-130	130th AW	C-130	130th AW	C-130
	136th AW	C-130	136th AW	C-130	136th AW	C-130	136th AW	C-130	136th AW	C-130
	137th AW	C-130	137th AW	C-130	137th AW	C-130	137th AW	C-130	137th AW	C-130
	139th AW	C-130	139th AW	C-130	139th AW	C-130	139th AW	C-130	139th AW	C-130
	143rd AW	C-130	143rd AW	C-130	143rd AW	C-130	143rd AW	C-130	143rd AW	C-130
	145th AW	C-130	145th AW	C-130	145th AW	C-130	145th AW	C-130	145th AW	C-130
	152nd AW	C-130	152nd AW	C-130	152nd AW	C-130	152nd AW	C-130	152nd AW	C-130
	153rd AW	C-130	153rd AW	C-130	153rd AW	C-130	153rd AW	C-130	153rd AW	C-130
	165th AW	C-130	165th AW	C-130	165th AW	C-130	165th AW	C-130	165th AW	C-130
	166th AW	C-130	166th AW	C-130	166th AW	C-130	166th AW	C-130	166th AW	C-130
	175th AW	C-130	175th AW	C-130	175th AW	C-130	179th AW	C-130	179th AW	C-130
	179th AW	C-130	179th AW	C-130	179th AW	C-130	182nd AW	C-130	182nd AW	C-130
	182nd AW	C-130	182nd AW	C-130	182nd AW	C-130				
AFRC	440th AW	C-130	440th AW	C-130	440th AW	C-130	302nd AW	C-130	302nd AW	C-130
	908th AW	C-130	908th AW	C-130	908th AW	C-130	913th AW	C-130	913th AW	C-130
	910th AW	C-130	910th AW	C-130	910th AW	C-130	914th AW	C-130	914th AW	C-130
	911th AW	C-130	911th AW	C-130	911th AW	C-130				
	914th AW	C-130	914th AW	C-130	914th AW	C-130				
	934th AW	C-130	934th AW	C-130	934th AW	C-130				

AEF Rotational Low-Density, High-Demand Forces

	Sept. 1, 2004-Dec. 31, 2004 AEF 1/AEF 2		Jan. 1, 2005-April 30, 2005 AEF 3/AEF 4		May 1, 2005-Aug. 31, 2005 AEF 5/AEF 6		Sept. 1, 2005-Dec. 31, 2005 AEF 7/AEF 8		Jan. 1, 2006-April 30, 2006 AEF 9/AEF 10	
	Unit	Aircraft	Unit	Aircraft	Unit	Aircraft	Unit	Aircraft	Unit	Aircraft
Active	960th AACS	E-3	962nd AACS	E-3	964th AACS	E-3	960th AACS	E-3	963rd AACS	E-3
	965th AACS	E-3	963rd AACS	E-3	965th AACS	E-3	961st AACS	E-3	964th AACS	E-3
	12th AACS	E-8	12th AACS	E-8	12th AACS	E-8	12th AACS	E-8	12th AACS	E-8
	16th AACS	E-8	16th AACS	E-8	16th AACS	E-8	16th AACS	E-8	16th AACS	E-8
	41st ECS	EC-130H	41st ECS	EC-130H	41st ECS	EC-130H	41st ECS	EC-130H	41st ECS	EC-130H
	43rd ECS	EC-130H	43rd ECS	EC-130H	43rd ECS	EC-130H	43rd ECS	EC-130H	43rd ECS	EC-130H
	41st RQS	HH-60	41st RQS	HH-60	41st RQS	HH-60	41st RQS	HH-60	41st RQS	HH-60
	66th RQS	HH-60	66th RQS	HH-60	71st RQS	HC-130	71st RQS	HC-130	66th RQS	HH-60
	71st RQS	HC-130	71st RQS	HC-130	38th RS	RC-135	38th RS	RC-135	71st RQS	HC-130
	38th RS	RC-135	38th RS	RC-135	15th RS	RQ-1	15th RS	RQ-1	38th RS	RC-135
	15th RS	RQ-1	15th RS	RQ-1	99th RS	U-2	99th RS	U-2	15th RS	RQ-1
	99th RS	U-2	99th RS	U-2	603rd ACS		729th ACS		99th RS	U-2
	728th ACS		726th ACS						606th ACS	
ANG					109th ACS		102nd RQS	HH-60	123rd ACS	
							129th RQS	HH-60		
							102nd RQS	HC-130		
							129th RQS	HC-130		
AFRC					301st RQS	HH-60	970th AACS	E-3		
					305th RQS	HH-60				
					39th RQS	HC-130				

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Aircraft Armor Seating Systems Inflatable Restraints Body Armor Personnel Protective Equipment Armored Vehicles Vehicle Armor Kits

AEF Rotation Cycle, Expeditionary Combat Support Forces

	Sept. 1, 2004-Dec. 31, 2004 **AEF 1/AEF 2** Base	Jan. 1, 2005-April 30, 2005 **AEF 3/AEF 4** Base	May 1, 2005-Aug. 31, 2005 **AEF 5/AEF 6** Base	Sept. 1, 2005-Dec. 31, 2005 **AEF 7/AEF 8** Base	Jan. 1, 2006-April 30, 2006 **AEF 9/AEF 10** Base
Active	Andersen AFB, Guam Altus AFB, Okla. Charleston AFB, S.C. Columbus AFB, Miss. Dover AFB, Del. Dyess AFB, Tex. Eglin AFB, Fla. Elmendorf AFB, Alaska Hanscom AFB, Mass. Keesler AFB, Miss. Laughlin AFB, Tex. Luke AFB, Ariz. MacDill AFB, Fla. Maxwell AFB, Ala. McGuire AFB, N.J. Moody AFB, Ga. Patrick AFB, Fla. Peterson AFB, Colo. Pope AFB, N.C. Ramstein AB, Germany Robins AFB, Ga. Scott AFB, Ill. Seymour Johnson AFB, N.C. Shaw AFB, S.C. Sheppard AFB, Tex. Spangdahlem AB, Germany Tinker AFB, Okla.	Andrews AFB, Md. Arnold AFB, Tenn. Barksdale AFB, La. Beale AFB, Calif. Brooks City-Base, Tex. Buckley AFB, Colo. Cannon AFB, N.M. Davis-Monthan AFB, Ariz. Edwards AFB, Calif. Eielson AFB, Alaska Ellsworth AFB, S.D. Fairchild AFB, Wash. F.E. Warren AFB, Wyo. Goodfellow AFB, Tex. Grand Forks AFB, N.D. Hill AFB, Utah Holloman AFB, N.M. Hurlburt Field, Fla. Lajes Field, Azores, Portugal Los Angeles AFB, Calif. McChord AFB, Wash. Misawa AB, Japan NAS Keflavik, Iceland Nellis AFB, Nev. Offutt AFB, Neb. RAF Lakenheath, UK Randolph AFB, Tex. Schriever AFB, Colo. Travis AFB, Calif. Tyndall AFB, Fla. Vandenberg AFB, Calif. Whiteman AFB, Mo. Yokota AB, Japan	Aviano AB, Italy Bolling AFB, D.C. Charleston AFB, S.C. Dover AFB, Del. Hanscom AFB, Mass. Hickam AFB, Hawaii Incirlik AB, Turkey Kadena AB, Japan Keesler AFB, Miss. Kirtland AFB, N.M. Lackland AFB, Tex. Langley AFB, Va. Laughlin AFB, Tex. Little Rock AFB, Ark. Luke AFB, Ariz. MacDill AFB, Fla. Malmstrom AFB, Mont. Maxwell AFB, Ala. McConnell AFB, Kan. McGuire AFB, N.J. Minot AFB, N.D. Mountain Home AFB, Idaho RAF Mildenhall, UK Robins AFB, Ga. Scott AFB, Ill. Shaw AFB, S.C. USAF Academy, Colo. Vance AFB, Okla. Wright-Patterson AFB, Ohio	Altus AFB, Okla. Andersen AFB, Guam Arnold AFB, Tenn. Buckley AFB, Colo. Cannon AFB, N.M. Columbus AFB, Miss. Davis-Monthan AFB, Ariz. Dyess AFB, Tex. Edwards AFB, Calif. Eglin AFB, Fla. Elmendorf AFB, Alaska Ellsworth AFB, S.C. Grand Forks AFB, N.D. Hill AFB, Utah Hurlburt Field, Fla. Lajes Field, Azores, Portugal Los Angeles AFB, Calif. McChord AFB, Wash. Misawa AB, Japan Moody AFB, Ga. NAS Keflavik, Iceland Offutt AFB, Neb. Patrick AFB, Fla. Peterson AFB, Colo. Pope AFB, N.C. RAF Lakenheath, UK Ramstein AB, Germany Seymour Johnson AFB, N.C. Sheppard AFB, Tex. Spangdahlem AB, Germany Tinker AFB, Okla. Travis AFB, Calif. Vandenberg AFB, Calif.	Andrews AFB, Md. Aviano AB, Italy Barksdale AFB, La. Beale AFB, Calif. Bolling AFB, D.C. Brooks City-Base, Tex. Eielson AFB, Alaska Fairchild AFB, Wash. F.E. Warren AFB, Wyo. Goodfellow AFB, Tex. Hickam AFB, Hawaii Holloman AFB, N.M. Incirlik AB, Turkey Kadena AB, Japan Kirtland AFB, N.M. Lackland AFB, Tex. Langley AFB, Va. Little Rock AFB, Ark. Malmstrom AFB, Mont. McConnell AFB, Kan. Minot AFB, N.D. Mountain Home AFB, Idaho Nellis AFB, Nev. RAF Mildenhall, UK Randolph AFB, Tex. Schriever AFB, Colo. Tyndall AFB, Fla. USAF Academy, Colo. Vance AFB, Okla. Whiteman AFB, Mo. Wright-Patterson AFB, Ohio Yokota AB, Japan
ANG	Allen C. Thompson Field, Miss. Birmingham Arpt., Ala. Capital Arpt., Ill. Charlotte/Douglas Arpt., N.C. Dannelly Field, Ala. General Mitchell Arpt./ARS Wis. Lambert-St. Louis Arpt., Mo. Louisville Arpt./AGS, Ky. Mansfield Lahm Arpt., Ohio Memphis Arpt., Tenn. Minneapolis-St. Paul Arpt./ARS, Minn. NAS JRB New Orleans, La.	Andrews AFB, Md. Channel Islands ANGS, Calif. Fresno Yosemite Arpt., Calif. Hancock Field, N.Y. Klamath Falls Arpt./Kingsley Field, Ore. Little Rock AFB, Ark. McEntire ANGS, S.C. McGuire AFB, N.J. NAS JRB Fort Worth, Tex. Quonset State Arpt., R.I. Richmond Arpt., Va. Salt Lake City Arpt., Utah Schenectady County Arpt., N.Y. Scott AFB, Ill. Springfield-Beckley Arpt., Ohio Tuscon Arpt., Ariz. Will Rogers World Arpt., Okla.	Bangor Arpt., Maine Bradley Arpt., Conn. Des Moines Arpt., Iowa Duluth Arpt., Minn. Ellington Field, Tex. Forbes Field, Kan. Hector Arpt., N.D. Fort Smith Arpt., Ark. Greater Peoria Arpt., Ill. Martin State Arpt., Md. McConnell AFB, Kan. McGhee Tyson ANGB, Tenn. Moffett Federal Airfield, Calif. NAS JRB Willow Grove, Pa. New Castle County Arpt., Del. Pittsburgh Arpt./ARS, Pa. Reno/Tahoe Arpt., Nev. Robins AFB, Ga. Savannah Arpt., Ga. Sky Harbor Arpt., Ariz. Stewart ANGB, N.Y. Toledo Express Arpt., Ohio Tulsa Arpt., Okla.	Barnes Arpt., Mass Boise Air Terminal, Idaho Cheyenne Arpt., Wyo. Eastern West Virginia Arpt., W.Va. Eielson AFB, Alaska Fairchild AFB, Wash. Francis S. Gabreski Arpt., N.Y. Hulman Arpt., Ind. Joe Foss Field, S.D. Kelly City-Base, Tex. Luis Munoz Marin Arpt., Puerto Rico Pease Intl. Tradeport ANGS, N.H. Selfridge ANGB, Mich. Sioux Gateway Arpt., Iowa W.K. Kellogg Arpt., Mich.	Atlantic City Arpt., N.J. Buckley AFB, Colo. Burlington Arpt., Vt. Fort Wayne Arpt., Ind. General Mitchell Arpt./ARS, Wis. Great Falls Arpt., Mont. Harrisburg Arpt., Pa. Hickam AFB, Hawaii Jacksonville Arpt., Fla. Key Field, Miss. Kirtland AFB, N.M. Kulis ANGB, Alaska Lincoln Arpt., Neb. March ARB, Calif. Nashville Arpt., Tenn. Niagara Falls Arpt./ARS, N.Y. Rickenbacker ANGB, Ohio Rosecrans Memorial Arpt., Mo. Yeager Arpt., W.Va.
AFRC	Charleston AFB, S.C. Dover AFB, Del. Eglin AFB, Fla. Lackland AFB, Tex. NAS JRB New Orleans, La. Scott AFB, Ill. Westover ARB, Mass. Whiteman AFB, Mo.	Barksdale AFB, La. March ARB, Calif. Maxwell AFB, Ala. McConnell AFB, Kan. Pittsburgh Arpt./ARS, Pa. Seymour Johnson AFB, N.C. Tinker AFB, Okla.	Davis-Monthan AFB, Ariz. Dobbins ARB, Ga. Minneapolis-St. Paul Arpt./ARS, Minn. Niagara Falls Arpt./ARS, N.Y. Peterson AFB, Colo. Portland Arpt., Ore. Patrick AFB, Fla. Wright-Patterson AFB, Ohio	Beale AFB, Calif. Grisson ARB, Ind. Hill AFB, Utah Homestead ARB, Fla. Keesler AFB, Miss. Luke AFB, Ariz. NAS JRB Fort Worth, Tex. Selfridge ANGB, Mich. Youngstown-Warren Arpt./ARS, Ohio	Andrews AFB, Md. General Mitchell Arpt./ARS, Wis. McChord AFB, Wash. McGuire AFB, N.J. NAS JRB Willow Grove, Pa. Travis AFB, Calif.

Note: USAF draws expeditionary combat support (ECS) personnel from the facilities listed here. ECS forces include communicators, contracting personnel, engineers, logisticians, medics, security forces, services, and others needed to establish air expeditionary force locations anywhere in the world.

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The Nation's Air Arm and Its Early Leaders

Designation	Commander (at highest rank)	Dates of Service
Aeronautical Division, US Signal Corps	**Chief, Aeronautical Division**	
Aug. 1, 1907-July 18, 1914	Capt. Charles deForest Chandler	Aug. 1, 1907-June 30, 1910
	Capt. Arthur S. Cowan	July 1, 1910-June 19, 1911
	Capt. Charles deForest Chandler	June 20, 1911-Sept. 9, 1913
	Maj. Samuel Reber	Sept. 10, 1913-July 17, 1914
Aviation Section, US Signal Corps	**Chief, Aviation Section**	
July 18, 1914-May 20, 1918	Lt. Col. Samuel Reber	July 18, 1914-May 5, 1916
	Lt. Col. George O. Squier	May 20, 1916-Feb. 19, 1917
	Lt. Col. John B. Bennet	Feb. 19, 1917-May 20, 1918
Division of Military Aeronautics, Secretary of War	**Director of Military Aeronautics**	
May 20, 1918-May 24, 1918	Maj. Gen. William L. Kenly (Kept same title three months into absorption by Air Service)	May 20, 1918-August 1918
Army Air Service	**Director of Air Service**	
May 24, 1918-July 2, 1926	John D. Ryan	Aug. 28, 1918-Nov. 27, 1918
	Maj. Gen. Charles T. Menoher	Jan. 2, 1919-June 4, 1920
	Chief of Air Service	
	Maj. Gen. Charles T. Menoher	June 4, 1920-Oct. 4, 1921
	Maj. Gen. Mason M. Patrick	Oct. 5, 1921-July 2, 1926
Army Air Corps	**Chief of Air Corps**	
July 2, 1926-Sept. 18, 1947[a]	Maj. Gen. Mason M. Patrick	July 2, 1926-Dec. 13, 1927
	Maj. Gen. James E. Fechet	Dec. 14, 1927-Dec. 19, 1931
	Maj. Gen. Benjamin D. Foulois	Dec. 20, 1931-Dec. 21, 1935
	Maj. Gen. Oscar Westover	Dec. 22, 1935-Sept. 21, 1938
	Maj. Gen. Henry H. Arnold	Sept. 29, 1938-June 20, 1941
Army Air Forces	**Chief, Army Air Forces**	
June 20, 1941-Sept. 18, 1947	Lt. Gen. Henry H. Arnold	June 20, 1941-March 9, 1942
	Commanding General, AAF	
	Gen. of the Army Henry H. Arnold	March 9, 1942-Feb. 9, 1946
	Gen. Carl A. Spaatz	Feb. 9, 1946-Sept. 26, 1947
United States Air Force	**Chief of Staff, USAF**	
Sept. 18, 1947	Gen. Carl A. Spaatz	Sept. 26, 1947-April 29, 1948

The title General of the Army for Henry H. Arnold was changed to General of the Air Force by an act of Congress May 7, 1949. The position of Chief of Staff was established by a DOD-approved Army-Air Force Transfer Order issued Sept. 28, 1947.

[a]The Army Air Corps became a subordinate element of the Army Air Forces June 20, 1941. Since the Army Air Corps had been established by statute in 1926, its disestablishment required an Act of Congress, which did not take place until 1947. Between March 9, 1942, and Sept. 18, 1947, the Army Air Corps continued to exist as a combatant arm, and personnel of the Army Air Forces were still assigned to the Army Air Corps.

USAF Leaders Through the Years

Secretaries of the Air Force

Stuart Symington	Sept. 18, 1947	April 24, 1950
Thomas K. Finletter	April 24, 1950	Jan. 20, 1953
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955
Donald A. Quarles	Aug. 15, 1955	April 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 (acting)	May 15, 1973	July 18, 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	April 6, 1977
John C. Stetson	April 6, 1977	May 18, 1979
Hans Mark (acting)	May 18, 1979	July 26, 1979
Hans Mark	July 26, 1979	Feb. 9, 1981
Verne Orr	Feb. 9, 1981	Nov. 30, 1985
Russell A. Rourke	Dec. 9, 1985	April 7, 1986
Edward C. Aldridge Jr. (acting)	April 8, 1986	June 8, 1986
Edward C. Aldridge Jr.	June 9, 1986	Dec. 16, 1988
James F. McGovern (acting)	Dec. 16, 1988	April 29, 1989
John J. Welch Jr. (acting)	April 29, 1989	May 21, 1989
Donald B. Rice	May 22, 1989	Jan. 20, 1993
Michael B. Donley (acting)	Jan. 20, 1993	July 13, 1993
Gen. Merrill A. McPeak (acting)	July 14, 1993	Aug. 5, 1993
Sheila E. Widnall	Aug. 6, 1993	Oct. 31, 1997
F. Whitten Peters (acting)	Nov. 1, 1997	July 30, 1999
F. Whitten Peters	July 30, 1999	Jan. 20, 2001
Lawrence J. Delaney (acting)	Jan. 20, 2001	June 1, 2001
James G. Roche	June 1, 2001	Jan. 20, 2005
Peter B. Teets (acting)	Jan. 20, 2005	March 25, 2005
Michael L. Dominguez (acting)	March 25, 2005	

USAF Chiefs of Staff

Gen. Carl A. Spaatz	Sept. 26, 1947	April 29, 1948
Gen. Hoyt S. Vandenberg	April 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	June 30, 1982
Gen. Charles A. Gabriel	July 1, 1982	June 30, 1986
Gen. Larry D. Welch	July 1, 1986	June 30, 1990
Gen. Michael J. Dugan	July 1, 1990	Sept. 17, 1990
Gen. John Michael Loh (acting)	Sept. 18, 1990	Oct. 29, 1990
Gen. Merrill A. McPeak	Oct. 30, 1990	Oct. 25, 1994
Gen. Ronald R. Fogleman	Oct. 26, 1994	Sept. 1, 1997
Gen. Ralph E. Eberhart (acting)	Sept. 2, 1997	Oct. 5, 1997
Gen. Michael E. Ryan	Oct. 6, 1997	Sept. 6, 2001
Gen. John P. Jumper	Sept. 6, 2001	

USAF Vice Chiefs of Staff

Gen. Hoyt S. Vandenberg	Oct. 10, 1947	April 28, 1948
Gen. Muir S. Fairchild	May 27, 1948	March 17, 1950
Lt. Gen. Lauris Norstad (acting)	May 22, 1950	Oct. 9, 1950
Gen. Nathan F. Twining	Oct. 10, 1950	June 29, 1953
Gen. Thomas D. White	June 30, 1953	June 30, 1957
Gen. Curtis E. LeMay	July 1, 1957	June 30, 1961
Gen. Frederic H. Smith Jr.	July 1, 1961	June 30, 1962
Gen. Willliam F. McKee	July 1, 1962	July 31, 1964
Gen. John P. McConnell	Aug. 1, 1964	Jan. 31, 1965
Gen. William H. Blanchard	Feb. 19, 1965	May 31, 1966
Lt. Gen. Hewitt T. Wheless (acting)	June 13, 1966	July 31, 1966
Gen. Bruce K. Holloway	Aug. 1, 1966	July 31, 1968
Gen. John D. Ryan	Aug. 1, 1968	July 31, 1969
Gen. John C. Meyer	Aug. 1, 1969	April 30, 1972
Gen. Horace M. Wade	May 1, 1972	Oct. 31, 1973
Gen. Richard H. Ellis	Nov. 1, 1973	Aug. 18, 1975
Gen. William V. McBride	Sept. 1, 1975	March 31, 1978
Gen. Lew Allen Jr.	April 1, 1978	June 30, 1978
Gen. James A. Hill	July 1, 1978	Feb. 29, 1980
Gen. Robert C. Mathis	March 1, 1980	May 31, 1982
Gen. Jerome F. O'Malley	June 1, 1982	Oct. 5, 1983
Gen. Lawrence A. Skantze	Oct. 6, 1983	July 31, 1984
Gen. Larry D. Welch	Aug. 1, 1984	July 31, 1985
Gen. John L. Piotrowski	Aug. 1, 1985	Jan. 31, 1987
Gen. Monroe W. Hatch Jr.	Feb. 1, 1987	May 24, 1990
Gen. John Michael Loh	May 25, 1990	March 25, 1991
Gen. Michael P.C. Carns	May 16, 1991	July 28, 1994
Gen. Thomas S. Moorman Jr.	July 29, 1994	July 11, 1997
Gen. Ralph E. Eberhart	July 11, 1997	May 26, 1999
Gen. Lester L. Lyles	May 27, 1999	April 17, 2000
Gen. John W. Handy	April 17, 2000	Nov. 5, 2001
Gen. Robert H. Foglesong	Nov. 5, 2001	Aug. 11, 2003
Gen. T. Michael Moseley	Aug. 12, 2003	

Chief Master Sergeants of the Air Force

CMSAF Paul W. Airey	April 3, 1967	July 31, 1969
CMSAF Donald L. Harlow	Aug. 1, 1969	Sept. 30, 1971
CMSAF Richard D. Kisling	Oct. 1, 1971	Sept. 30, 1973
CMSAF Thomas N. Barnes	Oct. 1, 1973	July 31, 1977
CMSAF Robert D. Gaylor	Aug. 1, 1977	July 31, 1979
CMSAF James M. McCoy	Aug. 1, 1979	July 31, 1981
CMSAF Arthur L. Andrews	Aug. 1, 1981	July 31, 1983
CMSAF Sam E. Parish	Aug. 1, 1983	June 30, 1986
CMSAF James C. Binnicker	July 1, 1986	July 31, 1990
CMSAF Gary R. Pfingston	Aug. 1, 1990	Oct. 25, 1994
CMSAF David J. Campanale	Oct. 26, 1994	Nov. 4, 1996
CMSAF Eric W. Benken	Nov. 5, 1996	July 30, 1999
CMSAF Frederick J. Finch	July 30, 1999	July 1, 2002
CMSAF Gerald R. Murray	July 1, 2002	

Air Combat Command

Gen. John Michael Loh	June 1, 1992	June 22, 1995
Gen. Joseph W. Ralston	June 23, 1995	Feb. 27, 1996
Lt. Gen. Brett M. Dula (acting)	Feb. 28, 1996	April 4, 1996
Gen. Richard E. Hawley	April 5, 1996	June 11, 1999
Gen. Ralph E. Eberhart	June 11, 1999	Feb. 8, 2000
Gen. John P. Jumper	Feb. 8, 2000	Sept. 6, 2001
Lt. Gen. Donald G. Cook (acting)	Sept. 6, 2001	Nov. 14, 2001
Gen. Hal M. Hornburg	Nov. 14, 2001	Nov. 17, 2004
Lt. Gen. Bruce A. Wright (acting)	Nov. 17, 2004	Feb. 6, 2005
Lt. Gen. William M. Fraser III (acting)	Feb. 6, 2005	

Air (Aerospace) Defense Command

Lt. Gen. George E. Stratemeyer	March 27, 1946	Nov. 30, 1948
Maj. Gen. Gordon P. Saville	Dec. 1, 1948	Sept. 1, 1949
Lt. Gen. Ennis C. Whitehead	Jan. 1, 1951	Aug. 24, 1951
Gen. Benjamin W. Chidlaw	Aug. 25, 1951	May 31, 1955
Maj. Gen. Frederic H. Smith Jr. (acting)	June 1, 1955	July 19, 1955
Gen. Earle E. Partridge	July 20, 1955	Sept. 16, 1956
Lt. Gen. Joseph H. Atkinson	Sept. 17, 1956	Feb. 28, 1961
Lt. Gen. Robert M. Lee	March 1, 1961	July 5, 1963
Maj. Gen. Robert H. Terrill (acting)	July 6, 1963	July 31, 1963
Lt. Gen. Herbert B. Thatcher	Aug. 1, 1963	July 31, 1967
Lt. Gen. Arthur C. Agan Jr.	Aug. 1, 1967	Feb. 28, 1970
Lt. Gen. Thomas K. McGehee	March 1, 1970	June 30, 1973
Gen. Seth J. McKee	July 1, 1973	Sept. 30, 1973
Gen. Lucius D. Clay Jr.	Oct. 1, 1973	Aug. 31, 1975
Gen. Daniel James Jr.	Sept. 1, 1975	Dec. 6, 1977
Gen. James E. Hill	Dec. 6, 1977	Dec. 31, 1979
Gen. James V. Hartinger	Jan. 1, 1980	March 31, 1980

Established March 21, 1946. Reassigned to Continental Air Command (1948). Discontinued July 1, 1950. Re-established as a major command and organized Jan. 1, 1951. Redesignated Aerospace Defense Command Jan. 15, 1968. Inactivated March 31, 1980.

Air Education and Training Command

Lt. Gen. John K. Cannon	April 13, 1946	Oct. 13, 1948
Lt. Gen. Robert W. Harper	Oct. 14, 1948	June 30, 1954
Maj. Gen. Glenn O. Barcus (acting)	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. 28, 1975
Gen. John W. Roberts	Aug. 29, 1975	April 1, 1979
Gen. Bennie L. Davis	April 1, 1979	July 28, 1981
Gen. Thomas M. Ryan Jr.	July 29, 1981	June 22, 1983
Gen. Andrew P. Iosue	June 23, 1983	Aug. 27, 1986
Lt. Gen. John A. Shaud	Aug. 28, 1986	June 5, 1988
Lt. Gen. Robert C. Oaks	June 6, 1988	June 24, 1990
Lt. Gen. Joseph W. Ashy	June 25, 1990	Dec. 9, 1992
Gen. Henry Viccellio Jr.	Dec. 10, 1992	June 19, 1995
Gen. Billy J. Boles	June 20, 1995	March 17, 1997
Gen. Lloyd W. Newton	March 17, 1997	June 22, 2000
Gen. Hal M. Hornburg	June 22, 2000	Nov. 14, 2001
Lt. Gen. John D. Hopper Jr. (acting)	Nov. 14, 2001	Dec. 17, 2001
Gen. Donald G. Cook	Dec. 17, 2001	

Established as Army Air Corps Flying Training Command Jan. 23, 1942. Redesignated AAF Flying Training Command March 1942, then AAF Training Command July 31, 1943. Redesignated ATC July 1, 1946. Redesignated AETC July 1, 1993.

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 (acting)	July 1, 1965	Oct. 18, 1965
Maj. Gen. Richard P. Klocko	Oct. 19, 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	June 21, 1979
Maj. Gen. Robert T. Herres	June 22, 1979	July 27, 1981
Maj. Gen. Robert F. McCarthy	July 27, 1981	June 1, 1984
Maj. Gen. Gerald L. Prather	June 1, 1984	Aug. 28, 1986
Maj. Gen. John T. Stihl	Aug. 28, 1986	March 29, 1988
Maj. Gen. James S. Cassity Jr.	March 29, 1988	May 16, 1989
Maj. Gen. Robert H. Ludwig	May 16, 1989	Nov. 9, 1990
Maj. Gen. John S. Fairfield	Nov. 9, 1990	July 1, 1991

Formerly Air Force Communications Service. Redesignated Air Force Communications Command Nov. 15, 1979. Redesignated Air Force Command, Control, Communications, and Computer Agency, an FOA, July 1, 1991.

Air Force Intelligence Command

Maj. Gen. Gary W. O'Shaughnessy	Oct. 1, 1991	June 1, 1993
Maj. Gen. Kenneth A. Minihan	June 2, 1993	Oct. 1, 1993

See Electronic Security Command.

Air Force Logistics Command

Lt. Gen. Nathan F. Twining	March 9, 1946	Oct. 13, 1947
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 (acting)	March 1, 1959	March 14, 1959
Gen. Samuel E. Anderson	March 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	March 28, 1968
Gen. Jack G. Merrell	March 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. 31, 1978
Gen. Bryce Poe II	Feb. 1, 1978	July 31, 1981
Gen. James P. Mullins	Aug. 1, 1981	Nov. 1, 1984
Gen. Earl T. O'Loughlin	Nov. 1, 1984	July 31, 1987
Gen. Alfred G. Hansen	July 31, 1987	Oct. 31, 1989
Gen. Charles C. McDonald	Oct. 31, 1989	July 1, 1992

Organized as AAF Materiel and Services July 17, 1944. Redesignated AAF Technical Service Command Aug. 31, 1944. Redesignated Air Technical Service Command July 1, 1945. Redesignated Air Materiel Command March 9, 1946. Redesignated Air Force Logistics Command April 1, 1961. Inactivated July 1, 1992.

Air Force Materiel Command

Gen. Ronald W. Yates	July 1, 1992	June 30, 1995
Gen. Henry Viccellio Jr.	June 30, 1995	May 9, 1997
Lt. Gen. Kenneth E. Eickmann (acting)	May 9, 1997	May 29, 1997
Gen. George T. Babbitt Jr.	May 29, 1997	April 20, 2000
Gen. Lester L. Lyles	April 20, 2000	Aug. 22, 2003
Gen. Gregory S. Martin	Aug. 22, 2003	


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Honeywell
ITT Industries
Middle River Aircraft Systems
MOOG
Northrop Grumman
Raytheon
Rolls-Royce
Smiths Aerospace
Vought Aircraft

Air Force Reserve Command

Maj. Gen. Rollin B. Moore Jr.	Aug. 1, 1968	Jan. 26, 1972
Brig. Gen. Alfred Verhulst (acting)	Jan. 27, 1972	March 15, 1972
Maj. Gen. Homer I. Lewis	March 16, 1972	April 8, 1975
Maj. Gen. William Lyon	April 16, 1975	April 16, 1979
Maj. Gen. Richard Bodycombe	April 17, 1979	Oct. 31, 1982
Maj. Gen. Sloan R. Gill	Nov. 1, 1982	Oct. 31, 1986
Maj. Gen. Roger P. Scheer	Nov. 1, 1986	Oct. 31, 1990
Maj. Gen. John J. Closner III	Nov. 1, 1990	Oct. 31, 1994
Maj. Gen. Robert A. McIntosh	Nov. 1, 1994	June 9, 1998
Maj. Gen. David R. Smith (acting)	June 9, 1998	Sept. 25, 1998
Lt. Gen. James E. Sherrard III	Sept. 25, 1998	June 1, 2004
Maj. Gen. J.J. Batbie Jr. (acting)	June 1, 2004	June 24, 2004
Lt. Gen. John A. Bradley	June 24, 2004	

Formerly Air Force Reserve, AFRC became a major command Feb. 17, 1997.

Air Force Space Command

Gen. James V. Hartinger	Sept. 1, 1982	July 30, 1984
Gen. Robert T. Herres	July 30, 1984	Oct. 1, 1986
Maj. Gen. Maurice C. Padden	Oct. 1, 1986	Oct. 29, 1987
Lt. Gen. Donald J. Kutyna	Oct. 29, 1987	March 29, 1990
Lt. Gen. Thomas S. Moorman Jr.	March 29, 1990	March 23, 1992
Gen. Donald J. Kutyna	March 23, 1992	June 30, 1992
Gen. Charles A. Horner	June 30, 1992	Sept. 13, 1994
Gen. Joseph W. Ashy	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III	Aug. 26, 1996	Aug. 14, 1998
Gen. Richard B. Myers	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart	Feb. 22, 2000	April 19, 2002
Gen. Lance W. Lord	April 19, 2002	

Air Force Special Operations Command

Maj. Gen. Thomas E. Eggers	May 22, 1990	June 30, 1991
Maj. Gen. Bruce L. Fister	June 30, 1991	July 22, 1994
Maj. Gen. James L. Hobson Jr.	July 22, 1994	July 9, 1997
Maj. Gen. Charles R. Holland	July 9, 1997	Aug. 5, 1999
Lt. Gen. Maxwell C. Bailey	Aug. 5, 1999	Jan. 16, 2002
Lt. Gen. Paul V. Hester	Jan. 16, 2002	July 1, 2004
Lt. Gen. Michael W. Wooley	July 1, 2004	

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	April 14, 1954
Lt. Gen. Thomas S. Power	April 15, 1954	June 30, 1957
Maj. Gen. John W. Sessums (acting)	July 1, 1957	July 31, 1957
Lt. Gen. Samuel E. Anderson	Aug. 1, 1957	March 9, 1959
Maj. Gen. John W. Sessums (acting)	March 10, 1959	April 24, 1959
Gen. Bernard A. Schriever	April 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	March 13, 1978
Gen. Alton D. Slay	March 14, 1978	Feb. 1, 1981
Gen. Robert T. Marsh	Feb. 1, 1981	Aug. 1, 1984
Gen. Lawrence A. Skantze	Aug. 1, 1984	July 17, 1987
Gen. Bernard P. Randolph	July 17, 1987	April 1, 1990
Gen. Ronald W. Yates	April 1, 1990	July 1, 1992

Formerly Air Research and Development Command. Redesignated Air Force Systems Command April 1, 1961. Inactivated July 1, 1992.

Air Mobility Command

Gen. Hansford T. Johnson	June 1, 1992	Aug. 22, 1992
Gen. Ronald R. Fogleman	Aug. 23, 1992	Oct. 17, 1994
Gen. Robert L. Rutherford	Oct. 18, 1994	July 15, 1996
Gen. Walter Kross	July 15, 1996	Aug. 3, 1998
Gen. Charles T. Robertson Jr.	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy	Nov. 5, 2001	

Air National Guard

Col. William A.R. Robertson	Nov. 28, 1945	October 1948
Maj. Gen. George G. Finch	October 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	April 19, 1974
Maj. Gen. John J. Pesch	April 20, 1974	Jan. 31, 1977
Maj. Gen. John T. Guice	Feb. 1, 1977	April 1, 1981
Maj. Gen. John B. Conaway	April 1, 1981	Nov. 1, 1988
Maj. Gen. Philip G. Killey	Nov. 1, 1988	Jan. 28, 1994
Maj. Gen. Donald W. Shepperd	Jan. 28, 1994	Jan. 28, 1998
Maj. Gen. Paul A. Weaver Jr.	Jan. 28, 1998	Dec. 3, 2001
Brig. Gen. David A. Brubaker (acting)	Dec. 3, 2001	June 3, 2002
Lt. Gen. Daniel James III	June 3, 2002	

Air Proving Ground Command

Maj. Gen. Carl A. Brandt	October 1946	August 1948
Maj. Gen. William E. Kepner	August 1948	June 1950
Maj. Gen. Bryant L. Boatner	July 1950	July 1952
Maj. Gen. Patrick W. Timberlake	July 1952	April 1955
Maj. Gen. Robert W. Burns	August 1955	July 1957

Designated a center December 1957.

Air University

Maj. Gen. Muir S. Fairchild	March 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
Maj. Gen. John DeF. Barker (acting)	March 1, 1953	April 14, 1953
Lt. Gen. Laurence S. Kuter	April 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	Aug. 1, 1984
Lt. Gen. Thomas C. Richards	Aug. 1, 1984	Nov. 6, 1986
Lt. Gen. Truman Spangrud	Nov. 6, 1986	July 12, 1988
Lt. Gen. Ralph E. Havens	July 12, 1988	Oct. 6, 1989
Maj. Gen. David C. Reed	Oct. 6, 1989	Jan. 4, 1990
Lt. Gen. Charles G. Boyd	Jan. 4, 1990	Oct. 26, 1992
Lt. Gen. Jay W. Kelley	Oct. 27, 1992	June 30, 1993

Established as AAF School of Applied Tactics Oct. 16, 1943 (assumed history of Air Services School, dating from 1920). Redesignated AAF School June 1, 1945. Given Majcom status Nov. 29, 1945. Redesignated AU May 12, 1946. Part of ATC between May 1978 and July 1983. Ceased to be a Majcom and was assigned to AETC July 1, 1993.

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
Brig. Gen. T. Alan Bennett (acting)	Feb. 1, 1956	Feb. 24, 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
Brig. Gen. Jack A. Gibbs (acting)	July 20, 1961	July 25, 1961
Maj. Gen. Wendell W. Bowman	July 26, 1961	Aug. 8, 1963
Col. Alfred Walton (acting)	Aug. 9, 1963	Aug. 14, 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	March 2, 1974
Col. David T. Stockman (acting)	March 3, 1974	March 18, 1974
Maj. Gen. Jack K. Gamble	March 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	April 1, 1981
Lt. Gen. Lynwood E. Clark	April 1, 1981	Aug. 31, 1983
Lt. Gen. Bruce K. Brown	Sept. 1, 1983	Sept. 26, 1985
Lt. Gen. David L. Nichols	Sept. 27, 1985	May 22, 1988
Lt. Gen. Thomas G. McInerney	May 22, 1988	Aug. 9, 1990

Activated as Alaskan Air Force (1942). Redesignated Eleventh Air Force (1942). Redesignated Alaskan Air Command (1945). Redesignated 11th Air Force Aug. 9, 1990, under PACAF.

Continental Air Command

Lt. Gen. George E. Stratemeyer	Dec. 1, 1948	April 15, 1949
Lt. Gen. Ennis C. Whitehead	April 15, 1949	Dec. 14, 1950
Maj. Gen. Willis H. Hale	Dec. 14, 1950	Feb. 18, 1952
Lt. Gen. Leon W. Johnson	Feb. 18, 1952	Dec. 14, 1955
Lt. Gen. Charles B. Stone III	Dec. 15, 1955	June 30, 1957
Lt. Gen. William E. Hall	July 1, 1957	Sept. 30, 1961
Lt. Gen. Gordon A. Blake	Sept. 30, 1961	June 30, 1962
Lt. Gen. Edward J. Timberlake	July 1, 1962	July 1966
Lt. Gen. Henry Viccellio Sr.	Aug. 1, 1966	Aug. 1, 1968

Established Dec. 1, 1948. Inactivated Aug. 1, 1968.

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. Kenneth D. Burns	Aug. 1, 1975	Jan. 18, 1979
Maj. Gen. Doyle E. Larson	Jan. 19, 1979	July 31, 1983
Maj. Gen. John B. Marks	Aug. 1, 1983	April 16, 1985
Maj. Gen. Paul H. Martin	April 17, 1985	Aug. 14, 1989
Maj. Gen. Gary W. O'Shaughnessy	Aug. 15, 1989	Oct. 1, 1991

Formerly USAF Security Service. Redesignated: Electronic Security Command Aug. 1, 1979; Air Force Intelligence Command Oct. 1, 1991; Air Intelligence Agency, Oct. 1, 1993.

Headquarters Command

Brig. Gen. Burton M. Hovey	Jan. 3, 1946	Dec. 13, 1948
Brig. Gen. Sydney D. Grubbs	Dec. 14, 1948	Oct. 1, 1950
Brig. Gen. Morris J. Lee	Oct. 2, 1950	June 13, 1952
Brig. Gen. Stoyte O. Ross	June 14, 1952	July 4, 1956
Maj. Gen. Reuben C. Hood Jr.	Aug. 1, 1956	June 30, 1959
Maj. Gen. Brooke E. Allen	Aug. 3, 1959	Dec. 31, 1965
Maj. Gen. Rollen H. Anthis	Jan. 10, 1966	Nov. 30, 1967
Maj. Gen. Milton B. Adams	Dec. 1, 1967	June 30, 1968
Maj. Gen. Nils O. Ohman	July 5, 1968	April 30, 1972
Maj. Gen. John L. Locke	May 1, 1972	Feb. 25, 1974
Maj. Gen. Maurice R. Reilly	Feb. 26, 1974	August 1975
Maj. Gen. William C. Norris	Sept. 1, 1975	June 30, 1976

Established as Bolling Field Command (1946). Redesignated Headquarters Command, USAF, March 17, 1958. Inactivated in 1976.

Military Airlift Command

Maj. Gen. Robert W. Harper	July 1, 1947	June 1, 1948
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
Lt. Gen. Jay T. Robbins (acting)	Sept. 12, 1972	Sept. 25, 1972
Gen. Paul K. Carlton	Sept. 26, 1972	March 31, 1977
Gen. William G. Moore Jr.	April 1, 1977	June 30, 1979
Gen. Robert E. Huyser	July 1, 1979	June 26, 1981
Gen. James R. Allen	June 26, 1981	June 30, 1983
Gen. Thomas M. Ryan Jr.	July 1, 1983	Sept. 19, 1985
Gen. Duane H. Cassidy	Sept. 20, 1985	Sept. 20, 1989
Gen. Hansford T. Johnson	Sept. 20, 1989	June 1, 1992

Antecedents: AAC Ferrying Command (1941); AAF Ferrying Command (1942); Air Transport Command (1942, inactivated June 1, 1948). Military Air Transport Service established June 1, 1948. Redesignated Military Airlift Command Jan. 1, 1966. In 1982, the inactivated Air Transport Command was consolidated with MAC. Inactivated June 1, 1992.

Northeast Air Command

Maj. Gen. Lyman P. Whitten	Oct. 6, 1950	March 14, 1952
Maj. Gen. Charles T. Myers	March 14, 1952	July 26, 1954
Lt. Gen. Glenn O. Barcus	July 26, 1954	March 31, 1957

Newfoundland Base Command, part of Military Air Transport Service, reorganized and redesignated Northeast Air Command, a new major command, Oct. 1, 1950. Inactivated March 31, 1957.

Pacific Air Command/Seventh Air Force

Maj. Gen. Ralph H. Wooten	April 1947	Aug. 31, 1948
Brig. Gen. Robert F. Travis	Sept. 1, 1948	June 1, 1949

Formerly Seventh Air Force. Redesignated Pacific Air Command Dec. 15, 1947. Discontinued June 1, 1949.

Pacific Air Forces

Lt. Gen. Ennis C. Whitehead	Dec. 30, 1945	April 25, 1949
Lt. Gen. George E. Stratemeyer	April 26, 1949	May 20, 1951
Lt. Gen. Earle E. Partridge (acting)	May 21, 1951	June 9, 1951
Gen. Otto P. Weyland	June 10, 1951	March 25, 1954
Gen. Earle E. Partridge	March 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	Sept. 30, 1983
Gen. Jerome F. O'Malley	Oct. 8, 1983	Nov. 1, 1984
Gen. Robert W. Bazley	Nov. 1, 1984	Dec. 16, 1986
Gen. Jack I. Gregory	Dec. 16, 1986	July 22, 1988
Gen. Merrill A. McPeak	July 22, 1988	Oct. 30, 1990
Lt. Gen. James B. Davis	Nov. 5, 1990	Feb. 19, 1991
Gen. Jimmie V. Adams	Feb. 19, 1991	Jan. 25, 1993
Gen. Robert L. Rutherford	Jan. 26, 1993	Oct. 12, 1994
Gen. John G. Lorber	Oct. 12, 1994	July 7, 1997
Gen. Richard B. Myers	July 7, 1997	July 23, 1998
Gen. Patrick K. Gamble	July 23, 1998	April 9, 2001
Lt. Gen. Lansford E. Trapp (acting)	April 9, 2001	May 4, 2001
Gen. William J. Begert	May 4, 2001	July 2, 2004
Gen. Paul V. Hester	July 2, 2004	

Activated as Far East Air Forces Aug. 3, 1944. Redesignated Pacific Air Command, US Army, Dec. 6, 1945. Redesignated FEAF Jan. 1, 1947. Redesignated Pacific Air Forces July 1, 1957.

Strategic Air Command

Gen. George C. Kenney	March 21, 1946	Oct. 18, 1948
Gen. Curtis E. LeMay	Oct. 19, 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 28, 1968
Gen. Bruce K. Holloway	July 29, 1968	April 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	July 31, 1981
Gen. Bennie L. Davis	Aug. 1, 1981	July 31, 1985
Gen. Larry D. Welch	Aug. 1, 1985	June 30, 1986
Gen. John T. Chain	July 1, 1986	Jan. 31, 1991
Gen. George L. Butler	Feb. 1, 1991	June 1, 1992

Established as Continental Air Forces Dec. 13, 1944. Redesignated Strategic Air Command March 21, 1946. Inactivated June 1, 1992.

Tactical Air Command

Lt. Gen. Elwood R. Quesada	March 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	March 31, 1954
Gen. Otto P. Weyland	April 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	April 30, 1978
Gen. W.L. Creech	May 1, 1978	Nov. 1, 1984
Gen. Jerome F. O'Malley	Nov. 1, 1984	April 20, 1985
Gen. Robert D. Russ	May 22, 1985	March 26, 1991
Gen. John Michael Loh	March 27, 1991	June 1, 1992

Established March 21, 1946. Reassigned to Continental Air Command (1948). Removed from CAC and returned to major command status Dec. 1, 1950. Inactivated June 1, 1992.

US Air Forces in Europe

Brig. Gen. John F. McBlain (acting)	Aug. 14, 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	June 30, 1982
Gen. Billy M. Minter	July 1, 1982	Nov. 1, 1984
Gen. Charles L. Donnelly Jr.	Nov. 1, 1984	May 1, 1987
Gen. William L. Kirk	May 1, 1987	April 12, 1989
Gen. Michael J. Dugan	April 12, 1989	June 26, 1990
Gen. Robert C. Oaks	June 26, 1990	July 29, 1994
Gen. James L. Jamerson	July 29, 1994	July 16, 1995
Gen. Richard E. Hawley	July 17, 1995	April 4, 1996
Gen. Michael E. Ryan	April 4, 1996	Oct. 5, 1997
Lt. Gen. William J. Begert (acting)	Oct. 6, 1997	Dec. 5, 1997
Gen. John P. Jumper	Dec. 5, 1997	Jan. 13, 2000
Gen. Gregory S. Martin	Jan. 13, 2000	Aug. 12, 2003
Gen. Robert H. Foglesong	Aug. 12, 2003	

Activated as 8th Air Force (1942). Redesignated Eighth Air Force Sept. 18, 1942. Redesignated US Strategic Air Forces in Europe (1944). Redesignated USAFE Aug. 7, 1945.

US Air Forces Southern Command/Caribbean

Maj. Gen. Hubert R. Harmon	July 31, 1946	Oct. 3, 1947
Brig. Gen. Glen C. Jamison (acting)	Oct. 4, 1947	Nov. 12, 1947
Maj. Gen. Willis H. Hale	Nov. 13, 1947	Oct. 19, 1949
Brig. Gen. Rosenham Beam	Oct. 20, 1949	Nov. 5, 1950
Brig. Gen. Emil C. Kiel	Nov. 6, 1950	June 10, 1953
Maj. Gen. Reuben C. Hood Jr.	June 11, 1953	June 16, 1956
Maj. Gen. Truman H. Landon	June 20, 1956	June 1, 1959
Maj. Gen. Leland S. Stranathan	Aug. 3, 1959	Sept. 8, 1963
Maj. Gen. Robert A. Breitweiser	Sept. 11, 1963	July 9, 1966
Maj. Gen. Reginald J. Clizbe	Aug. 6, 1966	June 14, 1968
Maj. Gen. Kenneth O. Sanborn	June 14, 1968	April 7, 1972
Maj. Gen. Arthur G. Salisbury	April 7, 1972	October 1974
Maj. Gen. James M. Breedlove	October 1974	Jan. 1, 1976

Activated as Panama Canal Air Force (1940). Redesignated Caribbean Air Force (1941). Redesignated 6th Air Force Feb. 5, 1942, then Sixth Air Force Sept. 18, 1942. Redesignated Caribbean Air Command July 31, 1946. Redesignated US Air Forces Southern Command July 8, 1963. Inactivated Jan. 1, 1976.

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 Sr.	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	June 27, 1977
Lt. Gen. Kenneth L. Tallman	June 28, 1977	June 15, 1981
Maj. Gen. Robert E. Kelley	June 16, 1981	June 15, 1983
Lt. Gen. Winfield W. Scott Jr.	June 16, 1983	June 25, 1987
Lt. Gen. Charles R. Hamm	June 26, 1987	July 1, 1991
Lt. Gen. Bradley C. Hosmer	July 1, 1991	July 7, 1994
Lt. Gen. Paul E. Stein	July 8, 1994	July 31, 1997
Lt. Gen. Tad J. Oelstrom	Aug. 1, 1997	June 9, 2000
Lt. Gen. John R. Dallager	June 9, 2000	June 1, 2003
Lt. Gen. John W. Rosa Jr.	June 1, 2003	

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DOD Leaders Through the Years

Secretaries of Defense

James V. Forrestal	Sept. 17, 1947	March 28, 1949
Louis A. Johnson	March 28, 1949	Sept. 19, 1950
George C. Marshall	Sept. 21, 1950	Sept. 12, 1951
Robert A. Lovett	Sept. 17, 1951	Jan. 20, 1953
Charles E. Wilson	Jan. 28, 1953	Oct. 8, 1957
Neil H. McElroy	Oct. 9, 1957	Dec. 1, 1959
Thomas S. Gates	Dec. 2, 1959	Jan. 20, 1961
Robert S. McNamara	Jan. 21, 1961	Feb. 29, 1968
Clark M. Clifford	March 1, 1968	Jan. 20, 1969
Melvin R. Laird	Jan. 22, 1969	Jan. 29, 1973
Elliot L. Richardson	Jan. 30, 1973	May 24, 1973
James R. Schlesinger	July 2, 1973	Nov. 19, 1975
Donald H. Rumsfeld	Nov. 20, 1975	Jan. 20, 1977
Harold Brown	Jan. 21, 1977	Jan. 20, 1981
Caspar W. Weinberger	Jan. 21, 1981	Nov. 23, 1987
Frank C. Carlucci	Nov. 23, 1987	Jan. 20, 1989
Richard B. Cheney	March 21, 1989	Jan. 20, 1993
Les Aspin	Jan. 21, 1993	Feb. 3, 1994
William J. Perry	Feb. 3, 1994	Jan. 23, 1997
William S. Cohen	Jan. 24, 1997	Jan. 20, 2001
Donald H. Rumsfeld	Jan. 20, 2001	

Chairmen of the Joint Chiefs of Staff

Gen. of the Army Omar N. Bradley	Aug. 16, 1949	Aug. 15, 1953
Adm. Arthur W. Radford, USN	Aug. 15, 1953	Aug. 15, 1957
Gen. Nathan F. Twining, USAF	Aug. 15, 1957	Sept. 30, 1960
Gen. Lyman L. Lemnitzer, USA	Oct. 1, 1960	Sept. 30, 1962
Gen. Maxwell D. Taylor, USA	Oct. 1, 1962	July 1, 1964
Gen. Earle G. Wheeler, USA	July 3, 1964	July 2, 1970
Adm. Thomas H. Moorer, USN	July 2, 1970	July 1, 1974
Gen. George S. Brown, USAF	July 1, 1974	June 20, 1978
Gen. David C. Jones, USAF	June 21, 1978	June 18, 1982
Gen. John W. Vessey Jr., USA	June 18, 1982	Sept. 30, 1985
Adm. William J. Crowe Jr., USN	Oct. 1, 1985	Sept. 30, 1989
Gen. Colin L. Powell, USA	Oct. 1, 1989	Sept. 30, 1993
Adm. David Jeremiah, USN (acting)	Oct. 1, 1993	Oct. 24, 1993
Gen. John M. Shalikashvili, USA	Oct. 25, 1993	Sept. 30, 1997
Gen. Henry H. Shelton, USA	Oct. 1, 1997	Oct. 1, 2001
Gen. Richard B. Myers, USAF	Oct. 1, 2001	

Vice Chairmen of the Joint Chiefs of Staff

Gen. Robert T. Herres, USAF	Feb. 6, 1987	Feb. 28, 1990
Adm. David E. Jeremiah, USN	March 1, 1990	Feb. 28, 1994
Adm. William A. Owens, USN	March 1, 1994	Feb. 27, 1996
Gen. Joseph W. Ralston, USAF	March 1, 1996	Feb. 29, 2000
Gen. Richard B. Myers, USAF	March 1, 2000	Oct. 1, 2001
Gen. Peter Pace, USMC	Oct. 1, 2001	

US Central Command

Gen. Robert C. Kingston, USA	Jan. 1, 1983	Nov. 27, 1985
Gen. George B. Crist, USMC	Nov. 27, 1985	Nov. 23, 1988
Gen. H. Norman Schwarzkopf, USA	Nov. 23, 1988	Aug. 9, 1991
Gen. Joseph P. Hoar, USMC	Aug. 9, 1991	Aug. 5, 1994
Gen. J.H. Binford Peay III, USA	Aug. 5, 1994	Aug. 13, 1997
Gen. Anthony C. Zinni, USMC	Aug. 13, 1997	July 6, 2000
Gen. Tommy R. Franks, USA	July 6, 2000	July 7, 2003
Gen. John Abizaid, USA	July 7, 2003	

US European Command

Gen. Matthew B. Ridgway, USA	Aug. 1, 1952	July 11, 1953
Gen. Alfred M. Gruenther, USA	July 11, 1953	Nov. 20, 1956
Gen. Lauris Norstad, USAF	Nov. 20, 1956	Nov. 1, 1962
Gen. Lyman L. Lemnitzer, USA	Nov. 1, 1962	May 5, 1969
Gen. Andrew J. Goodpaster, USA	May 5, 1969	Nov. 1, 1974
Gen. Alexander M. Haig Jr., USA	Nov. 1, 1974	June 27, 1979
Gen. Bernard W. Rogers, USA	June 27, 1979	June 25, 1987
Gen. John R. Galvin, USA	June 25, 1987	June 23, 1992
Gen. John M. Shalikashvili, USA	June 23, 1992	Oct. 21, 1993
Gen. George A. Joulwan, USA	Oct. 21, 1993	July 10, 1997
Gen. Wesley K. Clark, USA	July 10, 1997	May 2, 2000
Gen. Joseph W. Ralston, USAF	May 2, 2000	Jan. 16, 2003
Gen. James L. Jones, USMC	Jan. 16, 2003	

US Joint Forces Command

Adm. William H.P. Blandy, USN	Feb. 3, 1947	Feb. 1, 1950
Adm. William M. Fechteler, USN	Feb. 1, 1950	Aug. 15, 1951
Adm. Lynde D. McCormick, USN	Aug. 15, 1951	April 12, 1954
Adm. Jerauld Wright, USN	April 12, 1954	Feb. 28, 1960
Adm. Robert L. Dennison, USN	Feb. 28, 1960	April 30, 1963
Adm. Harold P. Smith, USN	April 30, 1963	April 30, 1965
Adm. Thomas H. Moorer, USN	April 30, 1965	June 17, 1967
Adm. Ephraim P. Holmes, USN	June 17, 1967	Sept. 30, 1970
Adm. Charles K. Duncan, USN	Sept. 30, 1970	Oct. 31, 1972
Adm. Ralph W. Cousins, USN	Oct. 31, 1972	May 30, 1975
Adm. Isaac C. Kidd Jr., USN	May 30, 1975	Sept. 30, 1978
Adm. Harry D. Train II, USN	Sept. 30, 1978	Sept. 30, 1982
Adm. Wesley D. McDonald, USN	Sept. 30, 1982	Nov. 27, 1985
Adm. Lee Baggett Jr., USN	Nov. 27, 1985	Nov. 22, 1988
Adm. Frank B. Kelso II, USN	Nov. 22, 1988	May 18, 1990
Adm. Leon A. Edney, USN	May 18, 1990	July 13, 1992
Adm. Paul D. Miller, USN	July 13, 1992	Oct. 31, 1994
Gen. John J. Sheehan, USMC	Oct. 31, 1994	Sept. 24, 1997
Adm. Harold W. Gehman Jr., USN	Sept. 24, 1997	Sept. 5, 2000
Gen. William F. Kernan, USA	Sept. 5, 2000	Oct. 2, 2002
Adm. Edmund P. Giambastiani Jr., USN	Oct. 2, 2002	

Formerly US Atlantic Command, established Dec. 1, 1947, redesignated Oct. 7, 1999.

US Northern Command

Gen. Ralph E. Eberhart, USAF	Oct. 1, 2002	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	

US Pacific Command

Adm. John H. Towers, USN	Jan. 1, 1947	Feb. 28, 1947
Adm. Louis E. Denfeld, USN	Feb. 28, 1947	Dec. 3, 1947
Adm. Dewitt C. Ramsey, USN	Dec. 3, 1947	April 30, 1949
Adm. Arthur W. Radford, USN	April 30, 1949	July 10, 1953
Adm. Felix B. Stump, USN	July 10, 1953	July 31, 1958
Adm. Harry D. Felt, USN	July 31, 1958	June 30, 1964
Adm. U.S. Grant Sharp, USN	June 30, 1964	July 31, 1968
Adm. John S. McCain Jr., USN	July 31, 1968	Sept. 1, 1972
Adm. Noel A.M. Gayler, USN	Sept. 1, 1972	Aug. 30, 1976
Adm. Maurice E. Weisner, USN	Aug. 30, 1976	Oct. 31, 1979
Adm. Robert L.J. Long, USN	Oct. 31, 1979	July 1, 1983
Adm. William J. Crowe Jr., USN	July 1, 1983	Sept. 18, 1985
Adm. Ronald J. Hays Jr., USN	Sept. 18, 1985	Sept. 30, 1988
Adm. Huntington Hardisty, USN	Sept. 30, 1988	March 1, 1991
Adm. Charles R. Larson, USN	March 1, 1991	July 11, 1994
Lt. Gen. Harold T. Fields, USA	July 11, 1994	July 19, 1994
Adm. Richard C. Macke, USN	July 19, 1994	Jan. 31, 1996
Adm. Joseph W. Prueher, USN	Jan. 31, 1996	Feb. 20, 1999
Adm. Dennis C. Blair, USN	Feb. 20, 1999	May 2, 2002
Adm. Thomas B. Fargo, USN	May 2, 2002	Feb. 26, 2005
Adm. William J. Fallon, USN	Feb. 26, 2005	

US Southern Command

Lt. Gen. Willis Crittenberger, USA	November 1947	June 1948
Lt. Gen. Matthew B. Ridgway, USA	June 1948	October 1949
Lt. Gen. William H.H. Morris, USA	October 1949	April 1952
Lt. Gen. Horace L. McBride, USA	April 1952	June 1954
Lt. Gen. William K. Harrison, USA	June 1954	January 1957
Lt. Gen. Robert M. Montague, USA	January 1957	February 1958
Lt. Gen. Ridgely Gaither, USA	April 1958	July 1960
Lt. Gen. Robert F. Sink, USA	July 1960	January 1961
Lt. Gen. Andrew P. O'Meara, USA	January 1961	June 1963
Gen. Andrew P. O'Meara, USA	June 1963	February 1965
Gen. Robert W. Porter, USA	February 1965	February 1969
Gen. George R. Mather, USA	February 1969	September 1971
Gen. George V. Underwood, USA	September 1971	January 1973
Gen. William B. Rosson, USA	January 1973	July 1975
Lt. Gen. Dennis P. McAuliffe, USA	August 1975	September 1979
Lt. Gen. Wallace H. Nutting, USA	October 1979	May 1983
Gen. Paul F. Gorman, USA	May 1983	March 1985
Gen. John R. Galvin, USA	March 1985	June 1987
Gen. Fred F. Woerner, USA	June 1987	July 1989
Gen. Maxwell R. Thurman, USA	September 1989	November 1990
Gen. George A. Joulwan, USA	November 1990	November 1993
Maj. Gen. W.A. Worthington, USA	December 1993	January 1994
Gen. Barry McCaffrey, USA	February 1994	February 1996
RAdm. James Perkins, USN	March 1996	June 1996
Gen. Wesley K. Clark, USA	July 1996	July 1997
Gen. Charles E. Wilhelm, USMC	August 1997	Sept. 8, 2000
Gen. Peter Pace, USMC	Sept. 8, 2000	Sept. 30, 2001
Maj. Gen. G.D. Speer, USA (acting)	Sept. 30, 2001	Aug. 18, 2002
Gen. James T. Hill, USA	Aug. 18, 2002	Nov. 9, 2004
Gen. B. John Craddock, USA	Nov. 9, 2004	

Formerly US Caribbean Command (1947). Activated in 1963.

US Space Command

Gen. Robert T. Herres, USAF	Sept. 23, 1985	Feb. 5, 1987
Gen. John L. Piotrowski, USAF	Feb. 6, 1987	March 30, 1990
Gen. Donald J. Kutyna, USAF	April 1, 1990	June 30, 1992
Gen. Charles A. Horner, USAF	June 30, 1992	Sept. 12, 1994
Gen. Joseph W. Ashy, USAF	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III, USAF	Aug. 27, 1996	Aug. 13, 1998
Gen. Richard B. Myers, USAF	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart, USAF	Feb. 22, 2000	Oct. 1, 2002

Deactivated Oct. 1, 2002, when its functions merged with US Strategic Command.

US Special Operations Command

Gen. James J. Lindsay, USA	April 16, 1987	June 27, 1990
Gen. Carl W. Stiner, USA	June 27, 1990	May 20, 1993
Gen. Wayne A. Downing, USA	May 20, 1993	Feb. 29, 1996
Gen. Henry H. Shelton, USA	Feb. 29, 1996	Sept. 25, 1997
Gen. Peter J. Schoomaker, USA	Nov. 5, 1997	Oct. 27, 2000
Gen. Charles R. Holland, USAF	Oct. 27, 2000	Sept. 2, 2003
Gen. Bryan D. Brown, USA	Sept. 2, 2003	

US Strategic Command

Gen. G. Lee Butler, USAF	June 1, 1992	Feb. 13, 1994
Adm. Henry G. Chiles Jr., USN	Feb. 14, 1994	Feb. 21, 1996
Gen. Eugene E. Habiger, USAF	Feb. 22, 1996	June 25, 1998
Adm. Richard W. Mies, USN	June 26, 1998	Nov. 30, 2001
Adm. James O. Ellis Jr., USN	Nov. 30, 2001	July 9, 2004
Gen. James E. Cartwright, USMC	July 9, 2004	

Merged the functions of US Space Command into STRATCOM Oct. 1, 2002.

US Transportation Command

Gen. Duane H. Cassidy, USAF	July 1, 1987	Sept. 21, 1989
Gen. H.T. Johnson, USAF	Sept. 22, 1989	Aug. 24, 1992
Gen. Ronald R. Fogleman, USAF	Aug. 25, 1992	Oct. 17, 1994
Gen. Robert L. Rutherford, USAF	Oct. 18, 1994	July 14, 1996
Gen. Walter Kross, USAF	July 15, 1996	Aug. 2, 1998
Gen. Charles T. Robertson Jr., USAF	Aug. 3, 1998	Nov. 5, 2001
Gen. John W. Handy, USAF	Nov. 5, 2001	

NORAD Leaders Through the Years

North American Aerospace Defense Command

Gen. Earle E. Partridge, USAF	Sept. 12, 1957	July 30, 1959
Gen. Laurence S. Kuter, USAF	Aug. 1, 1959	July 30, 1962
Gen. John K. Gerhart, USAF	Aug. 1, 1962	March 30, 1965
Gen. Dean C. Strother, USAF	April 1, 1965	July 29, 1966
Gen. Raymond J. Reeves, USAF	Aug. 1, 1966	July 31, 1969
Gen. Seth J. McKee, USAF	Aug. 1, 1969	Sept. 30, 1973
Gen. Lucius D. Clay Jr., USAF	Oct. 1, 1973	Aug. 29, 1975
Gen. Daniel James Jr., USAF	Sept. 1, 1975	Dec. 5, 1977
Gen. James E. Hill, USAF	Dec. 6, 1977	Dec. 31, 1979
Gen. James V. Hartinger, USAF	Jan. 1, 1980	July 30, 1984
Gen. Robert T. Herres, USAF	July 30, 1984	Feb. 5, 1987
Gen. John L. Piotrowski, USAF	Feb. 6, 1987	March 30, 1990
Gen. Donald J. Kutyna, USAF	April 1, 1990	June 30, 1992
Gen. Charles A. Horner, USAF	June 30, 1992	Sept. 12, 1994
Gen. Joseph W. Ashy, USAF	Sept. 13, 1994	Aug. 26, 1996
Gen. Howell M. Estes III, USAF	Aug. 27, 1996	Aug. 13, 1998
Gen. Richard B. Myers, USAF	Aug. 14, 1998	Feb. 22, 2000
Gen. Ralph E. Eberhart, USAF	Feb. 22, 2000	Nov. 5, 2004
Adm. Timothy J. Keating, USN	Nov. 5, 2004	

People

2005 USAF Almanac

USAF Total Force

(As of Sept. 30, 2004)

	FY99	FY00	FY01	FY02	FY03	FY04	FY05
Air Force active duty							
Officers	70,318	69,023	68,862	72,032	73,758	74,109	69,300
Enlisted	286,169	282,356	280,410	292,061	297,219	298,314	286,400
Cadets	4,103	4,275	4,299	4,158	4,085	4,193	4,000
Total Air Force active duty	**360,590**	**355,654**	**353,571**	**368,251**	**375,062**	**376,616**	**359,700**
Career re-enlistments (second term)	30,392	32,042	30,380	34,093	31,026	27,266	27,645
Rate	84%	84%	84%	88%*	90%*	91%	90%
First-term re-enlistments	8,196	9,917	10,485	10,666	8,232	9,232	12,445
Rate	49%	52%	56%	72%*	61%*	63%	60%
Civilian personnel							
Direct hire (excluding technicians)	126,685	122,619	122,474	123,439	122,419	124,959	125,111
ANG technicians	22,892	22,782	22,987	21,246	20,718	22,416	23,306
AFRC technicians	9,470	9,662	9,959	8,825	8,159	9,204	9,939
Indirect hire—foreign nationals	6,693	6,122	6,450	6,296	6,410	6,146	6,156
Total civilian personnel	**165,740**	**161,185**	**161,870**	**159,806**	**157,706**	**162,725**	**164,512**
Guard and Reserve							
Air National Guard, Selected Reserve	105,715	106,365	108,485	112,075	108,137	106,715	106,700
AFRC, Selected Reserve	71,772	72,340	74,869	76,632	74,754	75,322	76,100
AFRC, Individual Ready Reserve	54,271	50,304	47,940	41,095	36,665	36,489	38,500
Total Ready Reserve	**231,758**	**229,009**	**231,294**	**229,802**	**219,556**	**218,526**	**221,300**
Standby	17,129	16,429	17,826	17,430	17,587	17,335	18,500
Total Guard and Reserve	**248,887**	**245,438**	**249,120**	**247,232**	**237,143**	**235,861**	**239,800**

FYs 1999-04 are actual figures; FY 2005 is an estimate. *FY02 and FY03 rates higher due to Stop-Loss.

Armed Forces Manpower Trends, End Strength in Thousands

(As of Sept. 30, 2004)

	FY99	FY00	FY01	FY02	FY03	FY04	FY05
Active duty military							
Air Force	361	356	354	368	375	377	360
Army	479	482	481	487	499	500	482
Marine Corps	173	173	173	174	178	178	175
Navy	373	373	378	383	382	373	366
Total	**1,386**	**1,384**	**1,386**	**1,412**	**1,434**	**1,427**	**1,383**
Selected Guard and Reserve							
Air National Guard	106	106	109	112	108	107	107
AFRC	72	72	75	77	75	75	76
Army National Guard	358	353	352	351	351	343	350
Army Reserve	207	207	206	207	212	204	205
Marine Corps Reserve	40	40	40	40	41	40	40
Naval Reserve	89	87	88	88	88	83	83
Total	**872**	**865**	**870**	**875**	**875**	**851**	**861**
Direct-hire civilian (full-time equivalents)							
Air Force	160	155	155	154	149	154	157
Army	232	230	229	231	226	209	214
Navy/Marine Corps	190	185	183	185	182	183	183
Defense agencies	110	107	104	101	86	105	108
Total	**692**	**677**	**671**	**671**	**643**	**651**	**662**

FY05 numbers are estimates.

USAF Educational Levels

(As of Sept. 30, 2004)

	Number	Percent
Enlisted		
High school	20,852	7.0
Some college (< 2 years)	220,156	73.8
AA/AS degree or equivalent hours	42,361	14.2
Bachelor's degree	12,828	4.3
Master's degree	2,088	0.7
Professional or doctoral degree	30	0.01
Total	**298,314**	**100**
Officers		
Bachelor's degree	38,018	51.3
Master's degree	29,051	39.2
Doctoral degree	1,038	1.4
Professional degree	6,003	8.1
Total	**74,109**	**100**

Does not include 4,193 cadets.

USAF Marital Status

(As of Sept. 30, 2004)

Total percent married	58.9
Percent of enlisted	56.0
Percent of officers	70.7
Number of USAF couples	21,385
Number married to members of other services	1,486

Air Force Personnel Strength

(As of Sept. 30, 2004)

Year	Strength	Year	Strength	Year	Strength
1907	3	1940	51,165	1973	690,999
1908	13	1941	152,125	1974	643,795
1909	27	1942	764,415	1975	612,551
1910	11	1943	2,197,114	1976	585,207
1911	23	1944	2,372,292	1977	570,479
1912	51	1945	2,282,259	1978	569,491
1913	114	1946	455,515	1979	559,450
1914	122	1947	305,827	1980	557,969
1915	208	1948	387,730	1981	570,302
1916	311	1949	419,347	1982	582,845
1917	1,218	1950	411,277	1983	592,044
1918	195,023	1951	788,381	1984	597,125
1919	25,603	1952	973,474	1985	601,515
1920	9,050	1953	977,593	1986	608,199
1921	11,649	1954	947,918	1987	607,035
1922	9,642	1955	959,946	1988	576,446
1923	9,441	1956	909,958	1989	570,880
1924	10,547	1957	919,835	1990	535,233
1925	9,670	1958	871,156	1991	510,432
1926	9,674	1959	840,028	1992	470,315
1927	10,078	1960	814,213	1993	444,351
1928	10,549	1961	820,490	1994	426,327
1929	12,131	1962	883,330	1995	400,409
1930	13,531	1963	868,644	1996	389,001
1931	14,780	1964	855,802	1997	377,385
1932	15,028	1965	823,633	1998	367,470
1933	15,099	1966	886,350	1999	360,590
1934	15,861	1967	897,426	2000	355,654
1935	16,247	1968	904,759	2001	353,571
1936	17,233	1969	862,062	2002	368,251
1937	19,147	1970	791,078	2003	375,062
1938	21,089	1971	755,107	2004	376,616
1939	23,455	1972	725,635	2005	359,700

2005 number is an estimate.

Active Duty Force Demographics

(As of Sept. 30, 2004)

Grade	Total	Blacks*	Women	Other Minorities*
Officers				
General	271	12	16	0
Colonel	3,706	218	446	20
Lieutenant Colonel	10,527	617	1,352	94
Major	15,776	956	2,403	276
Captain	23,682	1,607	4,920	707
First Lieutenant	10,530	770	2,321	268
Second Lieutenant	9,617	778	2,138	365
Total	**74,109**	**4,958**	**13,596**	**1,730**
Enlisted				
Chief Master Sergeant of the Air Force	1			
Chief Master Sergeant	2,836	494	343	19
Senior Master Sergeant	5,822	1,128	650	57
Master Sergeant	29,144	6,228	3,384	397
Technical Sergeant	46,035	8,499	6,897	692
Staff Sergeant	76,988	13,107	17,013	1,678
Sergeant/Senior Airman	56,091	10,008	12,872	1,377
Airman First Class	58,254	9,420	12,764	2,791
Airman	11,259	1,846	3,154	622
Airman Basic	11,884	2,118	2,362	715
Total	**298,314**	**52,848**	**59,439**	**8,348**
Total personnel	**372,423**	**57,806**	**73,035**	**10,078**

Average ages of military personnel: Officers **35,** Enlisted **28**

Total does not include 4,193 cadets.
* Data for 2003; USAF did not provide 2004 update.

The Civilian Force

(As of Sept. 30, 2004)

General Schedule/ Other

Grade	Force
1	62
2	283
3	818
4	2,757
5	8,039
6	5,319
7	8,498
8	1,289
9	12,186
10	654
11	16,126
12	17,151
13	9,964
14	3,063
15	1,071
16	0
17	0
18	0
ST[a]	0
SES[b]	157
Other	0
Total	**87,437**

Wage Grade

Grade	Force
1	42
2	276
3	394
4	179
5	940
6	1,014
7	1,721
8	3,290
9	2,925
10	12,094
11	3,267
12	1,488
13	220
14	34
15	2
16	0
17	0
18	0
Total	**27,886**

Wage Grade Leader

Grade	Force
1	0
2	9
3	5
4	4
5	18
6	27
7	49
8	97
9	259
10	788
11	179
12	69
13	7
14	1
15	0
16	0
17	0
18	0
Total	**1,512**

Wage Grade Supervisory

Grade	Force
1	24
2	21
3	22
4	21
5	49
6	84
7	104
8	200
9	762
10	1,030
11	402
12	205
13	137
14	178
15	87
16	40
17	29
18	17
Total	**3,412**

Air Force Civilian Personnel: Average Age and Length of Service

General schedule	**47**
Federal wage system	**46**
Average age	**47**
Average length of service (overall)	**17.5 years**

Includes active Title 5 civilians with permanent appointments, US citizens only.

Excludes Title 32 technicians, temporary employees, and foreign/local nationals.

Does not include approx. 2,400 personnel in pay band demonstration projects.

[a]Scientific and Technical.

[b]Senior Executive Service (Includes ES, IE, and IP).

USAF Personnel Strength by Commands, FOAs, and DRUs

(As of Sept. 30, 2004)

	Military	Civilian	Total
Major commands			
Air Combat Command (ACC)	101,619	11,373	112,992
Air Education and Training Command (AETC)	69,319	14,612	83,931
Air Force Materiel Command (AFMC)	23,358	56,316	79,674
Air Force Reserve Command (AFRC)	387	14,239	14,626
Air Force Space Command (AFSPC)	19,876	6,398	26,274
Air Force Special Operations Command (AFSOC)	13,439	1,095	14,534
Air Mobility Command (AMC)	54,230	8,678	62,908
Pacific Air Forces (PACAF)	34,104	8,055	42,159
United States Air Forces in Europe (USAFE)	29,725	5,692	35,417
Total major commands	**346,057**	**126,458**	**472,515**
Field Operating Agencies (FOAs)			
Air Force Agency for Modeling and Simulation	20	15	35
Air Force Audit Agency	0	742	742
Air Force Center for Environmental Excellence	35	366	401
Air Force Civil Engineer Support Agency	93	112	205
Air Force C2ISR Center*	278	55	333
Air Force Communications Agency	224	300	524
Air Force Cost Analysis Agency	24	35	59
Air Force Flight Standards Agency	115	40	155
Air Force Frequency Management Agency	10	20	30
Air Force Historical Research Agency	2	61	63
Air Force Inspection Agency	111	20	131
Air Force Legal Services Agency	385	102	487
Air Force Logistics Management Agency	52	23	75
Air Force Manpower Agency	103	14	117
Air Force Medical Operations Agency	80	43	123
Air Force Medical Support Agency	126	79	205
AFNSEPA*	17	5	22
Air Force News Agency	312	93	405
AFNWCA*	16	21	37
Air Force Office of Special Investigations	1,525	632	2,157
Air Force Operations Group	71	0	71
Air Force Pentagon Communications Agency	195	185	380
Air Force Personnel Center	725	1,000	1,725
Air Force Personnel Operations Agency	25	4	29
Air Force Program Executive Office	18	7	25
Air Force Real Property Agency	0	198	198
Air Force Review Boards Agency	11	49	60
Air Force Safety Center	67	48	115
Air Force Security Forces Center	384	14	398
Air Force Services Agency	87	177	264
Air Force Technical Applications Center	543	0	543
Air Force Weather Agency	626	188	814
Air National Guard Readiness Center	130	467	597
Total FOA	**6,410**	**5,115**	**11,525**
Direct Reporting Units (DRUs)			
Air Force Doctrine Center	58	16	74
Air Force Operational Test and Evaluation Center	577	196	773
Air Force Studies and Analyses Agency	69	29	98
United States Air Force Academy	2,254	1,315	3,569
11th Wing	1,699	786	2,485
Total DRUs	**4,657**	**2,342**	**6,999**
Other			
Other units	15,299	28,810	44,109
USAFA cadets	4,193	0	4,193
Total for all categories	**376,616**	**162,725**	**539,341**

*AFC2ISR Center is Air Force Command & Control, Intelligence, Surveillance, and Reconnaissance Center; AFNSEPA is Air Force National Security Emergency Preparedness Agency; AFNWCA is Air Force Nuclear Weapons & Counterproliferation Agency.

USAF Personnel by Geographic Area

(As of Sept. 30, 2004)

Total military personnel	**376,616**
US territory and special locations	**299,627**
Total in foreign countries	**76,989**
Western and southern Europe	**35,599**
Germany	16,251
UK	9,932
Italy	4,738
Turkey	1,639
Spain	306
All other countries	2,733
East Asia and Pacific	**23,429**
Japan/Okinawa	14,240
South Korea	9,013
All other countries	176
Africa, Near East, South Asia	**2,129**
Kuwait	1,229
Saudi Arabia	84
Egypt	50
All other countries	766
Western hemisphere	**383**
Canada	95
All other countries	288
Other areas	**15,449**

Active Duty Force by Grade

(As of Sept. 30, 2004)

Grade	Number
Officers	
General	12
Lieutenant General	39
Major General	83
Brigadier General	137
Colonel	3,706
Lieutenant Colonel	10,527
Major	15,776
Captain	23,682
First Lieutenant	10,530
Second Lieutenant	9,617
Total	**74,109**
Cadets	4,193
Enlisted	
Chief Master Sergeant of the Air Force	1
Chief Master Sergeant	2,836
Senior Master Sergeant	5,822
Master Sergeant	29,144
Technical Sergeant	46,035
Staff Sergeant	76,988
Sergeant/Senior Airman	56,091
Airman First Class	58,254
Airman	11,259
Airman Basic	11,884
Total	**298,314**
Total strength	**376,616**

Specialties in the Enlisted Force

(As of Sept. 30, 2004)

Code	Career Field	Assigned	Percent
1A	Aircrew Operations	8,393	2.8
1C	Command Control Systems Operations	12,973	4.3
1N	Intelligence	10,806	3.6
1S	Safety	365	0.1
1T	Aircrew Protection	2,728	0.9
1W	Weather	2,603	0.9
2A	Manned Aerospace Maintenance	66,112	22.2
2E	Communications-Electronics Systems	12,497	4.2
2F	Fuels	4,658	1.6
2G	Logistics Plans	717	0.2
2M	Missile & Space Systems Maintenance	2,651	0.9
2P	Precision Measurement	969	0.3
2R	Maintenance Management Systems	1,794	0.6
2S	Supply	9,334	3.1
2T	Transportation & Vehicle Maintenance	13,450	4.5
2W	Munitions & Weapons	16,886	5.7
3A	Information Management	9,690	3.2
3C	Communications-Computer Systems	15,961	5.4
3E	Civil Engineering	20,960	7.0
3H	Historian	103	0.0
3M	Morale, Welfare, Recreation, & Services	4,289	1.4
3N	Public Affairs	1,549	0.5
3P	Security Forces	24,912	8.4
3S	Mission Support	8,186	2.7
3U	Manpower	622	0.2
3V	Visual Information	1,323	0.4
4A-V	Medical	20,234	6.8
4Y	Dental	2,710	0.9
5J	Paralegal	966	0.3
5R	Chapel Services Support	491	0.2
6C	Contracting	1,297	0.4
6F	Financial	3,428	1.1
7S	Special Investigation	835	0.3
8	Special Duty Identifiers	7,108	2.4
9	Reporting Identifiers	6,371	2.1
	Unassigned	343	0.1
	Total	**298,314**	**100**

Percentages have been rounded.

Specialties in the Officer Force

(As of Sept. 30, 2004)

Code	Utilization Field Title	Assigned	Percent
X0	Commander & Director	776	1.0
11	Pilot	12,466	16.8
12	Navigator	3,822	5.2
13	Space, Missile, Command & Control	5,262	7.1
14	Intelligence	3,016	4.1
15	Weather	682	0.9
16	Operations Support	1,321	1.8
21	Logistics	4,432	6.0
31	Security Forces	950	1.3
32	Civil Engineering	1,445	1.9
33	Communications-Computer Systems	4,513	6.1
34	MWR & Services	605	0.8
35	Public Affairs	492	0.7
36	Personnel	1,791	2.4
38	Manpower	364	0.5
4X	Medical	11,933	16.1
51	Law	1,303	1.8
52	Chaplain	613	0.8
61	Scientific/Research	932	1.3
62	Developmental Engineering	2,593	3.5
63	Acquisition	2,956	4.0
64	Contracting	987	1.3
65	Financial	978	1.3
71	Special Investigations	397	0.5
8X	Special Duty Identifiers	1,642	2.2
9X	Reporting Identifiers	7,220	9.7
	Other	618	0.8
	Total	**74,109**	**100**

Total does not include 4,193 cadets. Percentages have been rounded.

USAF photo by MSgt. Val Gempis

TSgt. Douglas Jefferson, a satellite wideband and telemetry maintenance technician assigned to Camp Zama, near Yokota AB, Japan, sets up a mobile tactical superhigh frequency satellite communications terminal.

Budgets 2005 USAF Almanac

Terms Explained

Funding levels can be expressed in several ways. **Budget authority** is the value of new obligations that the federal government is authorized to incur. These include some obligations to be met in later years. Figures can also be expressed in **outlays** (actual expenditures, some of which are covered by amounts that were authorized in previous years).

Another difference concerns the value of money. When funding is in **current** or **then-year** dollars, no adjustment for inflation has taken place. This is the actual amount of dollars that has been or is to be spent, budgeted, or forecast. When funding is expressed in **constant dollars,** or **real dollars,** the effect of inflation has been factored out to make direct comparisons between budget years possible. A specific year, often the present one, is chosen as a baseline for constant dollars.

Normally, Congress first authorizes payment, then appropriates it. **Authorization** is an act of Congress that establishes or continues a federal program or agency and sets forth guidelines to which it must adhere. **Appropriation** is an act of Congress that enables federal agencies to spend money for specific purposes.

Air Force Budget—A 10-Year Perspective

(Budget authority in millions of current and constant FY06 dollars)

Current dollars	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**
Military personnel	$19,309	$19,186	$19,111	$19,357	$20,217	$20,956	$24,751	$28,732	$29,844	$28,521
Operation & maintenance	23,519	22,728	25,174	27,107	27,254	29,328	34,364	43,254	38,406	35,531
Procurement	15,558	14,247	15,258	18,434	18,755	22,054	23,229	31,380	32,335	32,562
RDT&E	12,427	14,017	14,265	13,807	14,511	14,297	14,519	18,825	20,294	21,115
Military construction	1,285	1,567	1,537	862	1,174	1,410	1,806	1,634	1,821	1,022
Family housing	1,124	1,135	1,114	1,082	1,158	1,084	1,374	1,536	1,455	1,711
Rev. & mgmt. funds	n/a	790	234	1,510	434	515	292	31	0	81
Trust & receipts	-231	-453	-409	-246	-453	-95	-108	-147	-120	-121
Total	**$72,992**	**$73,216**	**$76,284**	**$81,914**	**$83,050**	**$89,549**	**$100,228**	**$125,245**	**$124,034**	**$120,421**
Constant FY06 dollars										
Military personnel	$24,283	$23,586	$23,124	$22,917	$23,149	$23,341	$27,134	$30,790	$31,141	$29,063
Operation & maintenance	29,578	27,940	30,460	32,093	31,206	32,666	37,672	46,352	40,075	36,206
Procurement	19,566	17,514	18,462	21,825	21,475	24,564	25,465	33,628	33,740	33,181
RDT&E	15,628	17,232	17,260	16,347	16,615	15,924	15,917	20,173	21,176	21,516
Military construction	1,616	1,926	1,860	1,021	1,344	1,570	1,980	1,751	1,900	1,041
Family housing	1,414	1,395	1,348	1,281	1,326	1,207	1,506	1,646	1,518	1,744
Rev. & mgmt. funds	n/a	971	283	1,788	497	574	320	33	0	83
Trust & receipts	-291	-557	-495	-291	-519	-106	-118	-158	-125	-123
Total	**$91,796**	**$90,007**	**$92,302**	**$96,981**	**$95,093**	**$99,741**	**$109,878**	**$134,216**	**$129,424**	**$122,709**
Percentage real growth										
Military personnel	-4.4	-2.9	-2.0	-0.9	1.0	0.8	16.2	13.5	1.1	-6.7
Operation & maintenance	-7.0	-5.5	9.0	5.4	-2.8	4.7	15.3	-23.0	-13.5	-9.7
Procurement	-8.6	-10.5	5.4	18.2	-1.6	14.4	3.7	32.1	0.3	-1.7
RDT&E	2.4	10.3	0.2	-5.3	1.6	-4.2	0.0	26.7	5.0	1.6
Military construction	52.9	19.2	-3.5	-45.1	31.7	16.8	26.1	-11.6	8.5	-45.2
Family housing	-1.3	-1.3	-3.4	-5.0	3.5	-8.9	24.8	9.3	-7.8	14.8
Total	**-4.1**	**-1.9**	**2.5**	**5.1**	**-1.9**	**4.9**	**10.2**	**22.2**	**-3.6**	**-5.2**

Numbers do not add due to rounding.

Air Force Major Force Programs

(Total obligation authority in billions of constant FY06 dollars)

	FY96	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**	**FY05**
Forces										
Strategic Forces	$6.2	$4.7	$5.2	$5.1	$4.7	$4.5	$5.1	$5.8	$6.0	$5.6
General-Purpose Forces	20.5	19.9	20.2	20.6	22.5	25.4	29.7	38.6	35.0	30.3
Airlift Forces	10.5	10.3	10.8	12.3	12.2	11.9	13.6	16.6	14.6	13.6
Guard and Reserve Forces	8.5	8.4	8.9	9.2	9.4	9.7	10.0	11.0	11.4	11.6
Special Operations Forces	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.6	0.6
Total	**$46.2**	**$43.8**	**$45.5**	**$47.7**	**$49.3**	**$52.0**	**$59.0**	**$72.5**	**$67.6**	**$61.7**
Support										
Intelligence & Communications	$22.4	$21.9	$22.5	$23.2	$22.7	$24.5	$25.5	$33.4	$34.1	$33.3
Research & Development	10.4	9.8	9.6	8.6	9.0	8.1	7.7	9.5	10.4	9.1
Central Supply & Maintenance	4.9	4.7	4.7	5.1	5.3	5.6	5.6	6.6	5.8	5.2
Training, Medical, & Personnel	10.4	9.8	9.8	9.9	10.1	10.4	11.6	13.0	13.3	12.9
Administration & Other	1.7	1.8	1.7	1.8	1.9	1.9	2.1	2.4	2.6	2.4
Total	**$49.7**	**$47.9**	**$48.3**	**$48.6**	**$49.0**	**$50.6**	**$52.5**	**$65.0**	**$66.1**	**$62.9**

Defense Department Budget Topline*

(In billions of current and constant FY06 dollars)

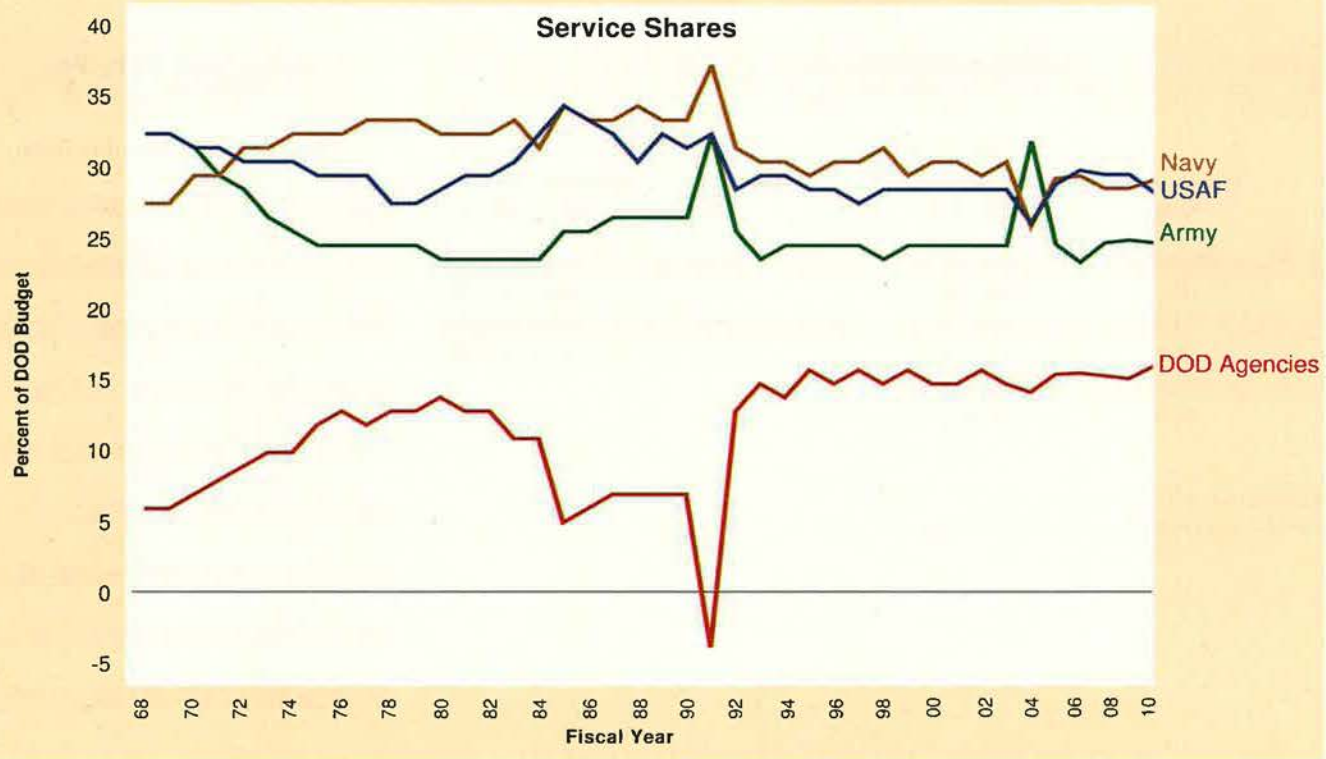
	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Budget authority (current $)	$375.7	$400.1	$419.3	$443.1	$462.4	$482.0	$492.1
Budget authority (constant FY06 $)	$392.0	$407.7	$419.3	$434.7	$443.6	$452.3	$451.6
Outlays (current $)	$436.9	$443.2	$424.4	$428.0	$446.5	$468.1	$485.1
Outlays (constant FY06 $)	$455.9	$451.6	$424.4	$419.9	$428.4	$439.2	$445.2

Numbers have been rounded.
*Does not include supplemental appropriations to cover costs of the war in Iraq.

Service Shares

(In billions of constant FY06 dollars)

Budget authority	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Air Force	$104.4	$120.0	$127.5	$130.8	$133.6	$130.1	$130.5
Army	127.5	102.2	100.0	109.4	112.7	114.0	114.0
Navy	103.4	121.5	125.6	126.5	129.1	134.5	135.4
Defense agencies, DOD-wide	56.6	64.0	66.2	68.0	68.2	73.7	71.8
Total	**$392.0**	**$407.7**	**$419.3**	**$434.7**	**$443.6**	**$452.3**	**$451.6**
Percent of budget authority							
Air Force	26.6%	29.4%	30.4%	30.1%	30.1%	28.8%	28.9%
Army	32.5%	25.1%	23.8%	25.2%	25.4%	25.2%	25.2%
Navy	26.4%	29.8%	30.0%	29.1%	29.1%	29.7%	30.0%
Defense agencies, DOD-wide	14.4%	15.7%	15.8%	15.6%	15.4%	16.3%	15.9%



Monthly Military Basic Rates of Pay in Dollars

(Effective Jan. 1, 2005)

Commissioned Officers

Pay Grade	Years of Service														
	<2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
O-10[a]												12,963	13,027	13,298	13,769
O-9[a]												11,338	11,501	11,737	12,149
O-8[a]	8,022	8,285	8,459	8,508	8,726	9,089	9,174	9,519	9,618	9,915	10,346	10,742	11,008		
O-7[a]	6,666	6,976	7,119	7,233	7,439	7,643	7,878	8,114	8,349	9,089	9,715	9,715	9,715	9,715	9,764
O-6	4,941	5,428	5,784	5,784	5,806	6,055	6,088	6,088	6,434	7,046	7,405	7,763	7,968	8,174	8,576
O-5	4,119	4,640	4,961	5,021	5,222	5,342	5,606	5,799	6,049	6,431	6,613	6,793	6,998		
O-4	3,554	4,114	4,388	4,450	4,704	4,978	5,318	5,583	5,767	5,872	5,934				
O-3	3,125	3,542	3,823	4,168	4,368	4,587	4,729	4,962	5,083						
O-2	2,669	3,075	3,541	3,661	3,736										
O-1	2,344	2,439	2,948												
O-3E[b]				4,168	4,368	4,587	4,729	4,962	5,159	5,271	5,425				
O-2E[b]				3,661	3,736	3,855	4,056	4,211	4,327						
O-1E[b]				2,948	3,149	3,265	3,384	3,501	3,661						

Enlisted Members

E-9							3,901	3,990	4,101	4,232	4,364	4,576	4,755	4,944	5,232
E-8						3,194	3,335	3,422	3,527	3,641	3,845	3,949	4,126	4,224	4,465
E-7	2,220	2,423	2,516	2,639	2,735	2,890	2,992	3,085	3,250	3,332	3,411	3,459	3,620	3,725	3,990
E-6	1,920	2,113	2,206	2,297	2,391	2,604	2,687	2,779	2,860	2,889	2,908				
E-5	1,760	1,877	1,968	2,061	2,205	2,330	2,422	2,451							
E-4	1,613	1,696	1,787	1,878	1,958										
E-3	1,456	1,548	1,641												
E-2	1,385														
E-1 4 mos.+	1,235														
E-1<4 mos.	1,143														

Amounts have been rounded to the nearest dollar.
[a]Basic pay for pay grades O-7 through O-10 is limited to $12,433.20. Basic pay for O-6 and below is limited to $10,950.00.
[b]Commissioned officers with more than four years' active service as enlisted members.
While serving as Chairman of the Joint Chiefs of Staff or Chief of Staff of the Air Force, basic pay is $15,146.40.
For the Chief Master Sergeant of the Air Force, basic pay is $6,304.20.

Aviation Career Incentive Pay

(Effective Jan. 1, 2005)

Monthly Rate	Years of Aviation Service as an Officer	Monthly Rate	Years of Aviation Service as an Officer
$125	2 or fewer	$585	more than 22
156	more than 2	495	more than 23
188	more than 3	385	more than 24
206	more than 4	250	more than 25
650	more than 6		
840	more than 14		

Provided to qualified rated officers.
Continuous pay ends following the 25th year of service.

Hazardous Duty Pay

(Effective Jan. 1, 2005)

Pay Grade	Monthly Rate
O-10	$150
O-9	150
O-8	150
O-7	150
O-6	250
O-5	250
O-4	225
O-3	175
O-2	150
O-1	150
E-9	240
E-8	240
E-7	240
E-6	215
E-5	190
E-4	165
E-3	150
E-2	150
E-1	150

Annual Pay for Federal Civilians

(Effective Jan. 1, 2005)

General Schedule

Grade	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
GS-1	$16,016	$16,550	$17,083	$17,613	$18,146	$18,459	$18,984	$19,515	$19,537	$20,036
GS-2	18,007	18,435	19,031	19,537	19,755	20,336	20,917	21,498	22,079	22,660
GS-3	19,647	20,302	20,957	21,612	22,267	22,922	23,577	24,232	24,887	25,542
GS-4	22,056	22,791	23,526	24,261	24,996	25,731	26,466	27,201	27,936	28,671
GS-5	24,677	25,500	26,323	27,146	27,969	28,792	29,615	30,438	31,261	32,084
GS-6	27,507	28,424	29,341	30,258	31,175	32,092	33,009	33,926	34,843	35,760
GS-7	30,567	31,586	32,605	33,624	34,643	35,662	36,681	37,700	38,719	39,738
GS-8	33,852	34,980	36,108	37,236	38,364	39,492	40,620	41,748	42,876	44,004
GS-9	37,390	38,636	39,882	41,128	42,374	43,620	44,866	46,112	47,358	48,604
GS-10	41,175	42,548	43,921	45,294	46,667	48,040	49,413	50,786	52,159	53,532
GS-11	45,239	46,747	48,255	49,763	51,271	52,779	54,287	55,795	57,303	58,811
GS-12	54,221	56,028	57,835	59,642	61,449	63,256	65,063	66,870	68,677	70,484
GS-13	64,478	66,627	68,776	70,925	73,074	75,223	77,372	79,521	81,670	83,819
GS-14	76,193	78,733	81,273	83,813	86,353	88,893	91,433	93,973	96,513	99,053
GS-15	89,625	92,613	95,601	98,589	101,577	104,565	107,553	110,541	113,529	116,517

Senior Executive Service

As part of the 2004 defense budget, Congress authorized DOD to implement a new performance-based pay system for SES members. On Jan. 1, 2004, a new SES pay scale reflecting only the minimum and maximum levels of pay replaced the old fixed SES pay levels (ES-1 through ES-6). The pay scale does not include locality pay.

SES Pay System Structure	Minimum	Maximum
Certified SES performance appraisal system	$107,550	$162,100
Noncertified SES performance appraisal system	$107,550	$149,200

Housing Allowance

(Effective Jan. 1, 2005)

Pay Grade	With Dependents	Without Dependents
O-10	$1,349.70	$1,096.80
O-9	1,349.70	1,096.80
O-8	1,349.70	1,096.80
O-7	1,349.70	1,096.80
O-6	1,215.00	1,006.20
O-5	1,171.20	968.70
O-4	1,032.30	897.60
O-3	854.10	719.70
O-2	729.00	570.60
O-1	652.50	480.90
O-3E	918.00	777.00
O-2E	828.30	660.30
O-1E	765.60	568.20
E-9	876.90	665.10
E-8	808.80	610.80
E-7	750.60	521.40
E-6	693.60	471.90
E-5	624.00	435.30
E-4	542.10	378.60
E-3	504.60	371.40
E-2	480.90	301.80
E-1	447.60	250.80

Subsistence Allowance

(Effective Jan. 1, 2005)

Officers	$183.99/month
Enlisted Members	$267.18/month

Historical Federal Budget Data

Current dollars
(In billions)

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	$106.8	$5.9	$34.7	$52.6
1963	111.3	4.0	36.2	53.7
1964	118.5	6.5	38.9	55.0
1965	118.2	1.6	39.7	51.0
1966	134.5	3.1	43.4	59.0
1967	157.5	12.6	50.9	72.0
1968	178.1	27.7	59.7	82.2
1969	183.6	0.5	64.6	82.7
1970	195.6	8.7	72.5	81.9
1971	210.2	26.1	86.9	79.0
1972	230.7	26.1	100.8	79.3
1973	245.7	15.2	116.0	77.1
1974	269.4	7.2	130.9	80.7
1975	332.3	54.1	169.4	87.6
1976	371.8	69.4	189.1	89.9
1977	409.2	49.9	203.7	97.5
1978	458.7	55.4	227.4	104.6
1979	504.0	39.6	247.0	116.8
1980	590.9	73.1	291.2	134.6
1981	678.2	73.9	339.4	158.0
1982	745.7	120.6	370.8	185.9
1983	808.4	207.7	410.6	209.9
1984	851.9	185.3	405.6	228.0
1985	946.4	221.5	448.2	253.1
1986	990.4	237.9	461.8	273.8
1987	1,004.1	168.4	474.2	282.5
1988	1,064.5	192.3	505.1	290.9
1989	1,143.8	205.4	549.8	304.0
1990	1,253.1	277.7	626.8	300.1
1991	1,324.3	321.5	702.3	319.7
1992	1,381.6	340.4	716.8	302.6
1993	1,409.5	300.4	738.0	292.4
1994	1,461.9	258.9	786.0	282.3
1995	1,515.8	226.4	818.5	273.6
1996	1,560.5	174.1	858.7	266.0
1997	1,601.2	103.3	896.3	271.7
1998	1,652.6	30.0	938.6	270.2
1999	1,701.9	**1.9**	976.8	275.5
2000	1,789.1	**86.3**	1,029.8	295.0
2001	1,863.0	32.5	1,094.4	306.1
2002	2,011.0	317.5	1,196.7	348.9
2003	2,159.9	538.4	1,281.6	404.9
2004	2,292.2	567.4	1,345.7	454.1

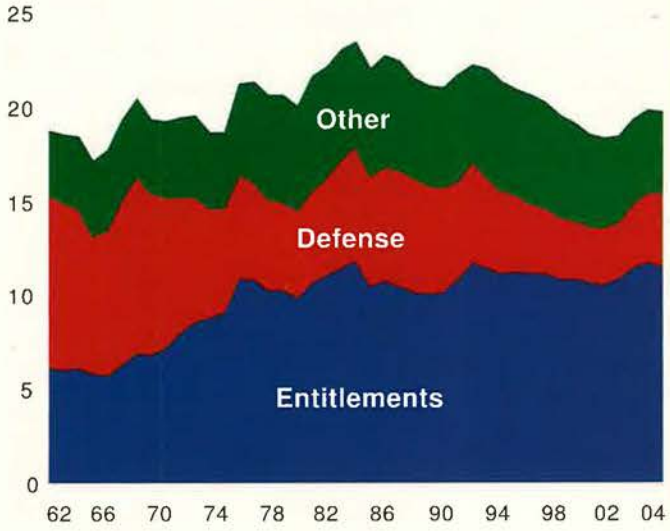
Constant FY06 dollars
(In billions)

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	$697.6	$38.5	$226.7	$343.6
1963	717.7	25.8	233.4	346.3
1964	754.3	41.4	247.6	350.1
1965	740.6	10.0	248.7	319.5
1966	818.9	18.9	264.2	359.2
1967	930.1	74.4	300.6	425.2
1968	1,009.4	157.0	338.4	465.9
1969	986.3	2.7	347.0	444.3
1970	994.1	44.2	368.5	416.2
1971	1,023.3	127.1	423.0	384.6
1972	1,088.3	123.1	475.5	374.1
1973	1,091.4	67.5	515.3	342.5
1974	1,078.1	28.8	523.8	322.9
1975	1,218.8	198.4	621.3	321.3
1976	1,289.0	240.6	655.6	311.7
1977	1,332.0	162.4	663.1	317.4
1978	1,387.7	167.6	688.0	316.4
1979	1,369.9	107.6	671.4	317.5
1980	1,415.1	175.1	697.4	322.3
1981	1,472.5	160.5	736.9	343.1
1982	1,524.6	246.6	758.1	380.1
1983	1,601.5	411.5	813.4	415.8
1984	1,618.1	352.0	770.4	433.1
1985	1,735.1	406.1	821.7	464.0
1986	1,781.9	428.0	830.9	492.6
1987	1,743.8	292.5	823.5	490.6
1988	1,775.9	320.8	842.6	485.3
1989	1,820.8	327.0	875.2	483.9
1990	1,892.6	419.4	946.7	453.2
1991	1,919.5	466.0	1,017.9	463.4
1992	1,944.2	479.0	1,008.7	425.8
1993	1,925.7	410.4	1,008.3	399.5
1994	1,946.7	344.8	1,046.6	375.9
1995	1,963.5	293.3	1,060.2	354.4
1996	1,962.5	219.0	1,079.9	334.5
1997	1,968.4	127.0	1,101.9	334.0
1998	1,999.6	36.3	1,135.7	326.9
1999	2,014.9	**2.2**	1,156.5	326.2
2000	2,048.5	**98.8**	1,179.1	337.8
2001	2,075.0	36.2	1,219.0	340.9
2002	2,204.6	348.1	1,311.9	382.5
2003	2,314.6	577.0	1,373.4	433.9
2004	2,391.8	592.1	1,404.2	473.8

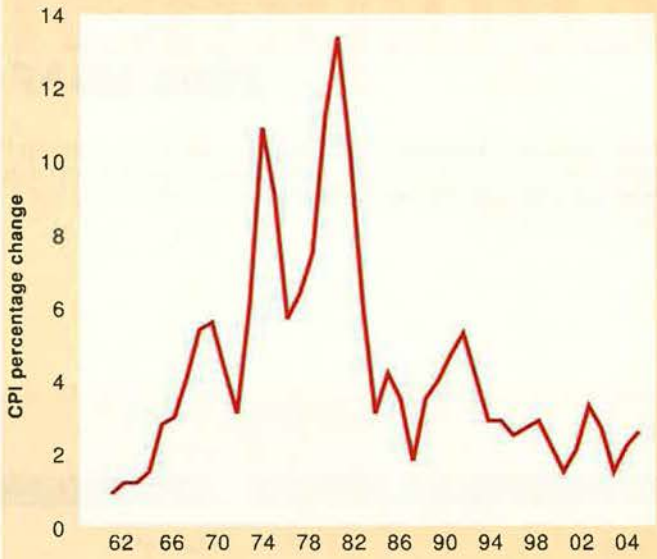
Source: "The Budget and Economic Outlook: Fiscal Years 2006-15," published by the Congressional Budget Office, January 2004; Budget of the United States Government Historical Tables, Fiscal Year 2006. (Constant dollar figures are derived.)

Percentages of GDP

Year	Total Outlays	Deficit/ Surplus	Entitlements	Defense
1962	18.8	1.0	6.1	9.3
1963	18.6	0.7	6.0	9.0
1964	18.5	1.0	6.1	8.6
1965	17.2	0.2	5.8	7.4
1966	17.8	0.4	5.7	7.8
1967	19.4	1.6	6.3	8.9
1968	20.5	3.2	6.9	9.5
1969	19.4	0.1	6.8	8.7
1970	19.3	0.9	7.2	8.1
1971	19.5	2.4	8.0	7.3
1972	19.6	2.2	8.6	6.7
1973	18.7	1.2	8.8	5.9
1974	18.7	0.5	9.1	5.6
1975	21.3	3.5	10.9	5.6
1976	21.4	4.0	10.9	5.2
1977	20.7	2.5	10.3	4.9
1978	20.7	2.5	10.3	4.7
1979	20.1	1.6	9.9	4.7
1980	21.7	2.7	10.7	4.9
1981	22.2	2.4	11.1	5.2
1982	23.1	3.7	11.5	5.8
1983	23.5	6.0	11.9	6.1
1984	22.1	4.8	10.5	5.9
1985	22.8	5.3	10.8	6.1
1986	22.5	5.4	10.5	6.2
1987	21.6	3.6	10.2	6.1
1988	21.2	3.8	10.1	5.8
1989	21.2	3.8	10.2	5.6
1990	21.8	4.8	10.9	5.2
1991	22.3	5.4	11.8	5.4
1992	22.1	5.5	11.5	4.8
1993	21.4	4.6	11.2	4.4
1994	21.0	3.7	11.3	4.1
1995	20.7	3.1	11.2	3.7
1996	20.3	2.3	11.2	3.5
1997	19.6	1.3	10.9	3.3
1998	19.2	0.3	10.9	3.1
1999	18.6	0.0	10.7	3.0
2000	18.4	0.9	10.6	3.0
2001	18.5	0.3	10.9	3.0
2002	19.4	3.1	11.5	3.4
2003	19.9	5.0	11.8	3.7
2004	19.8	4.9	11.6	3.9



Inflation Rates



CPI=Consumer Price Index

Year	% change
1962	1.0
1963	1.3
1964	1.3
1965	1.6
1966	2.9
1967	3.1
1968	4.2
1969	5.5
1970	5.7
1971	4.4
1972	3.2
1973	6.2
1974	11.0
1975	9.1
1976	5.8
1977	6.5
1978	7.6
1979	11.3
1980	13.5
1981	10.3
1982	6.2
1983	3.2
1984	4.3
1985	3.6
1986	1.9
1987	3.6
1988	4.1
1989	4.8
1990	5.4
1991	4.2
1992	3.0
1993	3.0
1994	2.6
1995	2.8
1996	3.0
1997	2.3
1998	1.6
1999	2.2
2000	3.4
2001	2.8
2002	1.6
2003	2.3
2004	2.7

Equipment
2005 USAF Almanac

Total active inventory (TAI): aircraft assigned to operating forces for mission, training, test, or maintenance. Includes primary, backup, and attrition aircraft.
Primary aircraft inventory (PAI): aircraft assigned to meet primary aircraft authorization (PAA).

Active Duty Inventory

(As of Sept. 30, 2004)

Type	TAI	PAI
Bomber		
B-1	67	52
B-2	21	16
B-52	84	53
Total	**172**	**121**
Fighter/Attack		
A-10	129	108
OA-10	75	54
F-15	604	524
F-16	737	638
F/A-22	27	27
F-117	55	47
Total	**1,627**	**1,398**
Helicopter		
HH-60	71	62
UH-1	89	68
Total	**160**	**130**
Reconnaissance/BM/C3I		
E-3	32	26
E-4	4	3
E-9	2	2
EC-130	17	10
MQ-9	5	0
M/RQ-1	6	4
NC-135	1	0
OC-135	2	2
RC-135	21	16
RQ-4	6	0
U-2	34	33
WC-135	2	0
Total	**132**	**96**
Special Ops Forces		
AC-130	21	19
MC-130	45	41
MH-53	33	30
Total	**99**	**90**

Type	TAI	PAI
Tanker		
HC-130	18	18
KC-10	59	54
KC-135	224	185
Total	**301**	**257**
Trainer		
T-1	179	149
T-3	110	0
T-6	159	113
T-37	283	227
T-38	484	347
T-41	4	4
T-43	9	9
TC-135	3	2
Gliders	43	41
UV-18	3	2
Total	**1,277**	**894**
Transport		
C-5	73	62
C-9	4	3
C-12	28	24
C-17	118	108
C-20	10	9
C-21	75	68
C-32	4	4
C-37	9	9
C-40	2	2
C-130	189	165
C-135	2	2
VC-25	2	2
Total	**516**	**458**
Total Active	**4,284**	**3,444**

Air National Guard Inventory

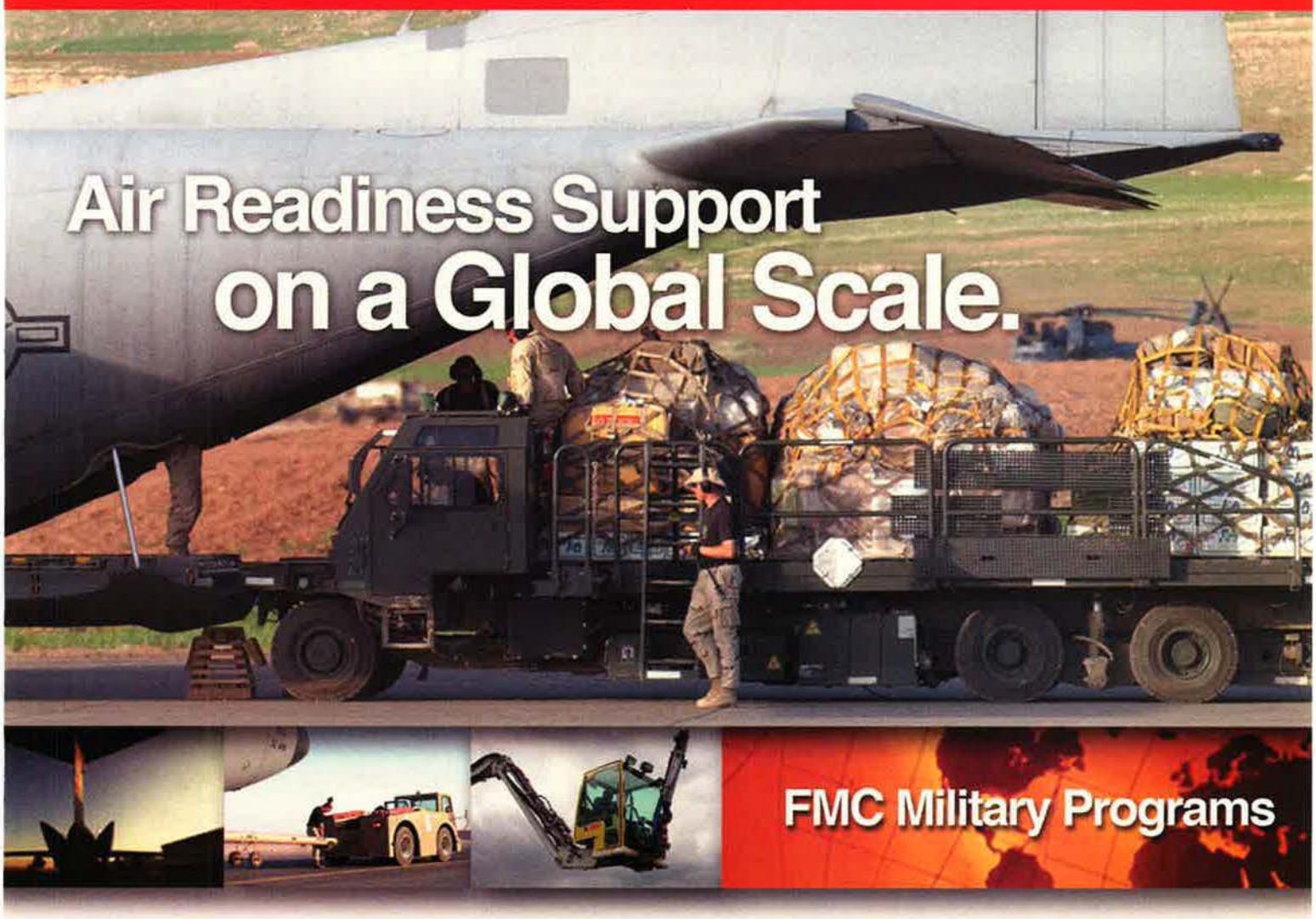
(As of Sept. 30, 2004)

Type	TAI	PAI
Fighter/Attack		
A-10	76	72
OA-10	26	18
F-15	129	103
F-16	540	452
Total	**771**	**645**
Helicopter		
HH-60G	18	15
Reconnaissance/BM/C3I		
EC-130	7	6
E-8	17	14
Total	**24**	**20**
Special Ops Forces		
MC-130	4	4
Tanker		
HC-130	9	7
KC-135	234	188
Total	**243**	**195**
Transport		
C-5	13	12
C-17	8	8
C-21	2	2
C-26	11	11
C-32	2	0
C-38	2	2
C-40	3	0
C-130	215	203
LC-130	10	10
Total	**266**	**248**
Total ANG	**1,326**	**1,127**

Air Force Reserve Command Inventory

(As of Sept. 30, 2004)

Type	TAI	PAI
Bomber		
B-52	9	8
Fighter/Attack		
A-10	44	27
OA-10	7	3
F-16	69	60
Total	**120**	**90**
Helicopter		
HH-60	15	13
Reconnaissance/BM/C3I		
WC-130	20	10
Special Ops Forces		
MC-130	14	12
Tanker		
HC-130	5	5
KC-135	76	72
Total	**81**	**77**
Transport		
C-5	32	28
C-9	4	3
C-130	93	90
C-141	20	16
Total	**149**	**137**
Total AFRC	**408**	**347**



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Total Number of USAF Aircraft in Service Over Time

(As of Sept. 30, 2004)

Type of aircraft	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Bomber	179	179	181	181	183	173	172
Fighter/attack	1,683	1,666	1,658	1,619	1,631	1,628	1,627
Helicopter	116	123	130	126	126	129	160
Reconnaissance/BM/C3I	140	138	141	140	143	135	132
Special Ops Forces	123	118	107	107	102	101	99
Tanker	326	327	328	330	322	325	301
Trainer	1,272	1,274	1,289	1,289	1,342	1,308	1,277
Transport	608	588	567	546	538	529	516
Total active duty	**4,447**	**4,413**	**4,401**	**4,338**	**4,387**	**4,328**	**4,284**
Air National Guard	1,381	1,360	1,362	1,361	1,350	1,312	1,326
AFRC	446	430	442	445	446	433	408
Total active duty, ANG, and AFRC	**6,274**	**6,203**	**6,205**	**6,144**	**6,183**	**6,073**	**6,018**
Total aircraft, including foreign-government-owned	6,373	6,302	6,304	6,245	6,286	6,167	6,107

Age of the Active Duty Fleet

(As of Sept. 30, 2004)

	Age in Years										
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+	Total	Average
A-10							12	167	25	204	22.8
B-1B						65	2			67	17.1
B-2			7	10	3	1				21	10.1
B-52									84	84	42.8
C-5						43	7		23	73	21.7
C-9									4	4	30.3
C-10					1	11	30	17		59	19.7
C-12						4	8		16	28	24.3
C-17	42	33	20	19	4					118	5.1
C-20			1	1		8				10	15.8
C-21							75			75	19.7
C-25					2					2	13.9
C-32		2	2							4	6
C-37	3	6								9	3.7
C-40	2									2	1.7
C-130	1			15	16	13	6		239	290	32
C-135									255	255	42.6
E-3							3	8	21	32	24.8
E-4									4	4	30.3
E-9				2						2	11
F-15	10	16		34	115	113	98	126	92	604	18.1
F-16	13	16	22	193	303	102	86	2		737	13.3
F/A-22	22	4	1							27	1.7
F-117					8	15	24	8		55	18.2
H-1									89	89	33.3
H-53									33	33	34.2
H-60		3	4	5	38	11	2	8		71	14.4
Q-1	3	3								6	3.5
Q-4	4	1	1							6	3
Q-9	5									5	1.3
T-1			57	101	21					179	8.9
T-3			14	96						110	9.6
T-6	125	34								159	1.9
T-37									283	283	40.8
T-38									484	484	37.4
T-41									4	4	35.1
T-43									9	9	30.4
U-2					1	8	13	8	4	34	21.2
UV-18			1						2	3	20.5
Gliders	40	1		1	1					43	4.2
Total	**270**	**119**	**130**	**477**	**513**	**394**	**366**	**344**	**1,671**	**4,284**	**22.8**
Percent	6%	3%	3%	11%	12%	9%	9%	8%	39%		

Age of the Air National Guard Fleet

(As of Sept. 30, 2004)

Age in Years

	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+	Total	Average
A-10							1	42	59	102	23.8
C-5									13	13	33.2
C-17	8									8	0.5
C-21						2				2	17
C-26				9	2					11	10.3
C-32	2									2	1.2
C-38			2							2	6.5
C-40	3									3	1.3
C-130	9	12	22	31	34	17	26	13	81	245	20.9
C-135									234	234	44.2
E-8	5	7	4		1					17	4.8
F-15							2	10	117	129	26.1
F-16			1	17	72	270	140	40		540	17
H-60				7		11				18	13.9
Total	**27**	**19**	**29**	**64**	**109**	**300**	**169**	**105**	**504**	**1,326**	**23.7**
Percent	2%	1%	2%	5%	8%	23%	13%	8%	38%		

Age of the Air Force Reserve Command Fleet

(As of Sept. 30, 2004)

Age in Years

	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24+	Total	Average
A-10							1	22	28	51	24
B-52									9	9	42.5
C-5									32	32	33.1
C-9									4	4	33.3
C-130	7	7	6	21	12	25	8	6	40	132	20.8
C-135									76	76	43.4
C-141									20	20	37.9
F-16					1	63	5			69	16.7
H-60					15					15	13.7
Total	**7**	**7**	**6**	**21**	**28**	**88**	**14**	**28**	**209**	**408**	**26.8**
Percent	2%	2%	1%	5%	7%	22%	3%	7%	51%		

ICBMs and Spacecraft in Service

(As of Sept. 30, 2004)

Type of system	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Minuteman III ICBM	530	500	500	500	500	500	500
Peacekeeper ICBM*	50	50	50	50	50	23	6
Total ICBMs	**580**	**550**	**550**	**550**	**550**	**523**	**506**
DMSP satellite	2	2	2	2	2	2	2
DSCS satellite	5	5	5	5	5	10	11
DSP satellite (data classified)	—	—	—	—	—	—	—
GPS satellite	26	26	24	27	28	28	30
Milstar satellite	2	2	2	3	4	5	5
Total satellites	**35**	**35**	**33**	**37**	**39**	**45**	**48**

DMSP: Defense Meteorological Satellite Program **DSCS:** Defense Satellite Communications System **DSP:** Defense Support Program **GPS:** Global Positioning System
As of FY02, satellite data show the number of satellites that are primary mission capable.
*Number changes as Peacekeepers are deactivated.

USAF Aircraft Flying Hours*

(In thousands, as of Sept. 30, 2004)

	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Active duty	1,644	1,633	1,555	1,579	1,768	1,700	1,648
ANG	361	357	342	341	410	426	393
AFRC	149	142	139	146	186	193	177
Total	**2,154**	**2,132**	**2,036**	**2,066**	**2,364**	**2,319**	**2,218**

*Includes contingency support hours but not AFSOC or RDT&E flying hours.

USAF Squadrons by Mission Type

(As of Sept. 30, 2004)

	FY00	FY01	FY02	FY03	FY04
Active forces					
Bomber	10	9	9	9	9
Air refueling	26	26	26	26	17
Strategic command & control	2	2	2	2	2
Fighter	46	46	46	46	45
Reconnaissance	1	4	4	9	10
Electronic warfare	3	2	2	2	2
Special operations	14	14	21	21	21
Ground theater air control	7	7	2	2	2
Airborne theater air control	8	8	8	8	8
Rescue	7	6	6	8	8
Theater airlift	12	12	12	12	6
Long-range airlift	20	18	18	18	13
Aeromedical airlift	3	3	3	0	0
ICBM	14	14	14	11	11
Space operations	8	8	8	8	9
Space communications	1	1	0	0	6
Space warning	7	7	8	8	6
Space surveillance	6	4	3	3	3
Space launch	3	3	3	4	4
Range	2	2	2	2	2
Space control	2	3	3	3	3
Space aggressor	0	0	0	1	1
Total	**202**	**199**	**200**	**203**	**188**
Reserve forces					
ANG Selected Reserve					
Flying	101	101	101	101	102
Space operations	0	1	1	3	4
Space warning	0	1	1	1	2
AFRC					
Flying	60	60	60	61	61
Space operations	4	4	4	4	4
Space warning	1	1	1	1	1
Space aggressor	0	0	0	1	1
Total	**166**	**168**	**168**	**172**	**175**
Grand total	**368**	**367**	**368**	**392**	**363**

Aircraft per Active Duty USAF Squadron

(As of Sept. 30, 2004)

Aircraft	Number
A/OA-10	18/24
AC-130H	8
AC-130U	13
B-1B	12/18
B-2	8
B-52	12
C-5	14
C-17	12
C-130	14
C-141B	10
E-3	2/5
E-8	8
EC-130	6/10
F-15	18/24
F-15E	18/24
F-16	18/24
F-117A	18
HC-130	3/4
HH-60	12/14
KC-10	15
KC-135	12
MC-130E	14
MC-130H/P	10/12
MH-53	16/17
U-2	29

Air National Guard Air Defense Unit Fin Flashes

Description	Aircraft	Unit and Location
Minuteman over Massachusetts	F-15A/B	102nd FW, Otis ANGB, Mass.
Subdued eagle and "Oregon" logo	F-15A/B	114th FS (173rd FW), Klamath Falls Arpt., Ore.[a]
Red stripe with "Happy Hooligans" logo	F-16A/B	119th FW, Hector Arpt., N.D.
Dark gray bison's skull against prairie/mountain profile	F-16C/D	120th FW, Great Falls Arpt., Mont.[b]
Subdued hawk with banner in talons	F-15A/B	123rd FS (142nd FW), Portland Arpt., Ore.
Blue lightning bolt, blue stripe with "Florida" logo	F-15A/B	125th FW, Jacksonville Arpt., Fla.
Black falcon with talons extended and "California" logo	F-16C/D	144th FW, Fresno Yosemite Arpt., Calif.
Texas star on subdued jagged stripes with "Houston" logo	F-16C/D	147th FW, Ellington Field, Tex.[b]
Blue stripe and "Duluth" logo	F-16C	148th FW, Duluth Arpt., Minn.
Green stripe with "Vermont" on top of tail with figure of Ethan Allen	F-16C/D	158th FW, Burlington Arpt., Vt.[b]
Starburst state flag and AZ	F-16A/B/C/D	162nd FW, Tucson Arpt., Ariz.[a]
Red stripe with "New Jersey" logo and AC above it	F-16C/D	177th FW, Atlantic City Arpt., N.J.[b]

[a]ANG training units.
[b]General-purpose units (no longer air defense only).

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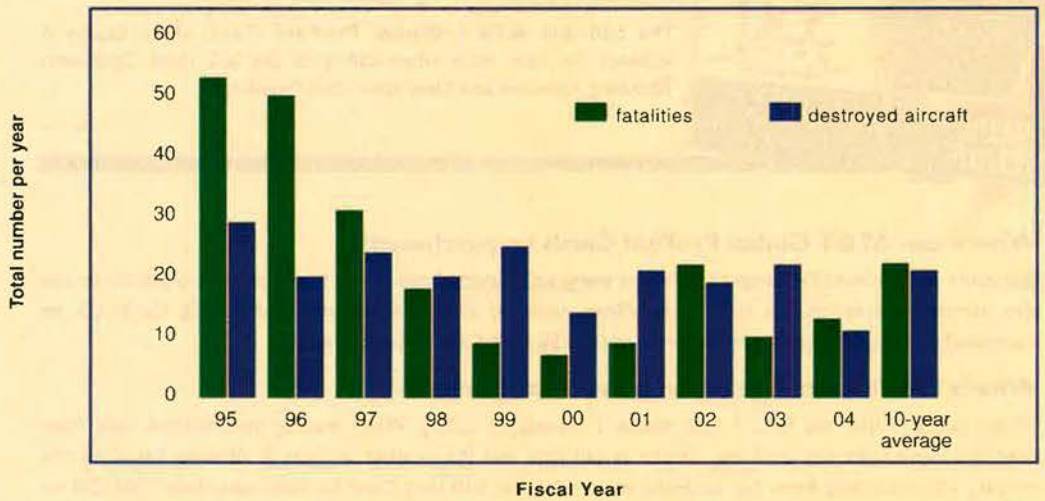
Class A Aircraft Mishaps

(As of Sept. 30, 2004)

(Loss of life, permanent total disability, destroyed aircraft, or more than $1 million in property damage)



Data provided by USAF.

USAF photo by A1C Trina Flannagan

An F-16 Fighting Falcon from the 64th Aggressor Squadron taxis to the runway at Nellis AFB, Nev., for a Joint Red Flag mission.

USAF Aircraft Tail Markings

Code	Aircraft	Unit and Location
AC	F-16C/D	177th FW (ANG), Atlantic City Arpt., N.J.
AF	C-150, DA-20, gliders, T-41, UV-18	USAF Academy, Colo.
AK	C-12, C-130H, E-3B/C, F-15C/D/E	3rd Wing, Elmendorf AFB, Alaska
AK	A/OA-10A, F-16C/D	354th FW, Eielson AFB, Alaska
AL	F-16C/D	187th FW (ANG), Dannelly Fld., Ala.
AL	KC-135	117th ARW (ANG), Birmingham Arpt., Ala.
AN	C-130H, HC-130N, HH-60G	176th Wing (ANG), Kulis ANGB, Alaska
AV	F-16C/D	31st FW, Aviano AB, Italy
AZ	F-16A/B/C/D	162nd FW (ANG), Tucson Arpt., Ariz.
BB	T-38A, U-2	9th RW, Beale AFB, Calif.
BC	A/OA-10A	110th FW (ANG), W.K. Kellogg Arpt., Mich.
BD	B-52H, A/OA-10A	917th Wing (AFRC), Barksdale AFB, La.
CA	HC-130P, HH-60G	129th RQW (ANG), Moffett Fed. Afld., Calif.
CB	T-1A, T-37B, T-38C	14th FTW, Columbus AFB, Miss.
CC	F-16C/D	27th FW, Cannon AFB, N.M.
CI	C-130E	146th AW, Channel Islands ANGS, Calif.
CO	F-16C/D	140th Wing (ANG), Buckley AFB, Colo.
CR	C-130H	302nd AW (AFRC), Peterson AFB, Colo.
CT	A/OA-10A	103rd FW (ANG), Bradley Arpt., Conn.
DC	F-16C/D	113th Wing (ANG), Andrews AFB, Md.
DE	C-130H	166th AW (ANG), New Castle Co. Arpt., Del.
DM	A/OA-10A	355th Wing, Davis-Monthan AFB, Ariz.
DM	EC-130E/H	55th Wing, Davis-Monthan AFB, Ariz.
DR	HH-60G	305th RQS (AFRC), Davis-Monthan AFB, Ariz.
DY	B-1B	7th BW, Dyess AFB, Tex.
ED	Various	412th TW, Edwards AFB, Calif.
EF	F-16C/D	147th FW (ANG), Ellington Fld., Tex.
EG	F-15C/D	33rd FW, Eglin AFB, Fla.
EL	B-1B	28th BW, Ellsworth AFB, S.D.
EN	AT-38B, T-37B, T-38A	80th FTW, Sheppard AFB, Tex.
ET	A-10A, F-15A/B/C/D/E, F-16A/B/C/D, UH-1N	46th TW, Eglin AFB, Fla.
FC	UH-1N	336th TRG, Fairchild AFB, Wash.
FE	UH-1N	90th SW, F.E. Warren AFB, Wyo.
FF	F-15C/D	1st FW, Langley AFB, Va.
FL	HC-130P/N, HH-60G	920th RQG (AFRC), Patrick AFB, Fla.
FM	F-16C/D	482nd FW (AFRC), Homestead ARB, Fla.
FS	F-16C/D	188th FW (ANG), Fort Smith Arpt., Ark.
FT	A/OA-10A	23rd FG, Pope AFB, N.C.
FW	F-16C/D	122nd FW (ANG), Fort Wayne Arpt., Ind.
GA	E-8C, TE-8A	116th ACW (ACC, ANG), Robins AFB, Ga.
GA	C-130H	165th AW (ANG), Savannah Arpt., Ga.
HA	KC-135	185th ARW (ANG), Sioux Gateway Arpt., Iowa
HD	QF-4	53rd WEG, Holloman AFB, N.M.
HH	C-130H, F-15A/B, KC-135R	154th Wing (ANG), Hickam AFB, Hawaii
HI	F-16C/D	419th FW (AFRC), Hill AFB, Utah
HL	F-16C/D	388th FW, Hill AFB, Utah
HO	F-117A, T-38A	49th FW, Holloman AFB, N.M.
HT	AT-38B, C-12, F-15A	46th TG, Holloman AFB, N.M.
HV	UH-1N	30th SW, Vandenberg AFB, Calif.
IA	F-16C/D	132nd FW (ANG), Des Moines Arpt., Iowa
ID	A/OA-10A, C-130E	124th Wing (ANG), Boise Air Term., Idaho
IL	C-130E	182nd AW (ANG), Greater Peoria Arpt., Ill.
IS	HH-60G	85th Group, NAS Keflavik, Iceland
JZ	F-15A/B	159th FW (ANG), NAS JRB New Orleans
KC	A/OA-10	442nd FW, Whiteman AFB, Mo.
KS	C-21A	45th Airlift Flight, Keesler AFB, Miss.
LA	B-52H	2nd BW, Barksdale AFB, La.
LF	F-16	56th FW, Luke AFB, Ariz.
LI	HC-130P, HH-60G	106th RQW (ANG), F.S. Gabreski Arpt., N.Y.
LN	F-15C/E	48th FW, RAF Lakenheath, UK
LR	F-16C/D	944th FW (AFRC), Luke AFB, Ariz.
MA	F-15A/B	102nd FW (ANG), Otis ANGB, Mass.
MA	A/OA-10A	104th FW (ANG), Barnes Arpt., Mass.
MD	A/OA-10A, C-130J	175th Wing (ANG), Martin State Arpt., Md.
MI	F-16C/D, C-130E	127th Wing (ANG), Selfridge ANGB, Mich.
MI	KC-135	927th ARW (AFRC), Selfridge ANGB, Mich.
MM	UH-1N	341st SW, Malmstrom AFB, Mont.
MN	C-130H	133rd AW (ANG), Minn.-St. Paul Arpt./ARS
MN	F-16C	148th FW (ANG), Duluth Arpt., Minn.
MO	F-15C/D/E, F-16CJ/D	366th FW, Mountain Home AFB, Idaho
MT	B-52H	5th BW, Minot AFB, N.D.
MT	UH-1N	91st SW, Minot AFB, N.D.
MY	HC-130P, HH-60G	347th Rescue Wing, Moody AFB, Ga.
MY	T-6A, T-38C	479th FTG, Moody AFB, Ga.
NC	C-130H	145th AW, Charlotte Arpt., N.C.
NM	F-16C/D	150th FW (ANG), Kirtland AFB, N.M.
NO	A/OA-10A	926th FW (AFRC), NAS JRB New Orleans
NV	C-130E	152nd AW (ANG), Reno/Tahoe Arpt., Nev.
NY	F-16C/D	174th FW (ANG), Hancock Fld., N.Y.
OF	Various	55th Wing, Offutt AFB, Neb.
OH	F-16C/D	178th FW (ANG), Springfield-Beckley Arpt., Ohio
OH	C-130H	179th AW (ANG), Mansfield Lahm Arpt., Ohio
OH	F-16C/D	180th FW (ANG), Toledo Exp. Arpt., Ohio
OK	C-130H	137th AW (ANG), Will Rogers World Arpt., Okla.
OK	F-16C/D	138th FW (ANG), Tulsa Arpt., Okla.
OK	E-3B/C	552nd ACW, Tinker AFB, Okla.
OS	A/OA-10A, C-12, F-16C/D	51st FW, Osan AB, South Korea
OT	B-1, B-2, B-52, F-15A/C/D/E, F-16C/D, RQ-1A, RQ-4A	85th TES, 53rd Wing (ACC), Eglin AFB, Fla.
OT	F/A-22, F-15, F-16A/C	422nd TES, 53rd Wing, Nellis AFB, Nev.
OT	F-117	Det. 1, 53rd WEG, Holloman AFB, N.M.
PA	A/OA-10A	111th FW (ANG), NAS JRB Willow Grove, Pa.
PD	KC-135	939th ARW (AFRC), Portland Arpt., Ore.
PR	C-130E	156th AW (ANG), Luis Munoz Marin Arpt., Puerto Rico
RA	T-1A, T-6A, T-37B, T-38A/C, T-43A	12th FTW, Randolph AFB, Tex.
RI	C-130E, C-130J-30	143rd AW (ANG), Quonset State Arpt., R.I.
RS	C-130E	86th AW, Ramstein AB, Germany
SA	F-16C/D	149th FW (ANG), Lackland AFB, Tex.
SC	F-16C/D	169th FW (ANG), McEntire ANGS, S.C.
SD	F-16C/D	114th FW (ANG), Joe Foss Fld., S.D.
SI	F-16C/D	183rd FW (ANG), Capital Arpt., Ill.
SJ	F-15E	4th FW, Seymour Johnson AFB, N.C.
SL	F-15A/B	131st FW (ANG), Lambert-St. Louis Arpt., Mo.
SP	A/OA-10A, F-16CJ	52nd FW, Spangdahlem AB, Germany
SW	F-16C/CJ/D	20th FW, Shaw AFB, S.C.
TD	QF-4	53rd Wing, Tyndall AFB, Fla.
TH	F-16C/D	181st FW (ANG), Hulman Arpt., Ind.
TX	C-130H	136th AW (ANG), NAS JRB F.W., Tex.
TX	F-16C/D	301st FW (AFRC), NAS JRB F.W., Tex.
TY	F-15C/D, F/A-22	325th FW, Tyndall AFB, Fla.
VA	F-16C/D	192nd FW (ANG), Richmond Arpt., Va.
VN	T-1A, T-37B, T-38C	71st FTW, Vance AFB, Okla.
WA	A-10, F-15C/D/E, F-16C/D, F/A-22, HH-60, RQ-1/MQ-1	57th Wing, Nellis AFB, Nev.
WE	E-9A	53rd WEG, Tyndall AFB, Fla.
WI	F-16C/D	115th FW (ANG), Truax Fld., Wis.
WM	B-2A, T-38A	509th BW, Whiteman AFB, Mo.
WP	F-16C/D	8th FW, Kunsan AB, South Korea
WV	C-130H	130th AW (ANG), Yeager Arpt., W.Va.
WV	C-130E	167th AW (ANG), East. W.Va. Arpt., W.Va.
WW	F-16C/D	35th FW, Misawa AB, Japan
WY	C-130H	153rd AW (ANG), Cheyenne Arpt., Wyo.
XL	T-1A, T-6A, T-37B, T-38A/C	47th FTW, Laughlin AFB, Tex.
XP	C-130H	139th AW (ANG), Rosecrans Arpt., Mo.
YJ	C-21A, C-130E/H, UH-1N	374th AW, Yokota AB, Japan
ZZ	E-3B/C, F-15C/D, KC-135R, HH-60G	18th Wing, Kadena AB, Japan

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USAF Grades and Insignia

Officer

Second Lieutenant
(O-1)

Brigadier General
(O-7)

First Lieutenant
(O-2)

Major General
(O-8)

Captain
(O-3)

Lieutenant General
(O-9)

Major
(O-4)

General
(O-10)

Lieutenant Colonel
(O-5)

Colonel
(O-6)

Enlisted

Airman Basic
(E-1)
No insignia

Airman
(E-2)

Airman First Class
(E-3)

Senior Airman
(E-4)

Staff Sergeant
(E-5)

Technical Sergeant
(E-6)

Master Sergeant
(E-7)

Senior Master Sergeant
(E-8)

Chief Master Sergeant
(E-9)

Chief Master Sergeant of
the Air Force

First Sergeant
The diamond device, shown here on senior master sergeant stripes, denotes an E-7 through E-9 who advises and assists a squadron commander in managing unit activities.

Command Chief Master Sergeant
The star device shown here denotes an E-9 who serves in a 9E000 position, formerly known as a senior enlisted advisor.

Awards and Decorations—Currently Awarded Ribbons

*Also awarded with gold, silver, or bronze devices. The gold frame on the ribbon denotes a unit citation; without, an individual citation.

Awards and Decorations—Previously Awarded Ribbons

Pre-World War I

Mexican Service Medal

World War I

Victory Medal

World War II Through Korean War (in order of precedence)

American Defense Service Medal

Women's Army Corps Service Medal

American Campaign Medal

Asiatic–Pacific Campaign Medal

European–African–Middle Eastern Campaign Medal

World War II Victory Medal

Army of Occupation Medal

Medal for Humane Action

Korean Service Medal

Philippine Defense Ribbon

Philippine Liberation Ribbon

Philippine Independence Ribbon

Philippine Presidential Unit Citation

ROK Presidential Unit Citation

United Nations Service Medal

Republic of Korea Korean War Service Medal

Currently Awarded Devices

Bronze Star
represents participation in campaigns or operations, multiple qualifications, or an additional award to any of the various ribbons on which it is authorized.

Silver Star
is worn in the same manner as the bronze star, but each is worn in lieu of five bronze service stars.

Silver and Bronze Stars
When worn together on a single ribbon, silver stars will be worn to the wearer's right of any bronze star.

Bronze Oak Leaf Cluster
represents second and subsequent entitlements of awards.

Silver Oak Leaf Cluster
represents the sixth, 11th, etc., entitlements or is worn in lieu of five bronze OLCs.

Silver/Bronze Oak Leaf Clusters
Silver OLCs are worn to the wearer's right of the bronze OLCs on the same ribbon.

Valor Device
represents valor and does not denote an additional award. Only one may be earned on any ribbon. It is worn to the wearer's right of any clusters on the same ribbon.

A Device
is worn with the Overseas Ribbon Short to denote service north of the Arctic Circle. Only one is worn on the ribbon. It is worn to the wearer's right of any clusters on the same ribbon.

Mobility Device
is worn with the Armed Forces Reserve Medal to denote active duty for at least one day during a contingency. A number to the right of the device denotes the total number of mobilizations.

Hourglass Device
is issued for the Armed Forces Reserve Medal in bronze for 10 years of service, silver for 20, and gold for 30 years.

Previously Awarded Devices

Berlin Airlift Device
is worn with the Army of Occupation Medal to denote service of 90 consecutive days in direct support of the Berlin Airlift, June 26, 1948, to Sept. 30, 1949.

Arrowhead Device
is worn with Army and Air Force campaign medals to denote participation in combat parachute, glider, or amphibious assault landing.

Disk "Wintered Over" Device
is worn with the Antarctica Service Medal to denote multiple "winters over"—bronze for one winter; gold, two; silver, three.

Berets

Five USAF career fields are authorized to wear a colored beret along with the crest of that particular field. Below are those badges on their particular beret color.

Combat Control Team

Combat Weather

Force Protection

Pararescue

Tactical Air Control Party

USAF Badges

Shown here are current wings and badges as seen in AFI 36-2923. The basic level of wings or badges is illustrated. Most wings and badges have two other categories of accomplishment—senior and either commander, master, or chief. A star centered above the badge indicates the senior level, while a star surrounded by a wreath above the badge represents the master level.


Pilot


Navigator/Observer


Enlisted Aircrew


Astronaut


Flight Surgeon


Flight Nurse


Officer Aircrew Member


Air Battle Manager


Parachutist


Transportation


Missile


Missile With Operations Designator


Space/Missile


Command and Control


Intelligence


Operations Support


Maintenance


Supply/Fuels


Logistics


Judge Advocate


Civil Engineer


Communications and Information


Services


Manpower and Personnel


Public Affairs


Band


Historian


Air Traffic Control


Force Protection


Paralegal


Chaplain Service Support


Acquisition and Financial Management


Meteorologist


Explosive Ordnance Disposal


Information Management


Weapons Director


Nurse Corps


Biomedical Science Corps


Dental Corps


Medical Corps


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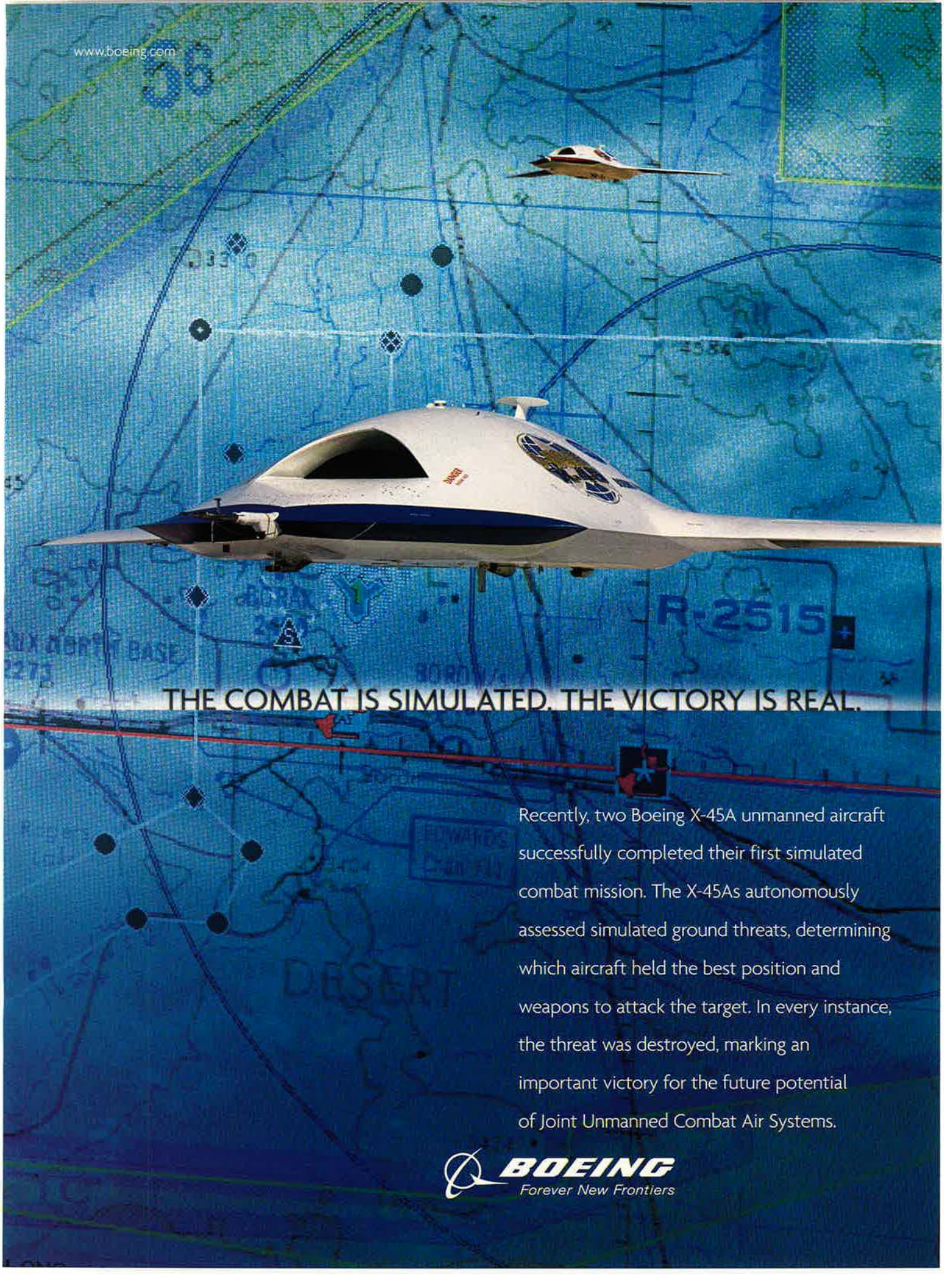
Medical Service Corps


Christian


Jewish


Buddhist


Muslim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AIR FORCE Magazine's

Guide to Aces and Heroes

2005 USAF Almanac

Capt. James Jabara, the first USAF ace of the Korean War, is shown here in the cockpit of his F-86 Sabre after returning from a mission over Korea. Jabara counted 15 victories before the end of the war.

Some Famous US Fighter Firsts

May 28, 1918	First AEF-trained AEF ace: Capt. Edward V. Rickenbacker
Dec. 7, 1941	First AAF victories (WW II at Pearl Harbor): Lts. Harry W. Brown, Philip M. Rasmussen, Lewis M. Sanders, Gordon H. Sterling Jr., Kenneth M. Taylor, George S. Welch
Dec. 16, 1941	First AAF ace (WW II): 1st Lt. Boyd D. Wagner
Nov. 8, 1950	First jet-to-jet victory (Korean War): 1st Lt. Russell J. Brown
May 20, 1951	First USAF ace of the Korean War: Capt. James Jabara
Nov. 30, 1951	First USAF ace of two wars (WW II and Korea): Maj. George A. Davis Jr. (7 in WW II and 14 in Korea)
Jan. 2, 1967	First (and only) USAF ace with victories in WW II and Vietnam: Col. Robin Olds (12 in WW II and 4 in Vietnam)
Aug. 28, 1972	First USAF ace of Vietnam: Capt. Richard S. Ritchie

By tradition, anyone with five official aerial victory credits is an ace. In compiling this list of aces who flew with the US Air Force and predecessor organizations (the Air Service, Air Corps, and Army Air Forces), *Air Force* Magazine relies on USAF's official accounting of aerial victory credits, which is the responsibility of the Air Force Historical Research Agency, Maxwell AFB, Ala.

Air Force historians have kept the official records of aerial victories by USAF pilots and crew members since 1957. The Office of the Air Force Historian initially published four separate listings—for World War I, World War II, the Korean War, and the Vietnam War. The four volumes were corrected, updated, and combined into one comprehensive volume. AFHRA continues to correct records and updates its online listing (www.maxwell.af.mil/au/afhra).

The criteria that the Air Force established for awarding aerial victory credits varied from war to war, and therefore one cannot make direct comparisons of aces across all wars.

In many cases during World War I, several aviators worked together to down a single aircraft. The Air Service awarded one whole credit to each aviator who contributed to the victory. A single victory could—and often did—result in three or four victory credits.

In World War II and Korea, the criteria were changed. The service divided one credit among all aviators who contributed to destruction of an enemy airplane. With the awarding of fractional credits, a single victory could result in no more than one credit.

The rules were changed again in the Vietnam War. When an F-4 downed an enemy aircraft, USAF would award two full aerial victory credits—one to the frontseater and one to the backseater. As in World War I, a single victory resulted in multiple victory credits.

Thus, the standards for World War II and Korea were more restrictive than those for World War I and Vietnam.

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American Aces of World War I

Capt. Eddie Rickenbacker (26)

In World War I, pilots who shared victories were each given one credit. This list uses the World War I counting rule.

Rickenbacker, Capt. Edward V.	26
Luke, 2nd Lt. Frank Jr.	18
Vaughn, 1st Lt. George A.	13
Kindley, 1st Lt. Field E.	12
Springs, 1st Lt. Elliott W.	12
Landis, 1st Lt. Reed G.	10
Swaab, 1st Lt. Jacques M.	10
Baer, 1st Lt. Paul P.	9
Cassady, 1st Lt. Thomas G.	9
Hamilton, 1st Lt. Lloyd A.	9
Wright, 1st Lt. Chester E.	9
Clay, 1st Lt. Henry R. Jr.	8
Coolidge, Capt. Hamilton	8
Donaldson, 2nd Lt. John O.	8
Erwin, 1st Lt. William P.	8
Hunter, 1st Lt. Frank O'D.	8
Jones, 2nd Lt. Clinton	8
Meissner, Capt. James A.	8
Stenseth, 1st Lt. Martinus	8
White, 2nd Lt. Wilbert W.	8
Burdick, 2nd Lt. Howard	7
Chambers, 1st Lt. Reed M.	7
Cook, 1st Lt. Harvey W.	7
Creech, 1st Lt. Jesse O.	7
Holden, 1st Lt. Lansing C.	7
Robertson, 1st Lt. Wendel A.	7
Rummell, 1st Lt. Leslie J.	7
Schoen, 1st Lt. Karl J.	7
Sewall, 1st Lt. Sumner	7
Beane, 1st Lt. James D.	6
Biddle, Capt. Charles J.	6
Brooks, 2nd Lt. Arthur R.	6
Campbell, 1st Lt. Douglas	6
Curtis, 1st Lt. Edward P.	6
Easterbrook, 1st Lt. Arthur E.	6
Guthrie, 1st Lt. Murray K.	6
Hammond, 1st Lt. Leonard C.	6
Hays, 2nd Lt. Frank K.	6
Hudson, 1st Lt. Donald	6
Knotts, 2nd Lt. Howard C.	6
Lindsay, 1st Lt. Robert O.	6
MacArthur, 2nd Lt. John K.	6
Ponder, 2nd Lt. William T.	6
Putnam, 1st Lt. David E.	6
Stovall, 1st Lt. William H.	6
Tobin, 1st Lt. Edgar G.	6
Vasconcells, 1st Lt. Jerry C.	6
Badham, 2nd Lt. William T.	5
Bair, 1st Lt. Hilbert L.	5
Bissell, 1st Lt. Clayton L.	5
Buckley, 1st Lt. Harold R.	5
Cook, 1st Lt. Everett R.	5
D'Olive, 1st Lt. Charles R.	5
Furlow, 1st Lt. George W.	5
George, 1st Lt. Harold H.	5
Grey, 1st Lt. Charles G.	5
Haight, 1st Lt. Edward M.	5
Healy, 1st Lt. James A.	5
Keating, 1st Lt. James A.	5
Knowles, 1st Lt. James Jr.	5
Larner, 1st Lt. G. DeFreest	5
Luff, 1st Lt. Frederick E.	5
O'Neill, 2nd Lt. Ralph A.	5
Owens, 2nd Lt. John S.	5
Porter, 2nd Lt. Kenneth L.	5
Ralston, 1st Lt. Orville A.	5
Seerley, 1st Lt. John J.	5
Strahm, Capt. Victor H.	5
Todd, 2nd Lt. Robert M.	5
Vernam, 1st Lt. Remington D.	5
Wehner, 1st Lt. Joseph F.	5

2nd Lt. Frank Luke Jr. (18)

Army Air Forces Aces of World War II

Maj. Richard Bong (40)

Ranks are as of last victory in World War II.

Bong, Maj. Richard I.	40
McGuire, Maj. Thomas B. Jr.	38
Gabreski, Lt. Col. Francis S.	28
Johnson, Capt. Robert S.	27
MacDonald, Col. Charles H.	27
Preddy, Maj. George E.	26.83
Meyer, Lt. Col. John C.	24
Schilling, Col. David C.	22.50
Johnson, Lt. Col. Gerald R.	22
Kearby, Col. Neel E.	22
Robbins, Maj. Jay T.	22
Christensen, Capt. Fred J.	21.50
Wetmore, Capt. Ray S.	21.25
Voll, Capt. John J.	21
Mahurin, Maj. Walker M.	20.75
Lynch, Lt. Col. Thomas J.	20
Westbrook, Lt. Col. Robert B.	20
Gentile, Capt. Don S.	19.83
Duncan, Col. Glenn E.	19.50
Carson, Capt. Leonard K.	18.50
Eagleston, Maj. Glenn T.	18.50
Beckham, Maj. Walter C.	18
Green, Maj. Herschel H.	18
Herbst, Lt. Col. John C.	18
Zemke, Lt. Col. Hubert	17.75
England, Maj. John B.	17.50
Beeson, Capt. Duane W.	17.33
Thornell, 1st Lt. John F. Jr.	17.25
Varnell, Capt. James S. Jr.	17
Johnson, Maj. Gerald W.	16.50

Maj. Thomas McGuire Jr. (38)

Godfrey, Capt. John T.	16.33
Anderson, Capt. Clarence E. Jr.	16.25
Dunham, Lt. Col. William D.	16
Harris, Lt. Col. Bill	16
Welch, Capt. George S.	16
Beerbower, Capt. Don M.	15.50
Brown, Maj. Samuel J.	15.50
Peterson, Capt. Richard A.	15.50
Whisner, Capt. William T. Jr.	15.50
Bradley, Lt. Col. Jack T.	15
Cragg, Maj. Edward	15
Foy, Maj. Robert W.	15
Hofer, 2nd Lt. Ralph K.	15
Homer, Capt. Cyril F.	15
Landers, Lt. Col. John D.	14.50
Powers, Capt. Joe H.	14.50
Brown, Capt. Henry W.	14.20
Carr, 1st Lt. Bruce W.	14
Curtis, Maj. Robert C.	14
Dahlberg, Capt. Kenneth H.	14
DeHaven, Capt. Robert M.	14
Emmer, Capt. Wallace N.	14
Goodson, Maj. James A.	14
Jeffrey, Lt. Col. Arthur F.	14
McComas, Lt. Col. Edward O.	14

Col. Hubert Zemke (17.75)

Roberts, Capt. Daniel T. Jr.	14
West, Capt. Richard L.	14
Bochkay, Maj. Donald H.	13.83
Strait, Maj. Donald J.	13.50
Bryan, Capt. Donald S.	13.33
Carpenter, Maj. George	13.33
Brooks, 1st Lt. James L.	13
Hampshire, Capt. John F. Jr.	13
Head, Capt. Cotesworth B. Jr.	13
Holloway, Col. Bruce K.	13
Millikan, Capt. Willard W.	13

Capt. Robert Johnson (27) **and Lt. Col. Francis Gabreski** (28)

Moran, 1st Lt. Glennon T.	13
Parker, Capt. Harry A.	13
Stephens, Maj. Robert W.	13
Williamson, Capt. Felix D.	13
Brueland, Maj. Lowell K.	12.50
Brown, Maj. Quince L.	12.33
Brezas, 1st Lt. Michael	12
Chase, Lt. Col. Levi R.	12
East, Capt. Clyde B.	12
Gleason, Capt. George W.	12
Hively, Maj. Howard D.	12
Ladd, Capt. Kenneth G.	12

Maj. Donald Strait (13.50)

Moore, Maj. Robert W.	12
Olds, Maj. Robin	12
Schreiber, Capt. Leroy A.	12
Skogstad, 1st Lt. Norman C.	12
Sloan, 1st Lt. William J.	12
Watkins, Capt. James A.	12
Megura, Capt. Nicholas	11.83
Blakeslee, Col. Donald J.M.	11.50
Conger, Maj. Paul A.	11.50
Kirla, 1st Lt. John A.	11.50
McDonald, Maj. Norman L.	11.50
Stewart, Maj. James C.	11.50
Yeager, Capt. Charles E.	11.50
Norley, Maj. Louis H.	11.33
Frantz, 1st Lt. Carl M.	11
Goebel, Capt. Robert J.	11
Lawler, Capt. John B.	11
Lent, 1st Lt. Francis J.	11
Leverette, Lt. Col. William L.	11
Loisel, Maj. John S.	11
Lowry, 1st Lt. Wayne L.	11
McCorkle, Col. Charles M.	11
McKennon, Maj. Pierce W.	11
Mitchell, Lt. Col. John W.	11
Molland, Capt. Leland P.	11
Quirk, Capt. Michael J.	11
Riddle, 1st Lt. Robert E.	11
Shubin, 1st Lt. Murray J.	11
Smith, Capt. Cornelius M. Jr.	11
Sparks, 1st Lt. Kenneth C.	11
Turner, Maj. Richard E.	11
O'Connor, Capt. Frank Q.	10.75
Ceuleers, Lt. Col. George F.	10.50
Clark, Lt. Col. James A. Jr.	10.50
Doersch, Capt. George A.	10.50
Halton, Maj. William T.	10.50
Hovde, Maj. William J.	10.50
Littge, Capt. Raymond H.	10.50
Storch, Lt. Col. John A.	10.50
Glover, Maj. Fred W.	10.33
Anderson, 1st Lt. Charles F.	10
Aschenbrener, Capt. Robert W.	10
Blickenstaff, Lt. Col. Wayne K.	10
England, Maj. James J.	10

Capt. John Godfrey (16.33)

Giroux, Capt. William K.	10
Gladych,* SL Michael	10
Goehausen, Capt. Walter J. Jr.	10
Harris, Capt. Ernest A.	10
Lines, 1st Lt. Ted E.	10
Rankin, 1st Lt. Robert J.	10
Reynolds, 1st Lt. Andrew J.	10
Scott, Col. Robert L. Jr.	10
Stanch, Capt. Paul M.	10
Summer, Capt. Elliot	10
Bankey, Capt. Ernest E. Jr.	9.5
Spencer, 1st Lt. Dale F.	9.5
Adams, Capt. Fletcher E.	9
Andrew, Maj. Stephen W.	9
Banks, Maj. William M.	9
Beyer, Capt. William R.	9
Boggs, Capt. Hampton E.	9
Champlin, Capt. Frederic F.	9
Collins, Maj. Frank J.	9
Curdes, 1st Lt. Louis E.	9
Dahl, Capt. Perry J.	9
Dalglish, Maj. James B.	9
Dunkin, Capt. Richard W.	9
Emmons, 1st Lt. Eugene H.	9
Fanning, 1st Lt. Grover E.	9
Feld, 1st Lt. Sylvan	9
Fiebelkorn, 1st Lt. Ernest C.	9
Forster, 1st Lt. Joseph M.	9
Gallup, Lt. Col. Kenneth W.	9
Hill, Capt. Allen E.	9
Hurlbut, Flight Officer Frank D.	9
Juchheim, Capt. Alwin M.	9
Kiser, Capt. George E.	9
Lesicka, 1st Lt. Joseph J.	9
Meroney, Capt. Virgil K.	9
Morrill, 1st Lt. Stanley B.	9
Overfield, 1st Lt. Loyd J.	9
Paris, Capt. Joel B. III	9
Roberts, Lt. Col. Eugene P.	9
Smith, Lt. Col. Meryl M.	9
Stewart, Capt. John S.	9
White, Capt. Robert H.	9
Wolfe, Capt. Judge E.	9
Bennett, Capt. Joseph H.	8.5
Cesky, Capt. Charles J.	8.5
Dorsch, Capt. Frederick J. Jr.	8.5
Hayes, Lt. Col. Thomas L. Jr.	8.5
Hoefker, Capt. John H.	8.5
Jenkins, 2nd Lt. Otto D.	8.5
Johnson, 1st Lt. Arthur G. Jr.	8.5
Luksic, 1st Lt. Carl J.	8.5
McDowell, 1st Lt. Don	8.5
McGrattan, Capt. Bernard L.	8.5
Moats, 1st Lt. Sanford K.	8.5
Schlegel, Capt. Albert L.	8.5
Ainlay, 1st Lt. John M.	8
Allen, 1st Lt. David W.	8
Benz, Maj. Walter G. Jr.	8
Booth, 1st Lt. Robert J.	8
Bostwick, Maj. George E.	8
Broadhead, Maj. Joseph E.	8
Carroll, 1st Lt. Walter J. Jr.	8
Cruikshank, Maj. Arthur W. Jr.	8
Damstrom, 1st Lt. Fernley H.	8
Douglas, Lt. Col. Paul P. Jr.	8
Elder, Maj. John L. Jr.	8
Fiedler, Capt. Arthur C. Jr.	8
Fowle, 1st Lt. James M.	8
Gardner, Capt. William A.	8
Gaunt, Capt. Frank L.	8
Gerard, Capt. Francis R.	8
Grosshuesch, Capt. Leroy V.	8
Harris, Capt. Frederick A.	8
Hart, 1st Lt. Kenneth F.	8
Ilfrey, Capt. Jack M.	8
Jackson, Maj. Michael J.	8
Jones, Capt. John L.	8
Kinnard, Lt. Col. Claiborne H. Jr.	8
Maloney, Capt. Thomas E.	8
Momyer, Col. William W.	8
Morehead, 1st Lt. James B.	8
Novotny, 1st Lt. George P.	8
O'Neill, 1st Lt. John G.	8
Paisley, 1st Lt. Melvyn R.	8
Richardson, Maj. Elmer W.	8
Roddy, Capt. Edward F.	8
Rowland, Col. Robert R.	8
Sangermano, 1st Lt. Philip	8

Lt. Col. Boyd Wagner (8)

Schiltz, 1st Lt. Glen D. Jr.	8
Shaw, 1st Lt. Robert M.	8
Shomo, Capt. William A.	8
Smith, Maj. Carroll C.	8
Stanton, Maj. Arland	8
Sublett, Capt. John L.	8
Tapp, Maj. James B.	8
Tovrea, 1st Lt. Philip E. Jr.	8
Tyler, Maj. James O.	8
Vogt, Maj. John W. Jr.	8
Wagner, Lt. Col. Boyd D.	8
Warford, Maj. Victor E.	8
Weaver, Capt. Charles E.	8
Lang, Capt. Joseph L.	7.83
Stewart, Lt. Col. Everett W.	7.83
Bryan, Maj. William E. Jr.	7.5
Cutler, Capt. Frank A.	7.5
Davis, Capt. Glendon V.	7.5
Glenn, Maj. Maxwell H.	7.5
Karger, 1st Lt. Dale E.	7.5
Lamb, Maj. George M.	7.5
Lasko, Capt. Charles W.	7.5
Lowell, Lt. Col. John H.	7.5
Miklajcyk, Capt. Henry J.	7.5
Righetti, Lt. Col. Elwyn G.	7.5

*Squadron Leader Gladych was Polish and flew in service with American units, but because the Polish government in exile was headquartered in London, Polish pilots had British designations.

Capt. William Shomo (8)

Garrison, 1st Lt. Vermont	7.33
Morris, Capt. James M.	7.33
Goodnight, 1st Lt. Robert E.	7.25
Adams, Capt. Burnell W.	7
Allen, 1st Lt. Calvin D. Jr.	7
Anderson, 1st Lt. William Y.	7
Becker, Capt. Robert H.	7
Blair, Capt. Samuel V.	7
Browning, Capt. James W.	7
Carder, 1st Lt. John B.	7
Chapman, Maj. Philip G.	7
Cramer, Maj. Darrell S.	7
Crenshaw, 1st Lt. Claude J.	7
Davis, 1st Lt. George A. Jr.	7
Dean, 1st Lt. Zach W.	7
Duke, Capt. Walter F.	7
Dunaway, 1st Lt. John S.	7
Edens, 2nd Lt. Billy G.	7
Elliot, 1st Lt. Vincent T.	7
Fisher, Capt. Edwin O.	7
Fisk, Capt. Jack A.	7
Franklin, 1st Lt. Dwaine R.	7
Graham, Lt. Col. Gordon M.	7
Grant, 1st Lt. Marvin E.	7
Gregg, 1st Lt. Lee O.	7
Griffin, Maj. Joseph H.	7
Hennon, Capt. William J.	7
Hill, Maj. Frank A.	7
Hockery, Capt. John J.	7
Howard, Col. James H.	7
Jackson, Lt. Col. Willie O. Jr.	7
Jamison, Capt. Gilbert L.	7
Jett, Capt. Verl E.	7
Johnson, Capt. Clarence O.	7
Keen, 1st Lt. Robert J.	7
King, Capt. Benjamin H.	7
Kinsey, 2nd Lt. Claude R. Jr.	7
Klibbe, 2nd Lt. Frank W.	7
Kuentzel, 2nd Lt. Ward A.	7
Lamb, Capt. Robert A.	7
Lewis, Maj. Warren R.	7
Lewis, Lt. Col. William H.	7
Liebers, 2nd Lt. Lawrence P.	7
Little, 1st Lt. James W.	7
Lombard, Maj. John D.	7
Maguire, Capt. William J.	7
Marshall, Maj. Bert W. Jr.	7
McLaughlin, Capt. Murray D.	7
Moore, Maj. John T.	7
O'Brien, 1st Lt. Gilbert M.	7
Older, Lt. Col. Charles H.	7
Pierce, 1st Lt. Joseph F.	7
Pierce, 1st Lt. Sammy A.	7
Poindexter, Capt. James N.	7
Popek, Maj. Edward S.	7
Purdy, 1st Lt. John E.	7
Reynolds, 1st Lt. Robert	7
Rogers, Capt. Felix M.	7
Ross, Maj. Herbert E.	7
Sears, 1st Lt. Meldrum L.	7
Shafer, Lt. Col. Dale E. Jr.	7
Shipman, 1st Lt. Ernest	7
Shuler, 1st Lt. Lucien B.	7
Simmons, 1st Lt. John M.	7
Smith, Maj. Leslie C.	7
Smith, 1st Lt. Richard E.	7
Stone, 2nd Lt. Robert J.	7
Strand, Capt. William H.	7
Truluck, 1st Lt. John H.	7
Turner, Lt. Col. William L.	7
Tyler, 1st Lt. Gerald E.	7
Vaughn, Maj. Harley C.	7
Waters, 1st Lt. Edward T.	7
Wheadon, Capt. Elmer M.	7
Whittaker, Capt. Roy E.	7
Wicker, Maj. Samuel J.	7
Wilkinson, Capt. James W.	7
Wire, 1st Lt. Calvin C.	7
Woods, Lt. Col. Sidney S.	7
Woody, Capt. Robert E.	7
Zoerb, Capt. Daniel J.	7
Murphy, Lt. Col. John B.	6.75
Cummings, Capt. Donald M.	6.5
Gray, Maj. Rockford V.	6.5
Hoffman, 1st Lt. James E. Jr.	6.5
Hubbard, Lt. Col. Mark E.	6.5
Hunt, 1st Lt. Edward E.	6.5
Koenig, 1st Lt. Charles W.	6.5
Kruzel, Lt. Col. Joseph J.	6.5
Moseley, Capt. Mark L.	6.5
Rader, 1st Lt. Valentine S.	6.5
Riley, 1st Lt. Paul S.	6.5
Welden, 1st Lt. Robert D.	6.25
Adams, 1st Lt. Charles E. Jr.	6
Alison, Lt. Col. John R.	6
Anderson, 1st Lt. Wyman D.	6
Andrews, 1st Lt. Stanley O.	6
Baker, 1st Lt. Ellis C. Jr.	6
Baseler, Lt. Col. Robert L.	6
Bille, Maj. Henry S.	6
Blumer, Capt. Laurence E.	6
Brown, 1st Lt. Harley L.	6
Brown, Capt. Harry W.	6
Brown, Capt. Meade M.	6
Buck, Capt. George T. Jr.	6
Callaway, Maj. Raymond H.	6
Campbell, 1st Lt. Richard A.	6
Candelaria, 1st Lt. Richard G.	6
Care, Capt. Raymond C.	6
Carlson, Capt. Kendall E.	6
Carter, Capt. James R.	6
Chick, Lt. Col. Lewis W. Jr.	6
Coffey, Lt. Col. Robert L. Jr.	6
Collinsworth, Capt. J.D.	6
Cook, Capt. Walter V.	6
Crawford, 2nd Lt. Ray	6
Crim, Maj. Harry C. Jr.	6
Cundy, 1st Lt. Arthur C.	6
Czarnecki, 1st Lt. Edward J.	6

Col. James Howard (7)

1st Lt. Urban Drew (6)

Davis, 1st Lt. Barrie S.	6
Dean, 2nd Lt. Cecil O.	6
Degraffenreid, 2nd Lt. Edwin L.	6
Dent, Capt. Elliott E. Jr.	6
Dillard, Capt. William J.	6
Drew, 1st Lt. Urban L.	6
Drier, Capt. William C.	6
Eason, 1st Lt. Hoyt A.	6
Emerson, Capt. Warren S.	6
Emmert, 1st Lt. Benjamin H.	6
Evans, Lt. Col. Andrew J. Jr.	6
Evans, Maj. Roy W.	6
Everhart, Capt. Lee R.	6
Fleischer, Capt. Richard H.	6
Foulis, Capt. William B. Jr.	6
Froning, 1st Lt. Alfred C.	6
Gallup, Capt. Charles S.	6
Goss, Maj. Edmund R.	6
Gresham, 1st Lt. Billy M.	6
Gumm, 1st Lt. Charles F. Jr.	6
Hagerstrom, 1st Lt. James P.	6
Hall, 1st Lt. George F.	6
Hanes, 1st Lt. William F. Jr.	6
Harmeyer, 1st Lt. Raymond F.	6
Hart, Capt. Cameron M.	6
Haviland, Capt. Fred R. Jr.	6
Hill, Col. David L.	6
Hogg, Capt. Roy B.	6
Holloway, 1st Lt. James D.	6
Howard, 1st Lt. Robert L.	6
Howes, 1st Lt. Bernard H.	6
Hurd, 1st Lt. Richard F.	6
Ince, 1st Lt. James C.	6
Johnston, Lt. Col. Robert D.	6
Jones, 1st Lt. Cyril W. Jr.	6
Jordan, Maj. Wallace R.	6
Karr, Capt. Robert A.	6
Kemp, 2nd Lt. William T.	6
Kienholz, 1st Lt. Donald D.	6
Lane, 1st Lt. John H.	6
Larson, Maj. Donald A.	6
Larson, 2nd Lt. Leland A.	6
Lubner, Capt. Martin W.	6
Lucas, Capt. Paul W.	6
Lustic, 1st Lt. Stanley J.	6
McDaniel, 1st Lt. Gordon H.	6
McGee, Capt. Donald C.	6
McKeon, Capt. Joseph T.	6
Meigs, 1st Lt. Henry II	6

Maj. John Alison (6), **Maj. David Hill** (6), **and Capt. Albert Baumler** (5)

Meuten, 1st Lt. Donald W.	6
Miller, Capt. Armour C.	6
Miller, Capt. Joseph E. Jr.	6
Mills, Maj. Henry L.	6
Mugavero, 1st Lt. James D.	6
Murphey, Capt. Paul C. Jr.	6
Murphy, Capt. Alva C.	6
Ohr, Capt. Fred F.	6
Olson, Capt. Norman E.	6
Pietz, 1st Lt. John Jr.	6
Pissanos, 1st Lt. Spiros N.	6
Pugh, Capt. John F.	6
Reed, Capt. William N.	6
Reeves, 1st Lt. Horace B.	6
Reeves, 1st Lt. Leonard R.	6
Roberson, 1st Lt. Arval J.	6
Scheible, Capt. Wilbur R.	6
Schildt, 1st Lt. William J.	6
Schimanski, Capt. Robert G.	6
Simmons, 1st Lt. William J.	6
Smith, 1st Lt. John C.	6
Starck, Capt. Walter E.	6
Starnes, Capt. James R.	6
Taylor, Capt. Ralph G. Jr.	6
Thwaites, Capt. David F.	6
Turley, 2nd Lt. Grant M.	6
Vincent, Col. Clinton D.	6
Wainwright, 2nd Lt. John H.	6
Walker, 1st Lt. Thomas H.	6
Wandrey, Capt. Ralph H.	6
Welch, Capt. Robert E.	6
Wenige, 1st Lt. Arthur E.	6
Whalen, 1st Lt. William E.	6
White, 2nd Lt. Thomas A.	6
Williams, 1st Lt. James M.	6
Witt, Capt. Lynn E. Jr.	6
Wright, Capt. Ellis W. Jr.	6
Zubarik, 1st Lt. Charles J.	6
Fortier, Capt. Norman J.	5.83
Koraleski, Capt. Walter J. Jr.	5.53
Amoss, 1st Lt. Dudley M.	5.5
Bickel, 1st Lt. Carl G.	5.5
Burdick, 1st Lt. Clinton D.	5.5
Buttke, Capt. Robert L.	5.5
Compton, Capt. Gordon B.	5.5
Edwards, 1st Lt. Edward B. Jr.	5.5
Gailer, 1st Lt. Frank L.	5.5
Graham, Capt. Lindol F.	5.5
Hatala, Capt. Paul R.	5.5
Heller, Capt. Edwin L.	5.5
Holmes, 1st Lt. Besby F.	5.5
Horne, 1st Lt. Francis W.	5.5
King, 1st Lt. William B.	5.5
Lampe, 1st Lt. Richard C.	5.5
Lenfest, Capt. Charles W.	5.5
Long, Capt. Maurice G.	5.5
McCauley, 1st Lt. Frank E.	5.5
Minchew, Capt. Leslie D.	5.5
O'Brien, Capt. William R.	5.5
Pascoe, 1st Lt. James J.	5.5
Pompetti, 1st Lt. Peter E.	5.5
Ruder, 1st Lt. Leroy A.	5.5
Shoup, 1st Lt. Robert L.	5.5
Smith, 1st Lt. Donovan F.	5.5
Tanner, Capt. William F.	5.5
Vanden Heuvel, 1st Lt. George R.	5.5
Waits, 1st Lt. Joe W.	5.5
Wang, 1st Lt. Kuang Fu	5.5
Winks, 1st Lt. Robert P.	5.5
Biel, 1st Lt. Hipolitus T.	5.33
Vinson, Capt. Arnold E.	5.33

Col. Clinton Vincent (6)

Dorris, Maj. Harry W.	5.25
Miller, 2nd Lt. Thomas F.	5.25
Thompson, 1st Lt. Robert D.	5.25
Duffy, Capt. James E. Jr.	5.2
Abernathy, Capt. Robert W.	5
Adams, 1st Lt. Robert H.	5
Allen, 1st Lt. William H.	5
Ambort, 2nd Lt. Ernest J.	5
Ammon, 1st Lt. Robert H.	5
Andersen, 1st Lt. Leslie E.	5
Anderson, 1st Lt. Richard H.	5
Arasmith, 1st Lt. Lester L.	5
Archibald, 1st Lt. David B.	5
Aron, 1st Lt. William E.	5
Aust, Capt. Abner M. Jr.	5
Axtell, 1st Lt. Eugene D.	5
Baccus, Lt. Col. Donald A.	5
Bade, 1st Lt. Jack A.	5
Bank, 1st Lt. Raymond M.	5
Barber, 1st Lt. Rex T.	5
Barkey, 1st Lt. Robert M.	5
Barnes, 1st Lt. Truman S.	5
Baumler, Capt. Albert J.	5
Bearden, 2nd Lt. Aaron L.	5
Beavers, Capt. Edward H. Jr.	5
Benne, 1st Lt. Louis	5
Bolyard, Capt. John W.	5
Bonner, 1st Lt. Stephen J.	5
Bostrom, 1st Lt. Ernest O.	5
Bradley, Maj. John L.	5
Brown, Capt. Gerald	5
Byrne, 1st Lt. Robert J.	5
Byrnes, Capt. Robert C.	5
Castle, 2nd Lt. Nial K.	5
Chandler, Capt. George T.	5
Chandler, 1st Lt. Van E.	5
Cleaveland, 2nd Lt. Arthur B.	5
Clinger, Capt. Dallas A.	5
Cloud, Capt. Vivian A.	5
Cochran, 2nd Lt. Paul R.	5
Colman, 1st Lt. Philip E.	5
Comstock, Maj. Harold E.	5
Condon, Capt. Henry L. II	5
Coons, Capt. Merle M.	5
Cox, Capt. Ralph L.	5
Cranfill, Maj. Niven K.	5
Cullerton, 1st Lt. William J.	5
Curton, 1st Lt. Warden D.	5
Daniel, Col. William A.	5
Daniell, 1st Lt. J.S.	5
Davis, Capt. Clayton E.	5
Day, 1st Lt. William C. Jr.	5
Deakins, 1st Lt. Richard S.	5
Della, 1st Lt. George	5
Dick, Capt. Frederick E.	5
Dikovitsky, 1st Lt. Michael	5
Donaldson, 2nd Lt. I.B. Jack	5
Dregne, Lt. Col. Irwin H.	5
Dubisher, Maj. Francis E.	5
Dubois, 1st Lt. Charles H.	5
Duffy, 2nd Lt. Richard E.	5
Egan, 1st Lt. Joseph L. Jr.	5
Elder, Maj. Robert A.	5
Empey, 1st Lt. James W.	5
Ernst, 1st Lt. Herman E.	5
Faxon, 1st Lt. Richard D.	5
Felts, 1st Lt. Marion C.	5

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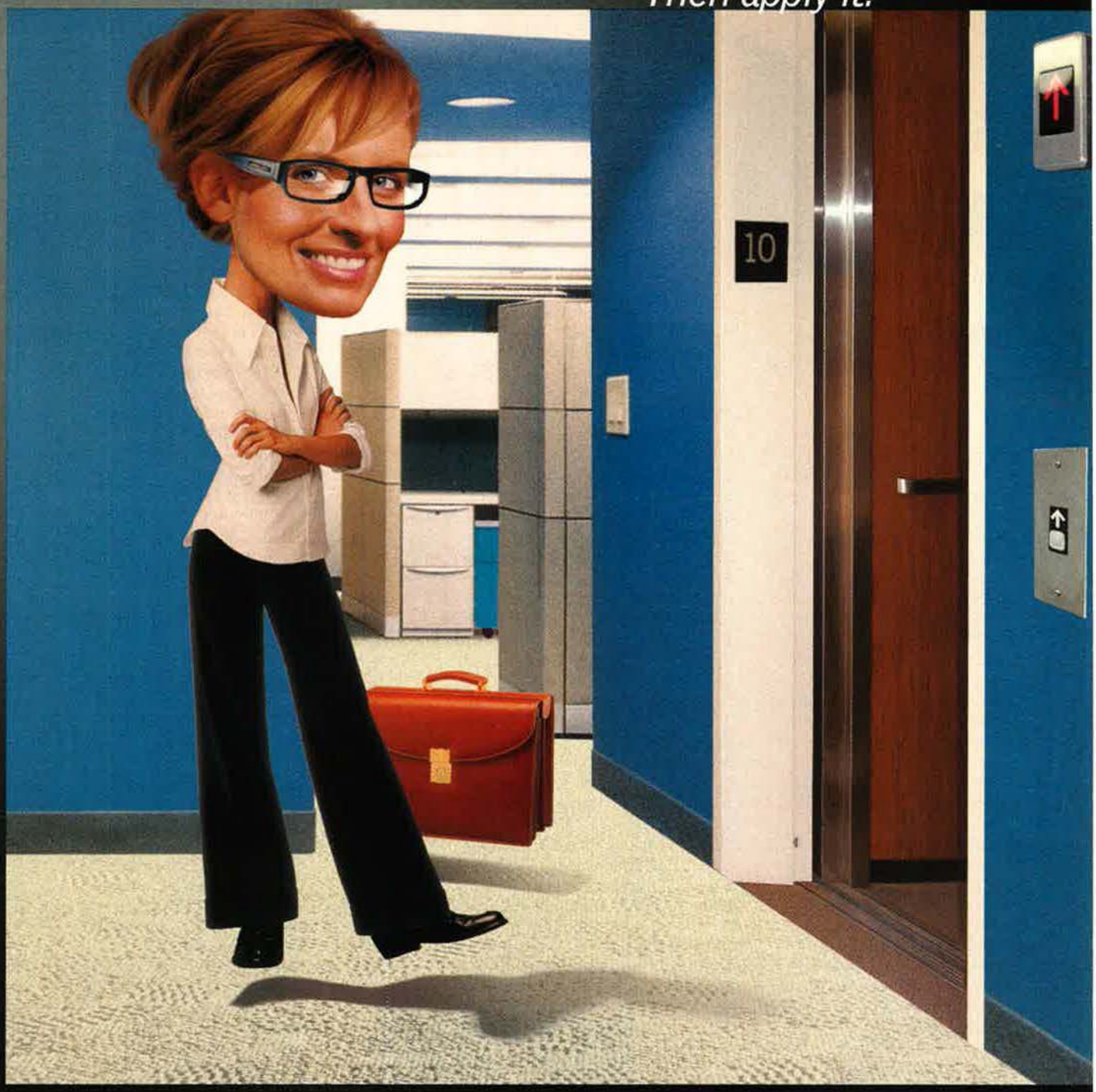

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Capt. Edwin Heller (5.5)

Fenex, Capt. James E. Jr. 5
Fiedler, 1st Lt. William F. Jr. 5
Fields, Capt. Virgil C. Jr. 5
Fischette, 1st Lt. Charles R. 5
Fisher, 1st Lt. Rodney W. 5
Fisk, Capt. Harry E. 5
Flack, Capt. Nelson D. Jr. 5
Ford, Maj. Claude E. 5
Gardner, Maj. Warner F. 5
Gerick, 2nd Lt. Steven 5
Gholson, Capt. Grover D. 5
Gibb, 1st Lt. Robert D. 5
Gladen, 1st Lt. Cyrus R. 5
Goodrich, 1st Lt. Burdett C. 5
Gordon, Capt. Mathew M. Jr. 5
Graham, 2nd Lt. Robert F. 5
Griffith, 1st Lt. Robert C. 5
Gross, Capt. Clayton K. 5
Grosvenor, Capt. William Jr. 5
Gupton, 1st Lt. Cheatham W. 5
Hammer, 1st Lt. Samuel E. 5
Hanna, 2nd Lt. Harry T. 5
Hanseman, 1st Lt. Chris J. 5
Harris, Capt. Thomas L. 5
Hartley, Capt. Raymond E. Jr. 5
Hatch, 2nd Lt. Herbert B. Jr. 5
Hauver, 1st Lt. Charles D. 5
Haworth, 1st Lt. Russell C. 5
Hendricks, Maj. Randall W. 5
Hill, Maj. James E. 5
Hiro, Maj. Edwin W. 5
Hnatio, 1st Lt. Myron M. 5
Hodges, Capt. William R. 5
Hoffman, 1st Lt. Cullen J. 5
House, 1st Lt. A.T. Jr. 5
Howe, 1st Lt. David W. 5
Hoyt, Capt. Edward R. 5
Hunter, Capt. Alvaro J. 5
Icard, 2nd Lt. Joe W. 5
Johnson, Capt. Evan M.V. 5
Jones, Capt. Curran L. 5
Jones, Capt. Frank C. 5
Jones, Capt. Lynn F. 5
Jones, 2nd Lt. Warren L. 5
Julian, Maj. William H. 5
Kennedy, 1st Lt. Daniel 5
King, Maj. Charles W. 5
King, 1st Lt. David L. 5
Kirby, 1st Lt. Marion F. 5
Kirkland, 1st Lt. Lenton F. Jr. 5
Knapp, Capt. Robert H. 5
Knott, 1st Lt. Carroll S. 5
Kcpsel, 1st Lt. Edward H. 5
Lathrope, 2nd Lt. Franklin C. 5
Lazear, 1st Lt. Earl R. Jr. 5
Lee, 1st Lt. Richard J. 5
Leikness, Capt. Marlow J. 5
Lenox, 2nd Lt. Jack Jr. 5
Liles, Maj. Robert L. 5
London, Capt. Charles P. 5
Loving, Capt. George G. Jr. 5
Lutton, 1st Lt. Lowell C. 5
Mackay, 2nd Lt. John A. 5
Magoffin, Col. Morton D. 5
Mahon, Capt. Keith 5
Mahony, Lt. Col. Grant 5
Mankin, Capt. Jack C. 5
Markham, Capt. Gene E. 5
Marsh, 1st Lt. Lester C. 5
Martin, Col. Kenneth R. 5
Mason, Col. Joe L. 5
Mathis, 1st Lt. William H. 5
Mathre, 2nd Lt. Milden E. 5
Matte, 1st Lt. Joseph Z. 5
Maxwell, Capt. Chester K. 5
McArthur, 1st Lt. Paul G. 5
McArthur, Capt. T.H. 5
McDonough, Maj. William F. 5
McElroy, Capt. James N. 5
McGinn, Lt. Col. John L. 5
McGuyrt, 1st Lt. John W. Jr. 5
McMinn, Flight Officer Evan D. 5
Merritt, Maj. George L. Jr. 5
Miller, 1st Lt. Everett 5
Milliken, 1st Lt. Robert C. 5
Monk, 1st Lt. Franklin H. 5
Mooney, 2nd Lt. Raymond P. 5
Morriss, Capt. Paul V. 5
Mullhollem, 1st Lt. Robert F. 5
Myers, 1st Lt. Jennings L. 5
Myers, Lt. Col. Raymond B. 5
Nichols, Maj. Franklin A. 5
Nollmeyer, Maj. Edward M. 5
Oberhansly, Maj. Jack J. 5
Olson, 1st Lt. Paul E. 5
O'Neill, Capt. Eugene W. 5
O'Neill, 1st Lt. Lawrence F. 5
Osher, Capt. Ernest K. 5

Lt. Col. Harrison Thyng (5)

Overcash, 1st Lt. Robert J. 5
Owens, Maj. Joel A. Jr. 5
Parham, Capt. Forrest F. 5
Paulk, 2nd Lt. Edsel 5
Payne, Capt. Carl W. 5
Perdomo, 1st Lt. Oscar F. 5
Pool, 1st Lt. Kenneth R. 5
Porter, 1st Lt. Philip B. 5
Powers, 2nd Lt. Macarthur 5
Price, Maj. Jack C. 5
Priest, 1st Lt. Royce W. 5
Pryor, Capt. Roger C. 5
Quigley, Maj. Donald L. 5
Ray, 1st Lt. C.B. 5
Reese, 1st Lt. William C. 5
Ritchey, 1st Lt. Andrew J. 5
Roberts, Capt. Newell O. 5
Rose, 1st Lt. Franklin Jr. 5
Rounds, 1st Lt. Gerald L. 5
Rudolph, 1st Lt. Henry S. 5
Rynne, Capt. William A. 5
Schank, 1st Lt. Thomas D. 5
Schriber, Capt. Louis 5
Schuh, 1st Lt. Duerr H. 5
Schultz (Shoals), Capt. Robert B. 5
Sears, 1st Lt. Alexander F. 5
Seidman, 1st Lt. Robert K. 5
Smith, Capt. Jack R. 5
Smith, Capt. Kenneth G. 5
Smith, 1st Lt. Paul A. 5
Smith, 1st Lt. Virgil H. 5
Stangel, Capt. William J. 5
Stanley, 1st Lt. Morris A. 5
Suehr, 1st Lt. Richard C. 5
Sullivan, Capt. Charles P. 5
Sutcliffe, 1st Lt. Robert C. 5
Sykes, 1st Lt. William J. 5
Talbot, Maj. Gilbert F. 5
Taylor, Col. Oliver B. 5
Thyng, Lt. Col. Harrison R. 5
Tierney, 1st Lt. Robert E. 5
Tilley, 1st Lt. John A. 5
Tordoff, Capt. Harrison B. 5
Trafton, 1st Lt. Frederick O. Jr. 5
Troxell, Capt. Clifton H. 5
Vaught, Capt. Robert H. 5
Visscher, 1st Lt. Herman W. 5
Vogt, Capt. John E. 5
Waggoner, 1st Lt. Horace Q. 5
Walker, 1st Lt. Walter B. Jr. 5
Warner, Capt. Jack A. 5
Warren, Capt. Jack R. 5
Watson, Maj. Ralph J. 5
Watts, Capt. Oran S. 5
Weatherford, 1st Lt. Sidney W. 5
Webb, Maj. Willard J. 5
Welch, Capt. Darrell G. 5
Wesson, 1st Lt. Warren M. 5
White, 1st Lt. John H. 5
Wilhelm, Capt. David C. 5
Wilkins, 2nd Lt. Paul H. 5
Williams, 1st Lt. Russell D. 5
Wilson, Capt. William F. 5
Wire, Maj. Ralph L. 5
Wiseman, Capt. Lee V. 5
Wolford, 1st Lt. John L. 5
Wright, Capt. Max J. 5
Yaeger, Capt. Robert R. Jr. 5
York, 1st Lt. Robert M. 5

USAF Aces of the Korean War

Capt. Joseph McConnell Jr. (16)

McConnell, Capt. Joseph C. Jr.	16
Jabara, Maj. James	15
Fernandez, Capt. Manuel J. Jr.	14.50
Davis, Maj. George A. Jr.	14
Baker, Col. Royal N.	13
Blesse, Maj. Frederick C.	10
Fischer, Capt. Harold E.	10
Garrison, Lt. Col. Vermont	10
Johnson, Col. James K.	10
Moore, Capt. Lonnie R.	10
Parr, Capt. Ralph S. Jr.	10
Foster, Capt. Cecil G.	9
Low, 1st Lt. James F.	9
Hagerstrom, Maj. James P.	8.50
Risner, Capt. Robinson	8
Ruddell, Lt. Col. George I.	8
Buttelmann, 1st Lt. Henry	7
Jolley, Capt. Clifford D.	7
Lilley, Capt. Leonard W.	7
Adams, Maj. Donald E.	6.50
Gabreski, Col. Francis S.	6.50
Jones, Lt. Col. George L.	6.50
Marshall, Maj. Winton W.	6.50
Bolt, Maj. John F.	6
Kasler, 1st Lt. James H.	6
Love, Capt. Robert J.	6
Whisner, Maj. William T. Jr.	5.50
Baldwin, Col. Robert P.	5
Becker, Capt. Richard S.	5
Bettinger, Maj. Stephen L.	5
Creighton, Maj. Richard D.	5
Curtin, Capt. Clyde A.	5
Gibson, Capt. Ralph D.	5
Kincheloe, Capt. Iven C. Jr.	5
Latshaw, Capt. Robert T. Jr.	5
Moore, Capt. Robert H.	5
Overton, Capt. Dolphin D. III	5
Thyng, Col. Harrison R.	5
Wescott, Maj. William H.	5

Maj. William Whisner Jr. (5.50)

USAF Aces of the Vietnam War

DeBellevue, Capt. Charles B.	6
Feinstein, Capt. Jeffrey S.	5
Ritchie, Capt. Richard S.	5

Capt. Jeffrey Feinstein (5)

Capts. Charles DeBellevue (6) **and Richard Ritchie** (5)

AAF/USAF Aces With Victories in Both World War II and a Later War

	WW II	Korean/Other	Total
Gabreski, Col. Francis S.	28	6.50	34.50
Meyer, Col. John C.	24	2	26
Mahurin, Col. Walker M.	20.75	3.50	24.25
Davis, Maj. George A. Jr.	7	14	21
Whisner, Maj. William T. Jr.	15.50	5.50	21
Eagleston, Col. Glenn T.	18.50	2	20.50
Garrison, Lt. Col. Vermont	7.33	10	17.33
Baker, Col. Royal N.	3.50	13	16.50
Jabara, Maj. James	1.50	15	16.50
Olds, Col. Robin	12	4[a]	16
Mitchell, Col. John W.	11	4	15
Brueland, Maj. Lowell K.	12.50	2	14.50
Hagerstrom, Maj. James P.	6	8.50	14.50
Hovde, Lt. Col. William J.	10.50	1	11.50
Johnson, Col. James K.	1	10	11
Ruddell, Lt. Col. George I.	2.50	8	10.50
Thyng, Col. Harrison R.	5	5	10
Colman, Capt. Philip E.	5	4	9
Heller, Lt. Col. Edwin L.	5.50	3.50	9
Chandler, Maj. Van E.	5	3	8
Hockery, Maj. John J.	7	1	8
Creighton, Maj. Richard D.	2	5	7
Emmert, Lt. Col. Benjamin H.	6	1	7
Bettinger, Maj. Stephen L.	1	5	6
Visscher, Maj. Herman W.	5	1	6

[a]Olds's four additional victories came during the Vietnam War.

Lt. Col. John Meyer (26)

Maj. George Davis Jr. (21)

Leading Air Service/AAF/USAF Aces of All Wars

Bong, Maj. Richard I.	40	WW II
McGuire, Maj. Thomas B. Jr.	38	WW II
Gabreski, Col. Francis S.	34.50	WW II, Korea
Johnson, Capt. Robert S.	27	WW II
MacDonald, Col. Charles H.	27	WW II
Preddy, Maj. George E.	26.83	WW II
Meyer, Col. John C.	26	WW II, Korea
Rickenbacker, Capt. Edward V.	26[b]	WW I
Mahurin, Col. Walker M.	24.25	WW II, Korea
Schilling, Col. David C.	22.50	WW II
Johnson, Lt. Col. Gerald R.	22	WW II
Kearby, Col. Neel E.	22	WW II
Robbins, Maj. Jay T.	22	WW II
Christensen, Capt. Fred J.	21.50	WW II
Wetmore, Capt. Ray S.	21.25	WW II
Davis, Maj. George A. Jr.	21	WW II, Korea
Voll, Capt. John J.	21	WW II
Whisner, Capt. William T. Jr.	21	WW II, Korea
Eagleston, Col. Glenn T.	20.50	WW II, Korea
Lynch, Lt. Col. Thomas J.	20	WW II
Westbrook, Lt. Col. Robert B.	20	WW II
Gentile, Capt. Don S.	19.83	WW II

Maj. George Preddy (26.83)

[b]Under World War II and Korean War counting rules, Rickenbacker would have been credited with 24.33 victories. The change would not alter his position on this list.

USAF Recipients of the Medal of Honor

*Living Medal of Honor recipient.

Names, Alphabetically by Wars, and Rank at Time of Action	Place of Birth	Date of Action	Place of Action
World War I			
Bleckley, 2nd Lt. Erwin R.	Wichita, Kan.	Oct. 6, 1918	Binarville, France
Goettler, 1st Lt. Harold E.	Chicago	Oct. 6, 1918	Binarville, France
Luke, 2nd Lt. Frank Jr.	Phoenix	Sept. 29, 1918	Murvaux, France
Rickenbacker, 1st Lt. Edward V.	Columbus, Ohio	Sept. 25, 1918	Billy, France
World War II			
Baker, Lt. Col. Addison E.	Chicago	Aug. 1, 1943	Ploesti, Romania
Bong, Maj. Richard I.	Superior, Wis.	Oct. 10-Nov. 15, 1944	Southwest Pacific
Carswell, Maj. Horace S. Jr.	Fort Worth, Tex.	Oct. 26, 1944	South China Sea
Castle, Brig. Gen. Frederick W.	Manila, Philippines	Dec. 24, 1944	Liège, Belgium
Cheli, Maj. Ralph	San Francisco	Aug. 18, 1943	Wewak, New Guinea
Craw, Col. Demas T.	Traverse City, Mich.	Nov. 8, 1942	Port Lyautey, French Morocco
Doolittle, Lt. Col. James H.	Alameda, Calif.	April 18, 1942	Tokyo
Erwin, SSgt. Henry E.	Adamsville, Ala.	April 12, 1945	Koriyama, Japan
Femoyer, 2nd Lt. Robert E.	Huntington, W.Va.	Nov. 2, 1944	Merseburg, Germany
Gott, 1st Lt. Donald J.	Arnett, Okla.	Nov. 9, 1944	Saarbrücken, Germany
Hamilton, Maj. Pierpont M.	Tuxedo Park, N.Y.	Nov. 8, 1942	Port Lyautey, French Morocco
Howard, Lt. Col. James H.	Canton, China	Jan. 11, 1944	Oschersleben, Germany
Hughes, 2nd Lt. Lloyd H.	Alexandria, La.	Aug. 1, 1943	Ploesti, Romania
Jerstad, Maj. John L.	Racine, Wis.	Aug. 1, 1943	Ploesti, Romania
Johnson, Col. Leon W.	Columbia, Mo.	Aug. 1, 1943	Ploesti, Romania
Kane, Col. John R.	McGregor, Tex.	Aug. 1, 1943	Ploesti, Romania
Kearby, Col. Neel E.	Wichita Falls, Tex.	Oct. 11, 1943	Wewak, New Guinea
Kingsley, 2nd Lt. David R.	Portland, Ore.	June 23, 1944	Ploesti, Romania
Knight, 1st Lt. Raymond L.	Houston	April 25, 1945	Po Valley, Italy
Lawley, 1st Lt. William R. Jr.	Leeds, Ala.	Feb. 20, 1944	Leipzig, Germany
Lindsey, Capt. Darrell R.	Jefferson, Iowa	Aug. 9, 1944	Pontoise, France
Mathies, Sgt. Archibald	Scotland	Feb. 20, 1944	Leipzig, Germany
Mathis, 1st Lt. Jack W.	San Angelo, Tex.	March 18, 1943	Vegesack, Germany
McGuire, Maj. Thomas B. Jr.	Ridgewood, N.J.	Dec. 25-26, 1944	Luzon, Philippines
Metzger, 2nd Lt. William E. Jr.	Lima, Ohio	Nov. 9, 1944	Saarbrücken, Germany
Michael, 1st Lt. Edward S.	Chicago	April 11, 1944	Brunswick, Germany
Morgan, 2nd Lt. John C.	Vernon, Tex.	July 28, 1943	Kiel, Germany
Pease, Capt. Harl Jr.	Plymouth, N.H.	Aug. 7, 1942	Rabaul, New Britain
Pucket, 1st Lt. Donald D.	Longmont, Colo.	July 9, 1944	Ploesti, Romania
Sarnoski, 2nd Lt. Joseph R.	Simpson, Pa.	June 16, 1943	Buka, Solomon Islands
Shomo, Maj. William A.	Jeannette, Pa.	Jan. 11, 1945	Luzon, Philippines
Smith, Sgt. Maynard H.	Caro, Mich.	May 1, 1943	St. Nazaire, France
Truemper, 2nd Lt. Walter E.	Aurora, Ill.	Feb. 20, 1944	Leipzig, Germany
Vance, Lt. Col. Leon R. Jr.	Enid, Okla.	June 5, 1944	Wimereaux, France
Vosler, TSgt. Forrest L.	Lyndonville, N.Y.	Dec. 20, 1943	Bremen, Germany
Walker, Brig. Gen. Kenneth N.	Cerrillos, N.M.	Jan. 5, 1943	Rabaul, New Britain
Wilkins, Maj. Raymond H.	Portsmouth, Va.	Nov. 2, 1943	Rabaul, New Britain
Zeamer, Maj. Jay Jr.*	Carlisle, Pa.	June 16, 1943	Buka, Solomon Islands
Korea			
Davis, Maj. George A. Jr.	Dublin, Tex.	Feb. 10, 1952	Sinuiju,Yalu River, N. Korea
Loring, Maj. Charles J. Jr.	Portland, Maine	Nov. 22, 1952	Sniper Ridge, N. Korea
Sebille, Maj. Louis J.	Harbor Beach, Mich.	Aug. 5, 1950	Hamch'ang, S. Korea
Walmsley, Capt. John S. Jr.	Baltimore	Sept. 14, 1951	Yangdok, N. Korea
Vietnam			
Bennett, Capt. Steven L.	Palestine, Tex.	June 29, 1972	Quang Tri, S. Vietnam
Day, Maj. George E.*	Sioux City, Iowa	Conspicuous gallantry while POW	
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	March 10, 1967	Thai Nguyen, N. Vietnam
Fisher, Maj. Bernard F.*	San Bernardino, Calif.	March 10, 1966	A Shau Valley, S. Vietnam
Fleming, 1st Lt. James P.*	Sedalia, Mo.	Nov. 26, 1968	Duc Co, S. Vietnam
Jackson, Lt. Col. Joe M.*	Newnan, Ga.	May 12, 1968	Kham Duc, S. Vietnam
Jones, Col. William A. III	Norfolk, Va.	Sept. 1, 1968	Dong Hoi, N. Vietnam
Levitow, A1C John L.	Hartford, Conn.	Feb. 24, 1969	Long Binh, S. Vietnam
Pitsenbarger, A1C William H.	Piqua, Ohio	April 11, 1966	Cam My, S. Vietnam
Sijan, Capt. Lance P.	Milwaukee	Conspicuous gallantry while POW	
Thorsness, Maj. Leo K.*	Walnut Grove, Minn.	April 19, 1967	N. Vietnam
Wilbanks, Capt. Hilliard A.	Cornelia, Ga.	Feb. 24, 1967	Dalat, S. Vietnam
Young, Capt. Gerald O.	Anacortes, Wash.	Nov. 9, 1967	Khesahn, S. Vietnam
Peacetime			
Lindbergh, Col. Charles A.	Detroit	May 20-21, 1927	New York City-Paris record flight
Mitchell, Maj. Gen. William	Milwaukee	Posthumous award	Foresight in military aviation

Hq. Air Force

2005 USAF Almanac

The Department of the Air Force incorporates all elements of the Air Force and is administered by a civilian Secretary and supervised by a military Chief of Staff. The Secretariat and the Air Staff help the Secretary and the Chief of Staff direct the Air Force mission.

HAF Headquarters Air Force

Headquarters Pentagon, Washington, D.C.

Established Sept. 18, 1947

Secretary Michael L. Dominguez (acting)

Chief of Staff Gen. John P. Jumper

ROLE

Organize, train, and equip air and space forces

MISSION

Defend the United States and protect its interests through air and space power

FORCE STRUCTURE—SECRETARIAT

One Secretary
One undersecretary
Four assistant secretaries
One deputy undersecretary
Four directors
Four offices

FORCE STRUCTURE—AIR STAFF

One Chief of Staff
One vice chief of staff
One Chief Master Sergeant of the Air Force
Four deputy chiefs of staff
Two directors
Eight offices

PERSONNEL

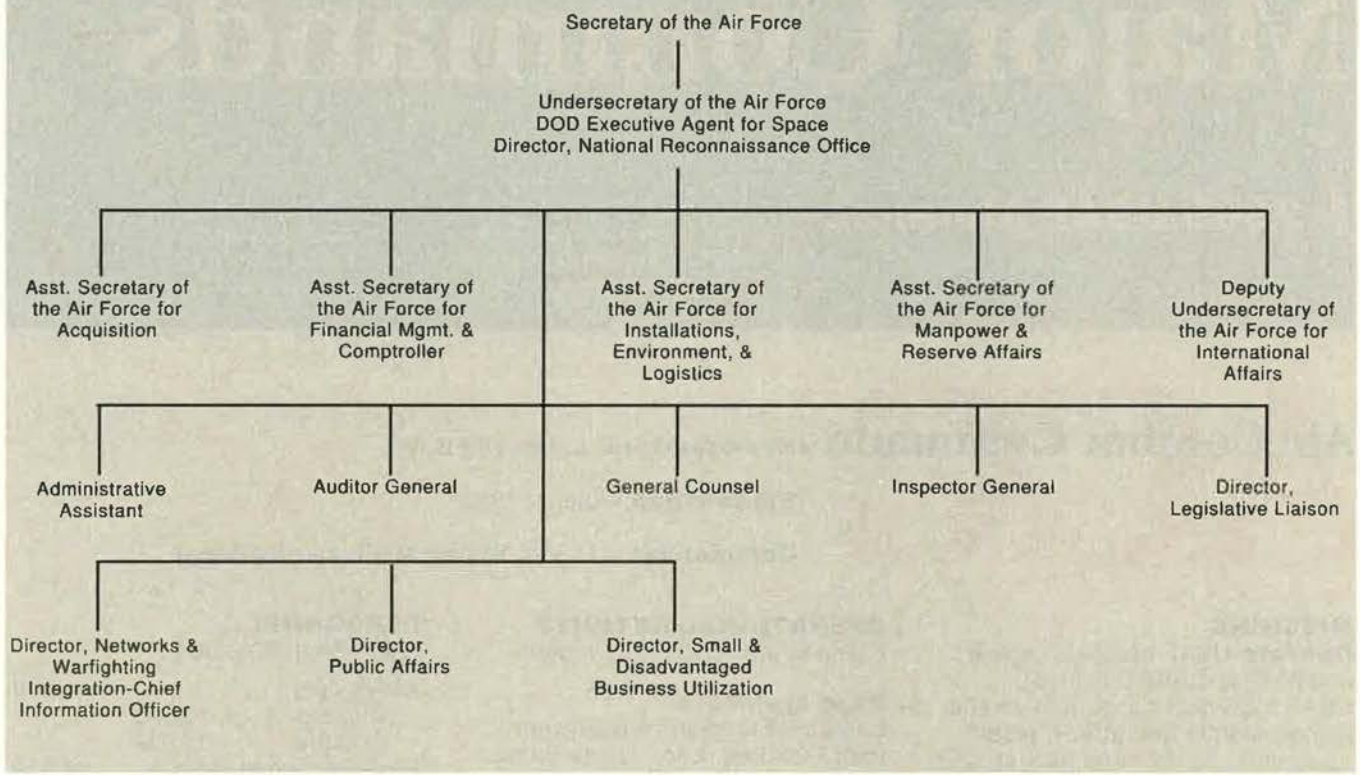
(as of Sept. 30, 2004)

Active duty		6,525
Officers	4,416	
Enlisted	2,109	
Reserve components		648
ANG	0	
AFRC	648	
Civilian		848
Total		**8,021**

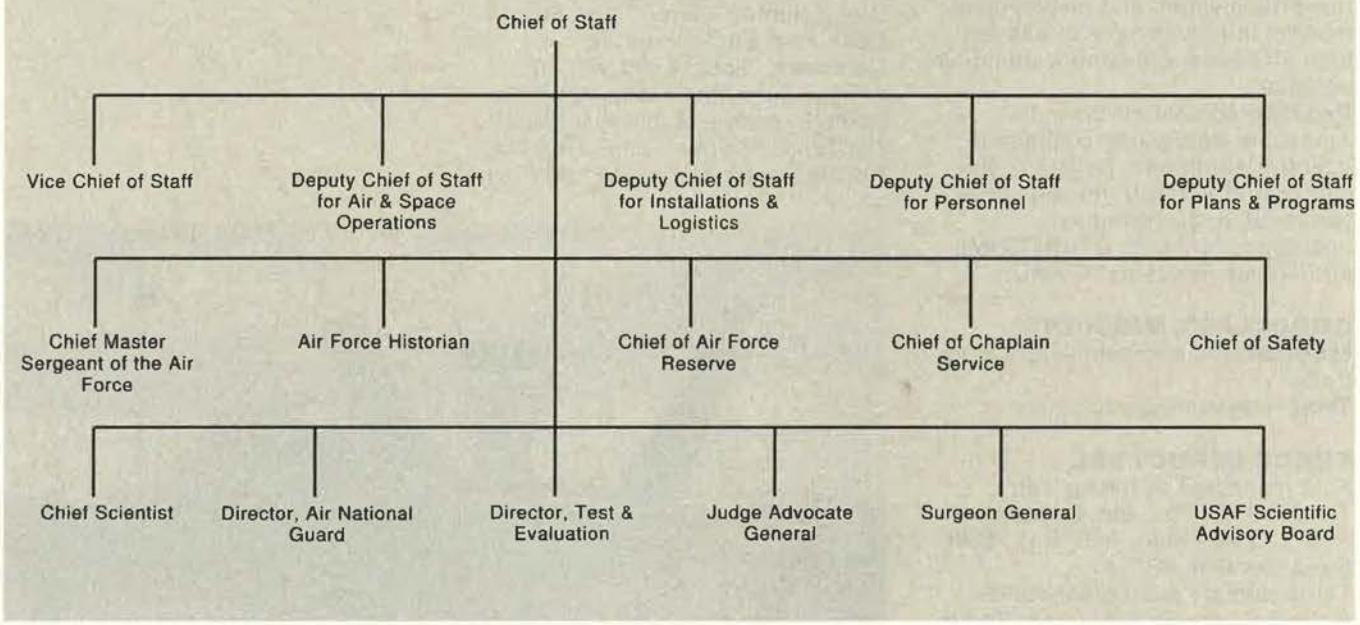
USAF photo by SSgt. Greg L. Davis

North Dakota ANG F-16s patrol the Washington, D.C., area shortly after 9/11. The Pentagon (in this photo bracketed by the F-16s' tails) is the home of Headquarters, US Air Force.

SECRETARIAT, PENTAGON, WASHINGTON, D.C.



AIR STAFF, PENTAGON, WASHINGTON, D.C.



Major Commands

2005 USAF Almanac

A major command is a subdivision of the Air Force assigned a major part of the Air Force mission and directly subordinate to Hq. USAF. In general, there are two types of major commands: functional and geographical.

ACC Air Combat Command

Headquarters Langley AFB, Va.

Established June 1, 1992

Commander Lt. Gen. William M. Fraser III (acting)

MISSIONS

Operate USAF bombers (active and ANG and AFRC gained); USAF's CONUS-based (active and gained) fighter and attack, reconnaissance, battle management, and command and control aircraft and intelligence and surveillance systems

Organize, train, equip, and maintain combat-ready forces for rapid deployment and employment to meet the challenges of peacetime air sovereignty and wartime air defense

Provide combat airpower to America's warfighting commands (Central, European, Northern, Pacific, and Southern); nuclear, conventional, and information operations forces to STRATCOM; air defense forces to NORAD

COROLLARY MISSIONS

Monitor and intercept illegal drug traffic

Test new combat equipment

FORCE STRUCTURE

Four numbered air forces: **1st,** Tyndall AFB, Fla.; **8th,** Barksdale AFB, La.; **9th,** Shaw AFB, S.C.; **12th,** Davis-Monthan AFB, Ariz.

Three primary subordinate units: Air and Space Expeditionary Force Center, Langley AFB, Va.; Air Intelligence Agency, Lackland AFB, Tex.; Air Warfare Center, Nellis AFB, Nev.

26 wings

Three groups

OPERATIONAL ACTIVITY

Flying hours: 31,041 per month

Major operations

Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US)

Major training exercises

Accurate Test; Air Warrior and AW II; Amalgam Brave Series; Blue Advance; Blue Flag; Bright Star; Clean Hunter; Eager Tiger; Falcon Nest; Foal Eagle; Fuertas Defensas; Global Lightning; Iron Falcon; Joint Red Flag; Joint Task Force Exercise; Maple Flag; New Horizons; Positive Force; Red Flag; Roving Sands; Unitas; Virtual Flag

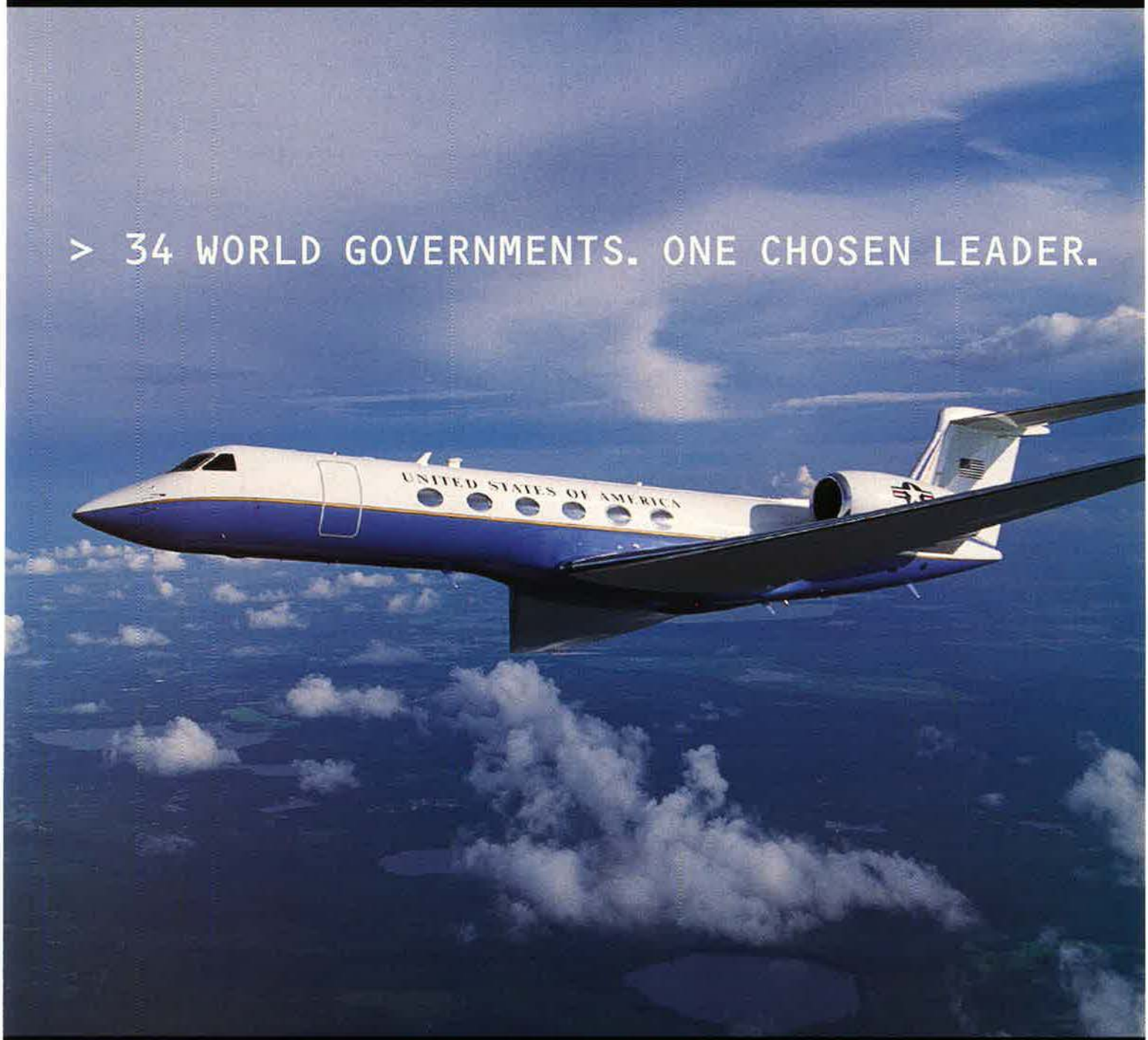
PERSONNEL

(as of Sept. 30, 2004)

Active duty		101,619
Officers	13,985	
Enlisted	87,634	
Reserve components		53,613
ANG	44,517	
AFRC	9,096	
Civilian		11,373
Total		**166,605**

USAF photo by Lisa Carroll

An F/A-22 undergoes preflight checks at Tyndall AFB, Fla. Langley AFB, Va., headquarters of Air Combat Command, has received the first two of its F/A-22s in anticipation of declaring initial operational capability this year.



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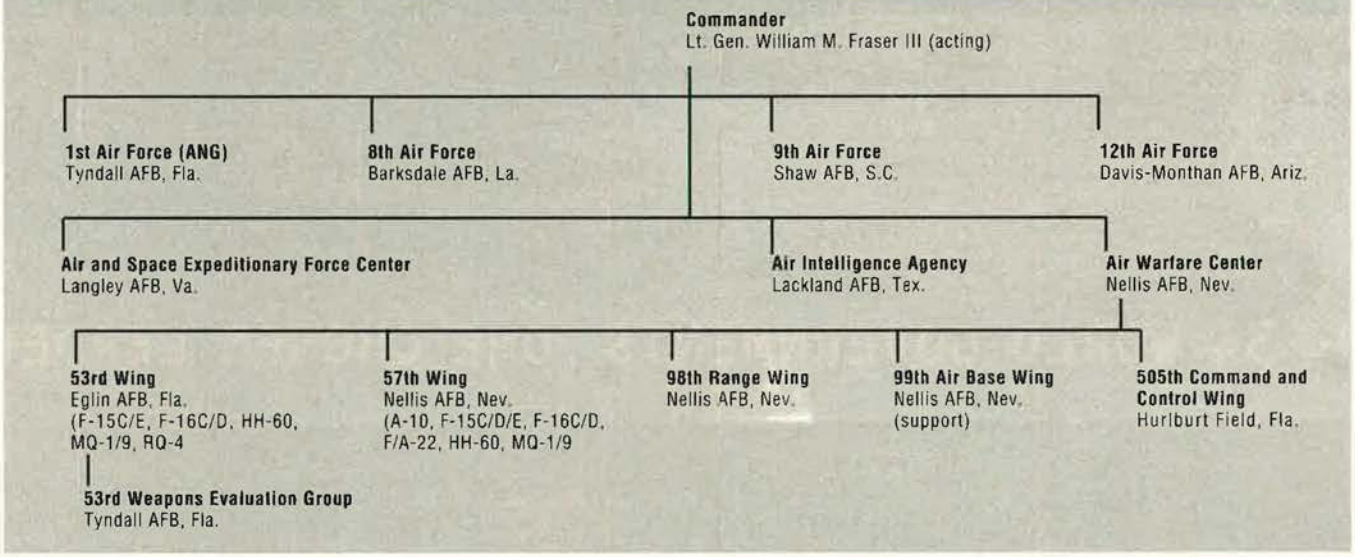
AIR COMBAT COMMAND, LANGLEY AFB, VA.



EQUIPMENT
(Primary aircraft inventory as of Sept. 30, 2004)

Bomber	117	Recon/BM/C3I	89
Fighter/Attack	674	Trainer	40

UNIT	BASE	WEAPONS
1st Fighter Wing	Langley AFB, Va.	F-15C/D, F/A-22
2nd Bomb Wing	Barksdale AFB, La.	B-52H
4th Fighter Wing	Seymour Johnson AFB, N.C.	F-15E
5th Bomb Wing	Minot AFB, N.D.	B-52H
7th Bomb Wing	Dyess AFB, Tex.	B-1B
9th Reconnaissance Wing	Beale AFB, Calif.	RQ-4, T-38, U-2R/S,
20th Fighter Wing	Shaw AFB, S.C.	F-16C/CJ/D
23rd Fighter Group[a]	Pope AFB, N.C.	A/OA-10
27th Fighter Wing	Cannon AFB, N.M.	F-16C/D
28th Bomb Wing	Ellsworth AFB, S.D.	B-1B
33rd Fighter Wing	Eglin AFB, Fla.	F-15C/D
49th Fighter Wing	Holloman AFB, N.M.	F-117A, QF-4, T-38B
53rd Wing	Eglin AFB, Fla.	F-15C/E, F-16C/D, HH-60, MQ-1/9, RQ-4
53rd Weapons Evaluation Group[b]	Tyndall AFB, Fla.	QM-34, MQM-107, QF-4
55th Electronic Combat Group	Davis-Monthan AFB, Ariz.	EC-130H
55th Wing	Offutt AFB, Neb.	E-4B, OC-135B, RC-135S/U/V/W, TC-135S/W, WC-135
57th Wing	Nellis AFB, Nev.	A-10, F-15C/D/E, F-16C/D, F/A-22, HH-60, MQ-1/9
67th Information Operations Wing	Lackland AFB, Tex.	
70th Intelligence Wing	Ft. Meade, Md.	
98th Range Wing	Nellis AFB, Nev.	
99th Air Base Wing	Nellis AFB, Nev.	
116th Air Control Wing[c]	Robins AFB, Ga.	E-8C
355th Wing	Davis-Monthan AFB, Ariz.	A/OA-10
366th Fighter Wing	Mountain Home AFB, Idaho	F-15C/D/E, F-16CJ/D
388th Fighter Wing	Hill AFB, Utah	F-16C/D
480th Intelligence Wing	Langley AFB, Va.	
505th Command and Control Wing	Hurlburt Field, Fla.	
509th Bomb Wing	Whiteman AFB, Mo.	B-2, T-38
552nd Air Control Wing	Tinker AFB, Okla.	E-3B/C

[a]Part of 4th Fighter Wing. [b]Part of 53rd Wing. [c]Blended wing with active duty and ANG personnel.

USAF photo by TSgt. Kevin J. Gruenwald

F-16CJs equipped for the suppression of enemy air defenses mission head out for a Red Flag exercise at Nellis AFB, Nev. The two Fighting Falcons are with the 27th Fighter Wing from Cannon AFB, N.M.

8th AIR FORCE (ACC), BARKSDALE AFB, LA.

Commander
Gen. (sel.) Bruce A. Carlson

2nd Bomb Wing
Barksdale AFB, La.
(B-52H)

5th Bomb Wing
Minot AFB, N.D.
(B-52H)

9th Reconnaissance Wing
Beale AFB, Calif.
(RQ-4, T-38, U-2R/S)

55th Wing
Offutt AFB, Neb.
(E-4B, OC-135B, RC-135S/U/V/W, TC-135S/W, WC-135)

55th Electronic Combat Group
Davis-Monthan AFB, Ariz.
(EC-130H)

67th Information Operations Wing
Lackland AFB, Tex.

70th Intelligence Wing
Ft. Meade, Md.

116th Air Control Wing
Robins AFB, Ga.
(E-8C)

480th Intelligence Wing
Langley AFB, Va.

509th Bomb Wing
Whiteman AFB, Mo.
(B-2, T-38)

552nd Air Control Wing
Tinker AFB, Okla.
(E-3B/C)

9th AIR FORCE (ACC), SHAW AFB, S.C.

Commander
Lt. Gen. Walter E.L. Buchanan III

1st Fighter Wing
Langley AFB, Va.
(F-15C/D, F/A-22)

4th Fighter Wing
Seymour Johnson AFB, N.C.
(F-15E)

23rd Fighter Group
Pope AFB, N.C.
(A/OA-10)

20th Fighter Wing
Shaw AFB, S.C.
(F-16C/CJ/D)

33rd Fighter Wing
Eglin AFB, Fla.
(F-15C/D)

12th AIR FORCE (ACC), DAVIS-MONTHAN AFB, ARIZ.

Commander
Lt. Gen. Randall M. Schmidt

- **7th Bomb Wing** — Dyess AFB, Tex. (B-1B)
- **27th Fighter Wing** — Cannon AFB, N.M. (F-16C/D)
- **28th Bomb Wing** — Ellsworth AFB, S.D. (B-1B)
- **49th Fighter Wing** — Holloman AFB, N.M. (F-117A, QF-4, T-38B)
- **355th Wing** — Davis-Monthan AFB, Ariz. (A/OA-10)
- **366th Fighter Wing** — Mountain Home AFB, Idaho (F-15C/D/E, F-16CJ/D)
- **388th Fighter Wing** — Hill AFB, Utah (F-16C/D)

AETC Air Education and Training Command

Headquarters Randolph AFB, Tex.

Established July 1, 1993

Commander Gen. Donald G. Cook

MISSIONS

Recruit, train, and educate professional, expeditionary-minded airmen to sustain the combat capability of America's Air Force
Provide basic military training, initial and advanced technical training, flying training, and professional military and degree-granting professional education
Conduct joint, medical service, readiness, and Air Force security assistance training

OTHER RESPONSIBILITIES

Recall of individual ready reservists. Mobility and contingency tasking support to combatant commanders

FORCE STRUCTURE

Two numbered air forces and an educational headquarters: **2nd,** Keesler AFB, Miss.; **19th,** Randolph AFB, Tex.; **Air University,** Maxwell AFB, Ala.
Three DRUs: Air Force Recruiting Service and Air Force Security Assistance Training Squadron, Randolph AFB, Tex., and 59th Medical Wing, Lackland AFB, Tex.
16 wings
Four groups
Two squadrons

USAF photo by SSgt. Jeffrey Allen

T-38As fly in formation near Randolph AFB, Tex. These trainers belong to Randolph's 12th Flying Training Wing, the only unit that teaches USAF pilots to be flight instructors for AETC's four undergraduate pilot training bases.

OPERATIONAL ACTIVITY

Flying hours: 44,836 per month

PERSONNEL
(as of Sept. 30, 2004)

Active duty		69,319
Officers	15,691	
Enlisted	53,628	
Reserve components		7,749
ANG	4,737	
AFRC	3,012	
Civilian		14,612
Total		**91,680**

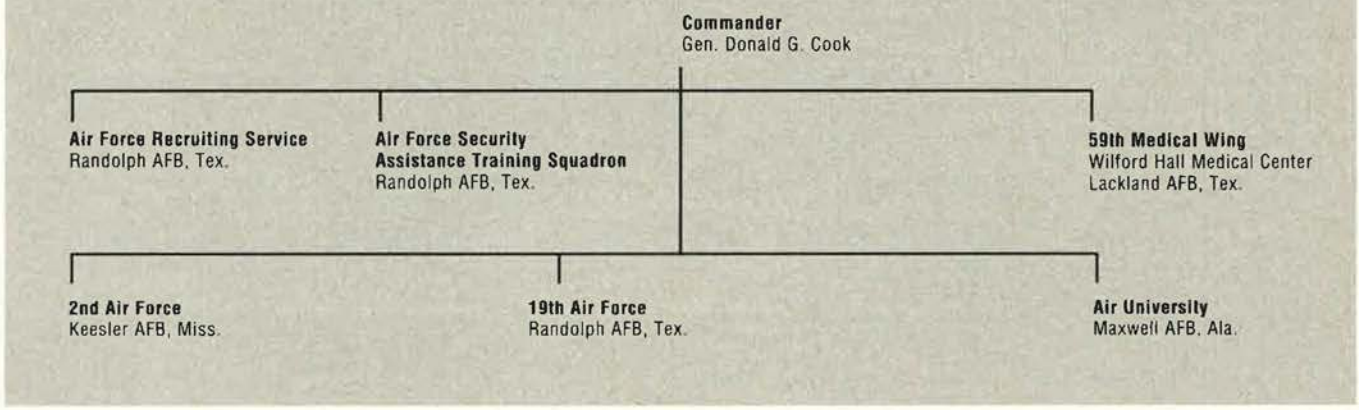
EQUIPMENT
(PAI as of Sept. 30, 2004)

Fighter/Attack	230
Helicopter	39
Special operations forces	18
Tanker	24
Trainer	798
Transport	59

UNIT	BASE	WEAPONS
Flying/Aircrew Training Units (Active)		
12th Flying Training Wing	Randolph AFB, Tex.	T-1A, T-6A, T-37B, T-38A/C, T-43A
14th Flying Training Wing	Columbus AFB, Miss.	T-1A, T-37B, T-38C
23rd Flying Training Squadron[a]	Ft. Rucker, Ala.	UH-1H, UH-1N
45th Airlift Squadron[b]	Keesler AFB, Miss.	C-21A
47th Flying Training Wing	Laughlin AFB, Tex.	T-1A, T-6A, T-38A/C
56th Fighter Wing	Luke AFB, Ariz.	F-16C/D
58th Special Operations Wing	Kirtland AFB, N.M.	HC-130N/P, MC-130H, MC-130P, HH-60G, MH-53I, UH-1H
71st Flying Training Wing	Vance AFB, Okla.	T-1A, T-37B, T-38C
80th Flying Training Wing	Sheppard AFB, Tex.	AT-38B, T-37A, T-38C
97th Air Mobility Wing	Altus AFB, Okla.	C-5A, C-17A, KC-135R
306th Flying Training Group	USAF Academy, Colo.	C-150, DA-20-C1, T-41D, TG-10B/C/I, TG-14, TG-15A/B, UV-18
314th Airlift Wing	Little Rock AFB, Ark.	C-130E/J
325th Fighter Wing	Tyndall AFB, Fla.	F-15C/D, F/A-22
336th Training Group	Fairchild AFB, Wash.	UH-1N
479th Flying Training Group	Moody AFB, Ga.	T-6A, T-38C
Technical Training Units		
17th Training Wing	Goodfellow AFB, Tex.	
37th Training Wing	Lackland AFB, Tex.	
81st Training Wing	Keesler AFB, Miss.	
82nd Training Wing	Sheppard AFB, Tex.	
381st Training Group	Vandenberg AFB, Calif.	
Other Major Units		
Air University	Maxwell AFB, Ala.	
Air Force Recruiting Service	Randolph AFB, Tex.	
42nd Air Base Wing	Maxwell AFB, Ala.	
59th Medical Wing	Lackland AFB, Tex.	

[a]Part of 58th Special Operations Wing
[b]Part of 314th Airlift Wing.

AIR EDUCATION AND TRAINING COMMAND, RANDOLPH AFB, TEX.



2nd AIR FORCE (AETC), KEESLER AFB, MISS.

Commander
Maj. Gen. Loyd S. Utterback

- **17th Training Wing** — Goodfellow AFB, Tex.
- **37th Training Wing** — Lackland AFB, Tex.
- **81st Training Wing** — Keesler AFB, Miss.
- **82nd Training Wing** — Sheppard AFB, Tex.
- **381st Training Group** — Vandenberg AFB, Calif.

19th AIR FORCE (AETC), RANDOLPH AFB, TEX.

Commander
Maj. Gen. Edward R. Ellis

- **12th Flying Training Wing** — Randolph AFB, Tex. (T-1A, T-6A, T-37B, T-38A/C, T-43A)
- **14th Flying Training Wing** — Columbus AFB, Miss. (T-1A, T-37B, T-38C)
- **47th Flying Training Wing** — Laughlin AFB, Tex. (T-1A, T-6A, T-38A/C)
- **56th Fighter Wing** — Luke AFB, Ariz. (F-16C/D)
- **58th Special Operations Wing** — Kirtland AFB, N.M. (HC-130N/P, MC-130H, MC-130P, HH-60G, MH-53I, UH-1H)
  - **23rd Flying Training Squadron** — Ft. Rucker, Ala. (UH-1H, UH-1N)
- **71st Flying Training Wing** — Vance AFB, Okla. (T-1A, T-37B, T-38C)
- **80th Flying Training Wing** — Sheppard AFB, Tex. (AT-38B, T-37A, T-38C)
- **97th Air Mobility Wing** — Altus AFB, Okla. (C-5A, C-17A, KC-135R)
- **306th Flying Training Group** — USAF Academy, Colo. (C-150, DA-20-C1, T-41D, TG-10B/C/I, TG-14, TG-15A/B, UV-18)
- **314th Airlift Wing** — Little Rock AFB, Ark. (C-130E/J)
  - **45th Airlift Squadron** — Keesler AFB, Miss. (C-21A)
- **325th Fighter Wing** — Tyndall AFB, Fla. (F-15C/D, F/A-22)
- **336th Training Group** — Fairchild AFB, Wash. (UH-1N)
- **479th Flying Training Group** — Moody AFB, Ga. (T-6A, T-38C)

AIR UNIVERSITY (AETC), MAXWELL AFB, ALA.

Commander
Lt. Gen. John F. Regni

- **Civil Air Patrol-USAF** — Maxwell AFB, Ala.
- **Civil Air Patrol** — Maxwell AFB, Ala.
- **Air Command and Staff College** — Maxwell AFB, Ala.
- **Air Force Institute for Advanced Distributed Learning** — Maxwell AFB, Ala.
- **Air Force Institute of Technology** — Wright-Patterson AFB, Ohio
- **Air Force Officer Accession and Training Schools** — Maxwell AFB, Ala.
- **Air University Library** — Maxwell AFB, Ala.
- **Air War College** — Maxwell AFB, Ala.
- **College of Aerospace Doctrine, Research, and Education** — Maxwell AFB, Ala.
- **College for Enlisted Professional Military Education** — Maxwell AFB, Gunter Annex, Ala.
- **Community College of the Air Force** — Maxwell AFB, Ala.
- **Ira C. Eaker College for Professional Development** — Maxwell AFB, Ala.
- **School of Advanced Airpower Studies** — Maxwell AFB, Ala.
- **Squadron Officer College** — Maxwell AFB, Ala.
- **42nd Air Base Wing** — Maxwell AFB, Ala.

Air Force Materiel Command

Headquarters Wright-Patterson AFB, Ohio

Established July 1, 1992

Commander Gen. Gregory S. Martin

MISSIONS

Deliver war-winning expeditionary capabilities to the warfighter through technology, acquisition support, and sustainment

FORCE STRUCTURE

Three major product centers
Two test centers
Three air logistics centers
Seven specialized centers
One laboratory,10 directorates, at various locations
32 wings
Two groups

OPERATIONAL ACTIVITY

Flying hours: 1,600 per month

PERSONNEL

(as of Sept. 30, 2004)

Active duty		23,358
Officers	7,162	
Enlisted	16,196	
Reserve components		4,906
ANG	1,998	
AFRC	2,908	
Civilian		56,316
Total		**84,580**

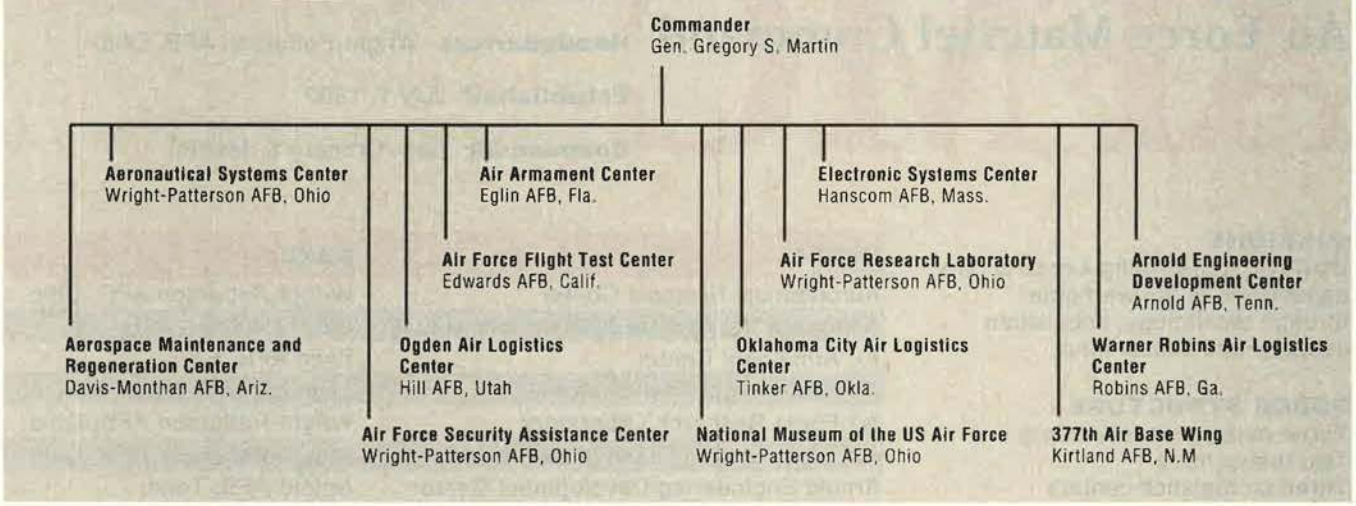
EQUIPMENT

(PAI as of Sept. 30, 2004)

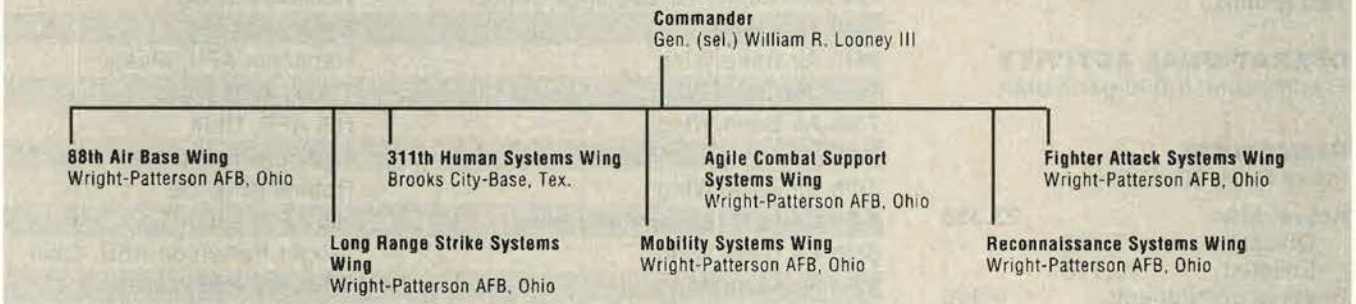
Bomber	4
Fighter/Attack	56
Helicopter	5
Tanker	3
Trainer	13
Transport	23

UNIT	BASE
Aeronautical Systems Center	Wright-Patterson AFB, Ohio
Aerospace Maintenance & Regeneration Center	Davis-Monthan AFB, Ariz.
Air Armament Center	Eglin AFB, Fla.
Air Force Flight Test Center	Edwards AFB, Calif.
Air Force Research Laboratory	Wright-Patterson AFB, Ohio
Air Force Security Assistance Center	Wright-Patterson AFB, Ohio
Arnold Engineering Development Center	Arnold AFB, Tenn.
Electronic Systems Center	Hanscom AFB, Mass.
Ogden Air Logistics Center	Hill AFB, Utah
Oklahoma City Air Logistics Center	Tinker AFB, Okla.
Warner Robins Air Logistics Center	Robins AFB, Ga.
46th Test Wing	Eglin AFB, Fla.
66th Air Base Wing	Hanscom AFB, Mass.
72nd Air Base Wing	Tinker AFB, Okla.
75th Air Base Wing	Hill AFB, Utah
76th Maintenance Wing	Tinker AFB, Okla.
78th Air Base Wing	Robins AFB, Ga.
84th Combat Sustainment Wing	Hill AFB, Utah
88th Air Base Wing	Wright-Patterson AFB, Ohio
95th Air Base Wing	Edwards AFB, Calif.
96th Air Base Wing	Eglin AFB, Fla.
309th Maintenance Wing	Hill AFB, Utah
311th Human Systems Wing	Brooks City-Base, Tex.
330th Aircraft Sustainment Wing	Robins AFB, Ga.
327th Aircraft Sustainment Wing	Tinker AFB, Okla.
377th Air Base Wing	Kirtland AFB, N.M.
402nd Maintenance Wing	Robins AFB, Ga.
412th Test Wing	Edwards AFB, Calif.
448th Combat Sustainment Wing	Tinker AFB, Okla.
508th Aircraft Sustainment Wing	Hill AFB, Utah
526th ICBM Systems Wing	Hill AFB, Utah
542nd Combat Sustainment Wing	Robins AFB, Ga.
Agile Combat Support Systems Wing	Wright-Patterson AFB, Ohio
Air-to-Air Missile Systems Wing	Eglin AFB, Fla.
Air-Ground Munitions Systems Wing	Eglin AFB, Fla.
Battle Management Systems Wing	Hanscom AFB, Mass.
C2ISR Systems Wing	Hanscom AFB, Mass.
Fighter Attack Systems Wing	Wright-Patterson AFB, Ohio
Long Range Strike Systems Wing	Wright-Patterson AFB, Ohio
Mobility Systems Wing	Wright-Patterson AFB, Ohio
Network Centric Ops/Integration Systems Wing	Hanscom AFB, Mass.
Operations Support Systems Wing	Hanscom AFB, Mass.
Reconnaissance Systems Wing	Wright-Patterson AFB, Ohio
Materiel Systems Group	Wright-Patterson AFB, Ohio
Standard Systems Group	Maxwell AFB, Gunter Annex, Ala.
National Museum of the US Air Force	Wright-Patterson AFB, Ohio

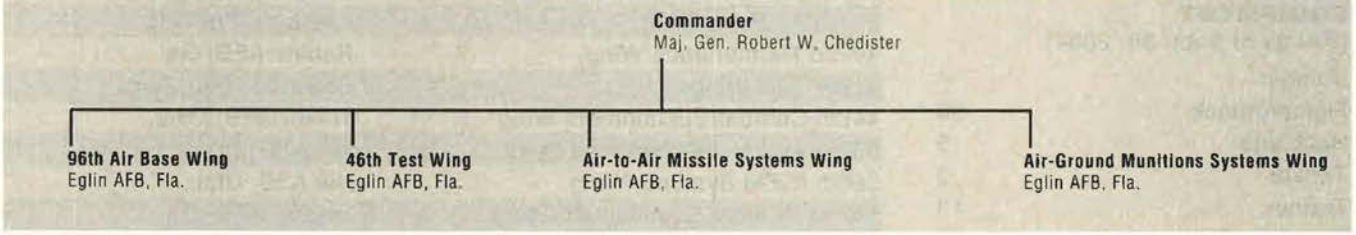
AIR FORCE MATERIEL COMMAND, WRIGHT-PATTERSON AFB, OHIO



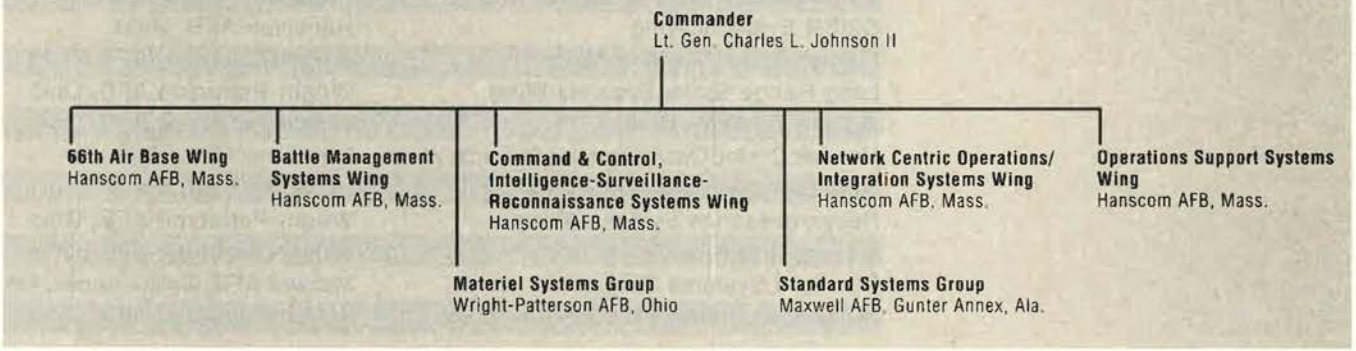
AERONAUTICAL SYSTEMS CENTER, WRIGHT-PATTERSON AFB, OHIO



AIR ARMAMENT CENTER, EGLIN AFB, FLA.



ELECTRONIC SYSTEMS CENTER, HANSCOM AFB, MASS.



OGDEN AIR LOGISTICS CENTER, HILL AFB, UTAH

Commander
Maj. Gen. Kevin J. Sullivan

- **75th Air Base Wing** — Hill AFB, Utah
- **84th Combat Sustainment Wing** — Hill AFB, Utah
- **309th Maintenance Wing** — Hill AFB, Utah
- **508th Aircraft Sustainment Wing** — Hill AFB, Utah
- **526th ICBM Systems Wing** — Hill AFB, Utah

OKLAHOMA CITY AIR LOGISTICS CENTER, TINKER AFB, OKLA.

Commander
Maj. Gen. Terry L. Gabreski

- **72nd Air Base Wing** — Tinker AFB, Okla.
- **76th Maintenance Wing** — Tinker AFB, Okla.
- **327th Aircraft Sustainment Wing** — Tinker AFB, Okla.
- **448th Combat Sustainment Wing** — Tinker AFB, Okla.

WARNER ROBINS AIR LOGISTICS CENTER, ROBINS AFB, GA.

Commander
Maj. Gen. Michael A. Collings

- **78th Air Base Wing** — Robins AFB, Ga.
- **330th Aircraft Sustainment Wing** — Robins AFB, Ga.
- **402nd Maintenance Wing** — Robins AFB, Ga.
- **542nd Combat Sustainment Wing** — Robins AFB, Ga.

AIR FORCE FLIGHT TEST CENTER, EDWARDS AFB, CALIF.

Commander
Maj. Gen. (sel.) Curtis M. Bedke

- **95th Air Base Wing** — Edwards AFB, Calif.
- **412th Test Wing** — Edwards AFB, Calif.

Air Force Space Command AFSPC

Headquarters Peterson AFB, Colo.

Established Sept. 1, 1982

Commander Gen. Lance W. Lord

MISSIONS

Operate and test USAF ICBM forces for STRATCOM; missile warning radars, sensors, and satellites; national space-launch facilities and operational boosters; worldwide space surveillance radars and optical systems; worldwide space environmental systems; position, navigation, and timing systems

Provide command and control for DOD satellites; missile warning to NORAD/NORTHCOM and STRATCOM; space weather support to entire DOD

Produce and acquire advanced space systems

COROLLARY MISSIONS

Develop and integrate space support for the warfighter

Serve as lead command for all USAF UH-1 helicopter programs

OTHER RESPONSIBILITIES

Provide communications, computer, and base support to NORAD; technology safeguard monitors to support launches of US satellites on foreign launch vehicles

Supply range and launch facilities for military, civil, and commercial space launch

FORCE STRUCTURE

Two numbered air forces: **14th,** Vandenberg AFB, Calif.; **20th,** F.E. Warren AFB, Wyo.

Two major product centers: Space and Missile Systems Center, Los Angeles AFB, Calif.; Space Warfare Center, Schriever AFB, Colo.

Eight wings

PERSONNEL
(as of Sept. 30, 2004)

Active duty		19,876
Officers	5,221	
Enlisted	14,655	
Reserve components		1,671
ANG	606	
AFRC	1,065	
Civilian		6,398
Total		**27,945**

EQUIPMENT
(as of Sept. 30, 2004)

Missile warning systems: DSP satellites, Ballistic Missile Early Warning System, Pave PAWS radars, Perimeter Acquisition Radar Attack Characterization System, Space Based Infrared System, and conventional radars

Helicopters: 18

ICBMs: Peacekeeper 6
Minuteman III 500

Satellite command and control system: Air Force Satellite Control Network

Satellite systems (as of Jan. 1, 2005):

GPS: Block II/IIA/IIR	30
DMSP	4
DSCS III	11
Milstar	5
Interim Polar System	2

Space surveillance systems: Electro-Optical Deep Space Surveillance System and phased-array, mechanical tracking, and passive surveillance radars

AIR FORCE SPACE COMMAND, PETERSON AFB, COLO.

Commander
Gen. Lance W. Lord

- **14th Air Force**, Vandenberg AFB, Calif.
- **Space and Missile Systems Center**, Los Angeles AFB, Calif.
- **Space Warfare Center**, Schriever AFB, Colo.
- **20th Air Force**, F.E. Warren AFB, Wyo.

14th AIR FORCE (AFSPC), VANDENBERG AFB, CALIF.

Commander
Maj. Gen. Michael A. Hamel

- **21st Space Wing**, Peterson AFB, Colo.
- **30th Space Wing**, Vandenberg AFB, Calif. (UH-1)
- **45th Space Wing**, Patrick AFB, Fla.
- **50th Space Wing**, Schriever AFB, Colo.
- **460th Space Wing**, Buckley AFB, Colo.

20th AIR FORCE (AFSPC), F.E. WARREN AFB, WYO.

Commander
Maj. Gen. Frank G. Klotz

- **90th Space Wing**, F.E. Warren AFB, Wyo. (Minuteman III, Peacekeeper, UH-1)
- **91st Space Wing**, Minot AFB, N.D. (Minuteman III, UH-1)
- **341st Space Wing**, Malmstrom AFB, Mont. (Minuteman III, UH-1)

UNIT	BASE	WEAPONS/FUNCTIONS
21st Space Wing	Peterson AFB, Colo.	Missile warning and space control
30th Space Wing	Vandenberg AFB, Calif.	Launches, range operations, support for space and ICBM test, UH-1
45th Space Wing	Patrick AFB, Fla.	Launch, range operations, support for shuttle program, and US Navy Trident test
50th Space Wing	Schriever AFB, Colo.	Satellite command and control
90th Space Wing	F.E. Warren AFB, Wyo.	Minuteman III and Peacekeeper ICBMs, UH-1
91st Space Wing	Minot AFB, N.D.	Minuteman III ICBM, UH-1
341st Space Wing	Malmstrom AFB, Mont.	Minuteman III ICBM, UH-1
460th Space Wing	Buckley AFB, Colo.	Missile warning and global surveillance
Space & Missile Systems Center	Los Angeles AFB, Calif.	R&D, purchase of military space systems
Space Warfare Center	Schriever AFB, Colo.	Space application to combat operations

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ILS

International Launch Services

AFSOC

Air Force Special Operations Command

Headquarters Hurlburt Field, Fla.

Established May 22, 1990

Commander Lt. Gen. Michael W. Wooley

MISSIONS

Serve as America's specialized airpower, providing combat search and rescue and delivering special operations power anytime, anywhere
Provide Air Force special operations and CSAR forces for worldwide deployment and assignment to regional unified commands
Tasked for seven mission areas: shaping the battlefield; information operations; precision engagement; SOF mobility; agile combat support; aerospace interface; and personnel recovery/recovery operations

FORCE STRUCTURE

Two wings
Four groups
Two squadrons
Air Force Rescue Coordination Center
USAF Special Operations School

OPERATIONAL ACTIVITY

Flying hours: 5,487 per month

Major operations
Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Global War on Terror; Noble Eagle (US)

PERSONNEL

(as of Sept. 30, 2004)

Active duty		13,439
Officers	2,237	
Enlisted	11,202	
Reserve components		5,439
ANG	2,956	
AFRC	2,483	
Civilian		1,095
Total		**19,973**

EQUIPMENT

(PAI as of Sept. 30, 2004)

Helicopter	2
SOF	126

UNIT	BASE	WEAPONS
9th Special Operations Squadron[a]	Eglin AFB, Fla.	MC-130P
16th Special Operations Wing	Hurlburt Field, Fla.	AC-130H/U, MC-130H, MH-53J/M, UH-1N
18th Flight Test Squadron	Hurlburt Field, Fla.	
347th Rescue Wing	Moody AFB, Ga.	HC-130, HH-60
352nd Special Operations Group	RAF Mildenhall, UK	MC-130H, MC-130P, MH-53M
353rd Special Operations Group	Kadena AB, Japan	MC-130H, MC-130P
563rd Rescue Group[b]	Davis-Monthan AFB, Ariz.	HC-130, HH-60
720th Special Tactics Group	Hurlburt Field, Fla.	
Air Force Rescue Coordination Center	Langley AFB, Va.	
USAF Special Operations School	Hurlburt Field, Fla.	

[a]Part of 16th SOW. [b]Part of 347th Rescue Wing.

AIR FORCE SPECIAL OPERATIONS COMMAND, HURLBURT FIELD, FLA.

Air Mobility Command

Headquarters Scott AFB, Ill.

Established June 1, 1992

Commander Gen. John W. Handy

MISSIONS

Provide rapid global mobility and sustainment through tactical and strategic airlift and aerial refueling for US armed forces

COROLLARY MISSIONS

Provide special duty and operational support aircraft and global humanitarian support
Perform peacetime and wartime aeromedical evacuation missions

FORCE STRUCTURE

One numbered air force: **18th,** Scott AFB, Ill.
Two expeditionary mobility task forces: 15th, Travis AFB, Calif.; 21st, McGuire AFB, N.J.
Two DRUs: Air Mobility Warfare Center, Ft. Dix, N.J.; Tanker Airlift Control Center, Scott AFB, Ill.
14 wings
Five groups

OPERATIONAL ACTIVITY

Flying hours: 39,091 per month

Major operations
Deep Freeze (Antarctic); Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US)

Major training exercises
Austere Challenge; Determine Promise; Global Guardian; Immediate Response; Iron Cobra; JTFEX 04-2; Reception, Staging, Onward Movement, & Integration; Terminal Fury; Ulchi Focus Lens

PERSONNEL

(as of Sept. 30, 2004)

Active duty		54,230
Officers	9,219	
Enlisted	45,011	
Reserve components		86,801
ANG	39,675	
AFRC	47,126	
Civilian		8,678
Total		**149,709**

EQUIPMENT

(PAI as of Sept. 30, 2004)

Helicopter	15
Tanker	185
Transport	311

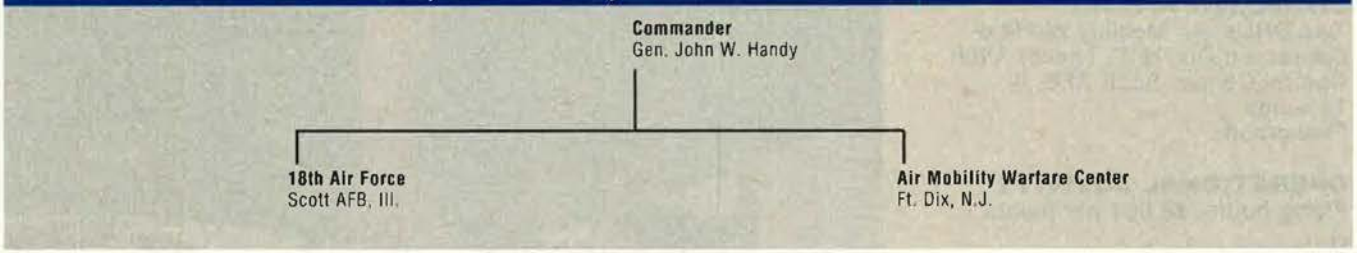
USAF photo by MSgt. Mark Bucher

USAF photo by MSgt. Val Gempis

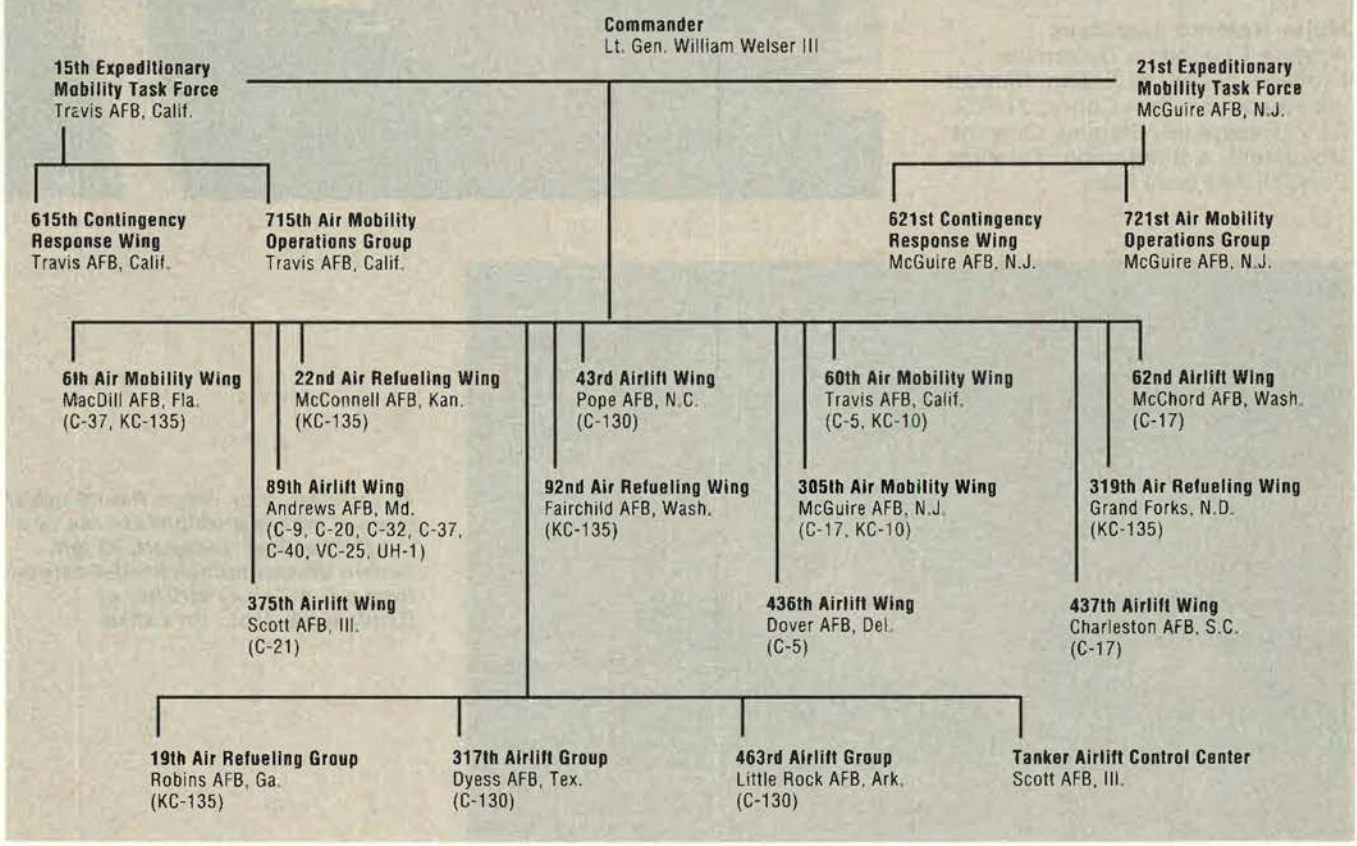
At Tallil AB, Iraq, MSgt. Paul Bannish (above) makes preflight checks of a C-130H tactical transport. At left, airmen unload tsunami-relief cargo from a C-5 Galaxy airlifter at Bandanaike Arpt., Sri Lanka.

UNIT	BASE	WEAPONS
6th Air Mobility Wing	MacDill AFB, Fla.	C-37, KC-135
19th Air Refueling Group	Robins AFB, Ga.	KC-135
22nd Air Refueling Wing	McConnell AFB, Kan.	KC-135
43rd Airlift Wing	Pope AFB, N.C.	C-130
60th Air Mobility Wing	Travis AFB, Calif.	C-5, KC-10
62nd Airlift Wing	McChord AFB, Wash.	C-17
89th Airlift Wing	Andrews AFB, Md.	C-9, C-20, C-32, C-37, C-40, VC-25, UH-1
92nd Air Refueling Wing	Fairchild AFB, Wash.	KC-135
305th Air Mobility Wing	McGuire AFB, N.J.	C-17, KC-10
317th Airlift Group	Dyess AFB, Tex.	C-130
319th Air Refueling Wing	Grand Forks AFB, N.D.	KC-135
375th Airlift Wing	Scott AFB, Ill.	C-21
436th Airlift Wing	Dover AFB, Del.	C-5
437th Airlift Wing	Charleston AFB, S.C.	C-17
463rd Airlift Group	Little Rock AFB, Ark.	C-130
615th Contingency Response Wing	Travis AFB, Calif.	
621st CRW	McGuire AFB, N.J.	
715th Air Mobility Operations Group	Travis AFB, Calif.	
721st AMOG	McGuire AFB, N.J.	

AIR MOBILITY COMMAND, SCOTT AFB, ILL.



18TH AIR FORCE (AMC), SCOTT AFB, ILL.



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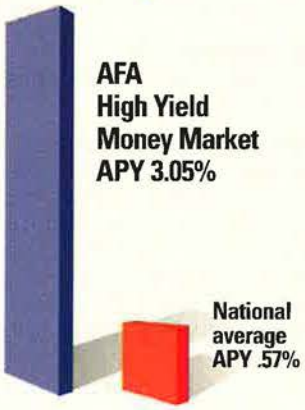
Visit www.afabankingcenter.com

Or complete and return this form

* If you are not a member and wish to become one, simply call 1-800-727-3337 or visit www.afa.org.

Compare...



This means at the present rate... $50,000 would earn $127.08 a month compared to average earnings nationwide of only $23.75.

Wouldn't you like $103.33 more each month?

As published 3/28/05 by Bank Rate, Inc.
APY = Annual Percentage Yield

YES, I wish to apply for an AFA FDIC-insured HIGH YIELD MONEY MARKET ACCOUNT. I enclose my check for at least $200 to fund it. Please add my bonus of $25.

Name _____

Address _____

City _____ State _____ Zip _____

Date of Birth ____/____/____ SSN ____-____-____

City of Birth _____ Mothers Maiden Name _____

Home Phone (____) _____

Business Phone (____) _____

E-mail Address _____

Your Signature _____ **Date** _____

If you wish this account to be a joint account, please complete the following:

Name of Joint Account Holder _____

Date of Birth ____/____/____ SSN ____-____-____

Joint Account Holder's Signature _____ Date _____

Consent Agreement: By signing I agree to accept the Terms & Conditions/Disclosures governing my account and any future changes to these disclosures. I consent to receive these documents electronically at the time my account is opened by Union Federal Bank of Indianapolis (the Bank) and at any time in the future for amendments made. Alternatively, I can review this information online as well by visiting www.afabankingcenter.com. In connection with this application, I authorize the Bank to obtain my credit and employment history.

IRS W-9 Certification: Under penalties of perjury, I certify that: (1) the number shown on this form is my correct taxpayer identification (or I am waiting for a number to be issued to me), and (2) I am not subject to backup withholding, because (a) I am exempt from backup withholding or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding, and (3) I am a U.S. person (including a U.S. resident alien). Certification Instructions: You must cross out item 2 above if the IRS has notified you that you are currently subject to backup withholding because of underreporting interest or dividends on your tax return. The IRS does not require your consent to any provision of this document other than certifications required to avoid backup withholding.

To help the government fight the funding of terrorism and money laundering activities, Federal Law requires all financial institutions to obtain, verify, and record information that identifies each person who opens an account. What this means to you: When you open an account, we will ask for your name, address, date of birth, and other information that will allow us to identify you.

Mail to: Deposit Operations, P.O. Box 1245, Indianapolis, IN 46209

Pacific Air Forces

Headquarters Hickam AFB, Hawaii

Established July 1, 1957

Commander Gen. Paul V. Hester

MISSIONS

Provide ready air and space power to promote US interests in the Asia-Pacific region during peacetime, crisis, and war

FORCE STRUCTURE

Four numbered air forces: **5th,** Yokota AB, Japan; **7th,** Osan AB, South Korea; **11th,** Elmendorf AFB, Alaska; **13th,** Andersen AFB, Guam
Nine wings
One squadron

OPERATIONAL ACTIVITY

Flying hours: 10,027 per month

Major operations
Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq)

Major training exercises
Balikatan; Cobra Gold; Commando Sling; Cope India; Cope North; Cope Thunder; Cope Tiger; Foal Eagle; Geronimo Thrust; Keen Sword; Positive Force; Reception, Staging, Onward Movement, & Integration; Tandem Thrust; Ulchi Focus Lens

USAF photo by SSgt. Adrian Cadiz

An F-15 air superiority fighter of the 90th Fighter Squadron taxis into position at Elmendorf AFB, Alaska. The fighter was taking part in the 3rd Wing's operational readiness inspection.

PERSONNEL

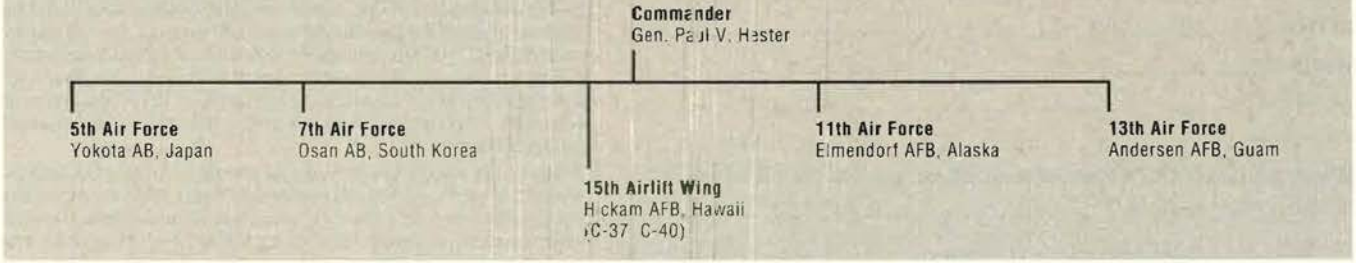
(as of Sept 30, 2004)

Active duty		34,104
Officers	4,468	
Enlisted	29,636	
Reserve components		5,311
ANG	4,669	
AFRC	642	
Civilian		8,055
Total		**47,470**

UNIT	BASE	WEAPONS
3rd Wing	Elmendorf AFB, Alaska	C-12, C-130H, E-3B/C, F-15C/D, F-15E
8th Fighter Wing	Kunsan AB, South Korea	F-16C/D
15th Airlift Wing	Hickam AFB, Hawaii	C-37, C-40
18th Wing	Kadena AB, Japan	E-3B/C, F-15C/D, KC-135R, HH-60G
35th Fighter Wing	Misawa AB, Japan	F-16C/D
36th Air Expeditionary Wing	Andersen AFB, Guam	
51st Fighter Wing	Osan AB, South Korea	A/OA-10A, C-12, F-16C/D
354th Fighter Wing	Eielson AFB, Alaska	A/OA-10A, F-16C/D
374th Airlift Wing	Yokota AB, Japan	C-21A, C-130E/H, UH-1N
497th Fighter Training Squadron	Paya Lebar Airfield, Singapore[a]	Rotational fighter aircraft

[a]Base owned by Singapore government.

PACIFIC AIR FORCES, HICKAM AFB, HAWAII



5th AIR FORCE (PACAF), YOKOTA AB, JAPAN

Commander
Lt. Gen. Bruce A. Wright

- **18th Wing**
  Kadena AB, Japan
  (E-3B/C, F-15C/D, KC-135R, HH-60G)
- **35th Fighter Wing**
  Misawa AB, Japan
  (F-16C/D)
- **374th Airlift Wing**
  Yokota AB, Japan
  (C-21A, C-130E/H, UH-1N)

7th AIR FORCE (PACAF), OSAN AB, SOUTH KOREA

Commander
Lt. Gen. Garry R. Trexler

- **8th Fighter Wing**
  Kunsan AB, South Korea
  (F-16C/D)
- **51st Fighter Wing**
  Osan AB, South Korea
  (A/OA-10A, C-12, F-16C/D)

11th AIR FORCE (PACAF), ELMENDORF AFB, ALASKA

Commander
Lt. Gen. Carrol H. Chandler

- **3rd Wing**
  Elmendorf AFB, Alaska
  (C-12, C-130H, E-3B/C, F-15C/D, F-15E)
- **354th Fighter Wing**
  Eielson AFB, Alaska
  (A/OA-10A, F-16C/D)

EQUIPMENT
(PAI as of Sept. 30, 2004)

Fighter/Attack	264
Helicopter	11
Recon	3
Tanker	12
Transport	37

USAF photo by MSgt. Val Gempis

Lt. Col. Pat Miller, commander of the 35th Fighter Squadron at Kunsan AB, South Korea, goes through a preflight checklist before an F-16 mission. USAF units in South Korea, only minutes of flying time from the DMZ, maintain high readiness.

13th AIR FORCE (PACAF), ANDERSEN AFB, GUAM

Commander
Maj. Gen. Edward A. Rice Jr.

- **36th Air Expeditionary Wing**
  Andersen AFB, Guam
- **497th Fighter Training Squadron**
  Paya Lebar Airfield, Singapore[a]
  (Rotational fighter aircraft)

[a]Base owned by Singapore government.

USAFE
US Air Forces in Europe

Headquarters Ramstein AB, Germany

Established Aug. 7, 1945

Commander Gen. Robert H. Foglesong

MISSIONS
Provide the joint force commander rapidly deployable expeditionary aerospace forces

COROLLARY MISSIONS
Plan, conduct, coordinate, and support air and space operations to achieve US national and NATO objectives based on EUCOM taskings
Develop and maintain light, lean, lethal, and rapid expeditionary aerospace forces
Establish and maintain expeditionary bases
Support US military plans and operations in Europe, the Mediterranean, the Middle East, and Africa

FORCE STRUCTURE
Two numbered air forces: **3rd,** RAF Mildenhall, UK; **16th,** Aviano AB, Italy
Nine wings

OPERATIONAL ACTIVITY
Flying hours: 7,515 per month

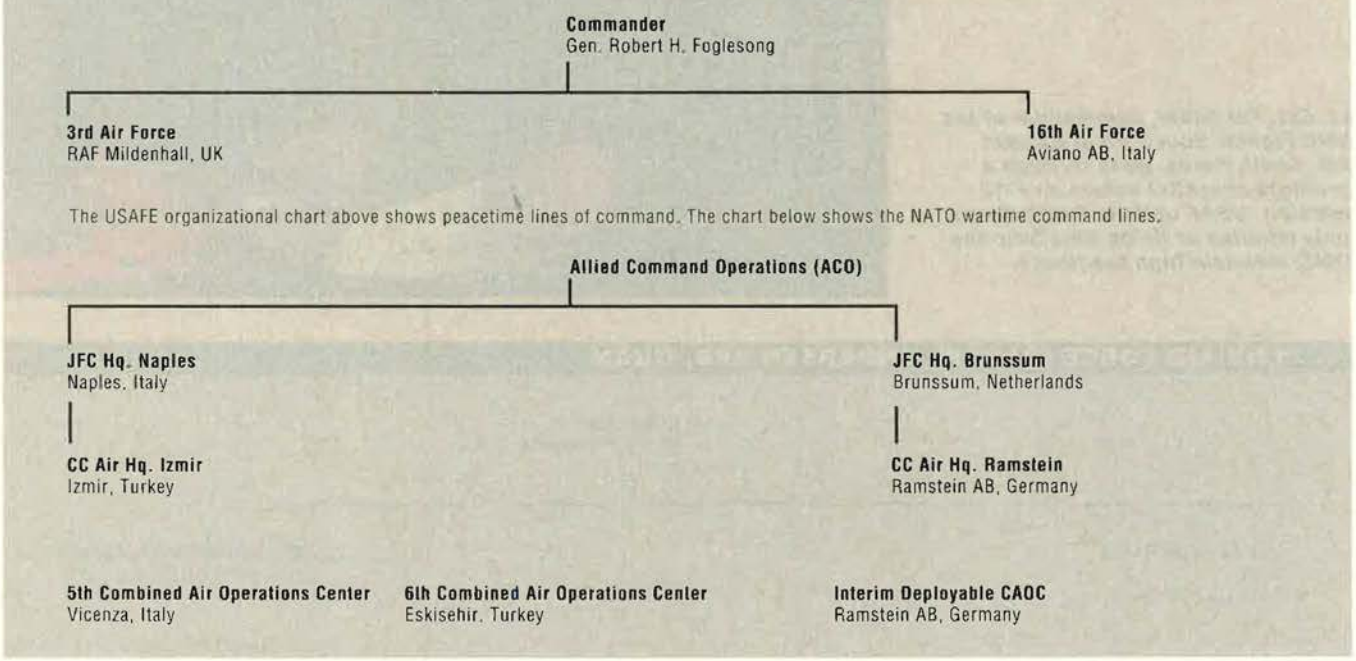
Major operations
Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Joint Forge (Bosnia); Joint Guardian (Kosovo)

USAF photo by SSgt. Aaron D. Allmon II

Deployed RAF Lakenheath F-15Es fly a mission supporting operations in Iraq. These two Strike Eagles are from the 492nd Fighter Squadron.

Major training exercises
Able Ally; Able Gain; African Eagle; African Lion; Agile Leader; Agile Response; Anatolian Eagle; Atlas Drop; Baltops; Blue Game; Cannon Cloud; Clean Hunter; Combined Endeavor; Cooperative Key; Destined Glory; Dimming Sun; Flintlock; Immediate Response; Juniper Stallion; Medflag; Positive Force; Rescuer/Medceur;

US AIR FORCES IN EUROPE, RAMSTEIN AB, GERMANY



Senior Commander Warfighting Seminar; Sentry White Eagle; Union Flash; Victory Strike

PERSONNEL

(as of Sept. 30, 2004)

Active duty		29,725
Officers	3,771	
Enlisted	25,954	
Reserve components		411
ANG	193	
AFRC	218	
Civilian		5,692
Total		**35,828**

EQUIPMENT

(PAI as of Sept. 30, 2004)

Fighter/Attack	174
Helicopter	4
Tanker	15
Transport	28

USAF photo by SrA. Priscilla Robinson

SrA. Sean Quattrini, a satellite communications technician with the 31st Communications Squadron at Aviano AB, Italy, sets up a satellite dish for exercise Healthy Thunder.

UNIT	BASE	WEAPONS
31st Fighter Wing	Aviano AB, Italy	F-16C/D
38th Combat Support Wing	Sembach AB, Germany	
39th Air Base Wing	Incirlik AB, Turkey	Tactical range and contingency support, rotational aircraft
48th Fighter Wing	RAF Lakenheath, UK	F-15C/D, F-15E, HH-60G*
52nd Fighter Wing	Spangdahlem AB, Germany	A/OA-10, F-16CJ
65th Air Base Wing	Lajes Field, the Azores	
86th Airlift Wing	Ramstein AB, Germany	C-9, C-21, C-130E
100th Air Refueling Wing	RAF Mildenhall, UK	KC-135R
435th Air Base Wing	Ramstein AB, Germany	

* Located at NAS Keflavik, Iceland.

3rd AIR FORCE (USAFE), RAF MILDENHALL, UK

Commander
Maj. Gen. Michael C. Gould

- **38th Combat Support Wing** — Sembach AB, Germany
- **48th Fighter Wing** — RAF Lakenheath, UK (F-15C/D, F-15E, HH-60G*)
- **52nd Fighter Wing** — Spangdahlem AB, Germany (A/OA-10, F-16CJ)
- **65th Air Base Wing** — Lajes Field, the Azores
- **86th Airlift Wing** — Ramstein AB, Germany (C-9, C-21, C-130E)
- **100th Air Refueling Wing** — RAF Mildenhall, UK (KC-135R)
- **435th Air Base Wing** — Ramstein AB, Germany

16th AIR FORCE (USAFE), AVIANO AB, ITALY

Commander
Lt. Gen. Glen W. Moorhead III

- **31st Fighter Wing** — Aviano AB, Italy (F-16C/D)
- **39th Air Base Wing** — Incirlik AB, Turkey (Tactical range and contingency support, rotational aircraft)

Air Reserve Components

2005 USAF Almanac

The Air Reserve Components for USAF are the Air National Guard and Air Force Reserve Command. Air Force Reserve Command stood up as a major command Feb. 17, 1997. The change in status, authorized by Congress in the Fiscal 1997 National Defense Authorization Act, was based on the experience gained from the Air Force Reserve component mobilization for Operations Desert Shield and Desert Storm.

AFRC Air Force Reserve Command

Headquarters Robins AFB, Ga.

Established Feb. 17, 1997

Commander Lt. Gen. John A. Bradley

MISSIONS

Support the active duty force
Serve in such missions as fighter, bomber, airlift, aerial refueling, rescue, special operations, aeromedical evacuation, aerial fire fighting, weather reconnaissance, space operations, airborne air control, flying training, flight testing, and aerial spraying
Provide support and disaster relief in the US
Support national counterdrug efforts

FORCE STRUCTURE

Air Reserve Personnel Center, Denver
Three numbered air forces: **4th,** March ARB, Calif.; **10th,** NAS JRB Fort Worth, Tex.; **22nd,** Dobbins ARB, Ga.
36 wings
Four groups
One detachment
Four space operations squadrons

OPERATIONAL ACTIVITY

Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US)

USAF photo by MSgt. Bill Kimble

TSgt. Gregory Little, a loadmaster with the 729th Airlift Squadron, checks the ailerons and flaps on a C-141 at March ARB, Calif.

PERSONNEL

(as of Sept. 30, 2004)

Total (selected reserve)*		75,322
Officers	16,724	
Enlisted	58,598	
Civilian		14,261
Total		**89,583**

*Numbers for AFRC personnel assigned to Majcoms, FOAs, and DRUs are included here.

EQUIPMENT

(PAI as of Sept. 30, 2004)

Bomber	8
Fighter/Attack	90
Helicopter	13
Recon/BM/C3I	10
SOF	12
Tanker	77
Transport	137

AIR FORCE RESERVE COMMAND, ROBINS AFB, GA.

Commander
Lt. Gen. John A. Bradley

- **4th Air Force**, March ARB, Calif.
- **10th Air Force**, NAS JRB Fort Worth, Tex.
- **22nd Air Force**, Dobbins ARB, Ga.
- **Air Reserve Personnel Center**, Col. James L. Playford, Denver

4th AIR FORCE (AMC), MARCH ARB, CALIF.

Commander
Maj. Gen. Robert E. Duignan

- **349th Air Mobility Wing**, Travis AFB, Calif. (C-5A/B, KC-10[a])
  - **452nd Air Mobility Wing**, March ARB, Calif. (C-141C, KC-135R)
    - **932nd Airlift Wing**, Scott AFB, Ill. (C-9A)
- **433rd Airlift Wing**, Lackland AFB, Tex. (C-5A)
  - **459th Air Refueling Wing**, Andrews AFB, Md. (KC-135R)
    - **939th Air Refueling Wing**, Portland Arpt., Ore. (KC-135R)
- **434th Air Refueling Wing**, Grissom ARB, Ind. (KC-135R)
  - **507th Air Refueling Wing**, Tinker AFB, Okla. (KC-135R)
    - **940th Air Refueling Wing**, Beale AFB, Calif. (KC-135E)
- **445th Airlift Wing**, Wright-Patterson AFB, Ohio (C-141C)
  - **916th Air Refueling Wing**, Seymour Johnson AFB, N.C. (KC-135R)
    - **931st Air Refueling Group**, McConnell AFB, Kan. (KC-135R[a])
- **446th Airlift Wing**, McChord AFB, Wash. (C-17A[a])
  - **927th Air Refueling Wing**, Selfridge ANGB, Mich. (KC-135R)

10th AIR FORCE (ACC), NAS JRB FORT WORTH, TEX.

Commander
Maj. Gen. Allan R. Poulin

- **301st Fighter Wing**, NAS JRB Fort Worth, Tex. (F-16C/D)
  - **919th Special Ops Wing**, Duke Field, Fla. (MC-130E[b]/P[a])
    - **310th Space Group**, Schriever AFB, Colo.
- **419th Fighter Wing**, Hill AFB, Utah (F-16C/D)
  - **920th Rescue Wing**, Patrick AFB, Fla. (HC-130P/N, HH-60G)
    - **340th Flying Training Group**, Randolph AFB, Tex. (AT/T-38, T-1, T-37)[a]
- **442nd Fighter Wing**, Whiteman AFB, Mo. (A/OA-10A)
  - **926th Fighter Wing**, NAS JRB New Orleans (A/OA-10A)
    - **513th Air Control Group**, Tinker AFB, Okla. (E-3[a])
- **482nd Fighter Wing**, Homestead ARB, Fla. (F-16C/D)
  - **944th Fighter Wing**, Luke AFB, Ariz. (F-16C/D)[c]
    - **Det. 1**, Shaw AFB, S.C. (F-16C/D)[a]
- **917th Wing**, Barksdale AFB, La. (B-52H, A/OA-10A)

22nd AIR FORCE (AMC), DOBBINS ARB, GA.

Commander
Maj. Gen. James D. Bankers

- **94th Airlift Wing**, Dobbins ARB, Ga. (C-130H)
  - **440th Airlift Wing**, General Mitchell Arpt./ARS, Wis. (C-130H)
    - **911th Airlift Wing**, Pittsburgh Arpt./ARS (C-130H)
- **302nd Airlift Wing**, Peterson AFB, Colo. (C-130H)
  - **512th Airlift Wing**, Dover AFB, Del. (C-5A/B[a])
    - **913th Airlift Wing**, NAS JRB Willow Grove, Pa. (C-130E)
- **315th Airlift Wing**, Charleston AFB, S.C. (C-17[a])
  - **514th Air Mobility Wing**, McGuire AFB, N.J. (C-141B, KC-10A)[a]
    - **914th Airlift Wing**, Niagara Falls Arpt./ARS, N.Y. (C-130H)
- **403rd Wing**, Keesler AFB, Miss. (C-130J, WC-130H/J)
  - **908th Airlift Wing**, Maxwell AFB, Ala. (C-130H)
    - **934th Airlift Wing**, Minneapolis-St. Paul Arpt./ARS, Minn. (C-130H)
- **439th Airlift Wing**, Westover ARB, Mass. (C-5A)
  - **910th Airlift Wing**, Youngstown-Warren Arpt./ARS, Ohio (C-130H2)

[a]Associate aircraft.
[b] Active-associate (owned by AFRC, flown by active).
[c]AFRC-owned and associate aircraft.

ANGB Air National Guard Base
ARB Air Reserve Base
Arpt. Airport
ARS Air Reserve Station
JRB Joint Reserve Base
NAS Naval Air Station

ANG Air National Guard

Headquarters Washington, D.C.

Established Sept. 18, 1947

Director Lt. Gen. Daniel James III

MISSIONS

Provide combat capability to the warfighter and security for the homeland
Provide ready units to support national security objectives
Protect life and property and preserve peace, order, and public safety

FORCE STRUCTURE

One numbered air force: **1st,** Tyndall AFB, Fla.
88 wings
Two squadrons

OPERATIONAL ACTIVITY

Enduring Freedom (Afghanistan); Iraqi Freedom (Iraq); Noble Eagle (US)

PERSONNEL

(as of Sept. 30, 2004)

Total ANG military*		106,715
Officers	13,555	
Enlisted	93,160	
Civilian		23,573
Total		**130,288**

*Includes ANG personnel assigned to Majcoms, FOAs, and DRUs.

USAF photo by SSgt. Rebecca Layman

Fighter forces of the Air National Guard have played key roles in Operation Noble Eagle as well as operations in Southwest Asia. Shown here is an F-16 of the 148th Fighter Wing, Minnesota ANG.

EQUIPMENT

(PAI as of Sept. 30, 2004)

Fighter/Attack	645
Helicopter	15
Recon/BM/C3I	20
SOF	4
Tanker	195
Transport	248

1st AIR FORCE (ACC), TYNDALL AFB, FLA.

Commander
Maj. Gen. Marvin S. Mayes

- **Southeast Air Defense Sector (ANG)** Tyndall AFB, Fla.
- **Northeast Air Defense Sector (ANG)** Rome, N.Y.
- **Western Air Defense Sector (ANG)** McChord AFB, Wash.

The Air National Guard by Major Command Assignment

(As of April 1, 2005)

Air Combat Command

A/OA-10A	
103rd Fighter Wing	Bradley Arpt., Conn.
104th Fighter Wing	Barnes Arpt., Mass.
110th Fighter Wing	W.K. Kellogg Arpt., Mich.
111th Fighter Wing	NAS JRB Willow Grove, Pa.
124th Wing[a]	Boise Air Terminal, Idaho
175th Wing[a]	Martin State Arpt., Md.
C-130	
156th Airlift Wing	Luis Munoz Marin Arpt., Puerto Rico
E-8C	
116th Air Control Wing[b]	Robins AFB, Ga.
F-15	
131st Fighter Wing	Lambert-St. Louis Arpt., Mo.
159th Fighter Wing	NAS JRB New Orleans, La.
F-15—air defense	
102nd Fighter Wing	Otis ANGB, Mass.
125th Fighter Wing	Jacksonville Arpt., Fla.
142nd Fighter Wing	Portland Arpt., Ore.
F-16	
113th Wing	Andrews AFB, Md.
114th Fighter Wing	Joe Foss Field, S.D.
115th Fighter Wing	Truax Field, Wis.
119th Fighter Wing	Hector Arpt., N.D.
120th Fighter Wing	Great Falls Arpt., Mont.
122nd Fighter Wing	Fort Wayne Arpt., Ind.
127th Wing[a]	Selfridge ANGB, Mich.
132nd Fighter Wing	Des Moines Arpt., Iowa
138th Fighter Wing	Tulsa Arpt., Okla.
140th Wing	Buckley AFB, Colo.
147th Fighter Wing	Ellington Field, Tex.
148th Fighter Wing	Duluth Arpt., Minn.
150th Fighter Wing	Kirtland AFB, N.M.
158th Fighter Wing	Burlington Arpt., Vt.
169th Fighter Wing	McEntire ANGS, S.C.
174th Fighter Wing	Hancock Field, N.Y.
177th Fighter Wing	Atlantic City Arpt., N.J.
180th Fighter Wing	Toledo Express Arpt., Ohio
181st Fighter Wing	Hulman Arpt., Ind.
183rd Fighter Wing	Capital Arpt., Ill.
187th Fighter Wing	Dannelly Field, Ala.
188th Fighter Wing	Fort Smith Arpt., Ark.
192nd Fighter Wing	Richmond Arpt., Va.
F-16—air defense	
144th Fighter Wing	Fresno Yosemite Arpt., Calif.
HC-130/HH-60	
106th Rescue Wing	Francis S. Gabreski Arpt., N.Y.
MC-130/HH-60	
129th Rescue Wing	Moffett Federal Airfield, Calif.

Air Education and Training Command

F-15	
173rd Fighter Wing	Klamath Falls Arpt., Ore.
F-16	
149th Fighter Wing	Kelly Field, Tex.
162nd Fighter Wing	Tucson Arpt., Ariz.
178th Fighter Wing	Springfield-Beckley Arpt., Ohio
C-130 (training)	
189th Airlift Wing	Little Rock AFB, Ark.

Air Force Space Command

137th Space Warning Sq.	Greeley ANGB, Colo.
148th Space Ops Sq.	Vandenberg AFB, Calif.

Air Force Special Operations Command

EC-130E	
193rd Special Ops Wing	Harrisburg Arpt., Pa.

Air Mobility Command

C-5A	
105th Airlift Wing	Stewart ANGB, N.Y.
C-130	
109th Airlift Wing	Schenectady County Arpt., N.Y.
118th Airlift Wing	Nashville Arpt., Tenn.
123rd Airlift Wing	Louisville Arpt./AGS, Ky.
130th Airlift Wing	Yeager Arpt., W.Va.
133rd Airlift Wing	Minneapolis-St. Paul Arpt./ARS, Minn.
136th Airlift Wing	NAS JRB Fort Worth, Tex.
137th Airlift Wing	Will Rogers World Arpt., Okla.
139th Airlift Wing	Rosecrans Memorial Arpt., Mo.
143rd Airlift Wing	Quonset State Arpt., R.I.
145th Airlift Wing	Charlotte/Douglas Arpt., N.C.
146th Airlift Wing	Channel Islands ANGS, Calif.
152nd Airlift Wing	Reno/Tahoe Arpt., Nev.
153rd Airlift Wing	Cheyenne Arpt., Wyo.
165th Airlift Wing	Savannah Arpt., Ga.
166th Airlift Wing	New Castle County Arpt., Del.
167th Airlift Wing	Eastern West Virginia Arpt., W.Va.
179th Airlift Wing	Mansfield Lahm Arpt., Ohio
182nd Airlift Wing	Greater Peoria Arpt., Ill.
KC-135	
101st Air Refueling Wing	Bangor Arpt., Maine
107th Air Refueling Wing	Niagara Falls Arpt./ARS, N.Y.
108th Air Refueling Wing	McGuire AFB, N.J.
117th Air Refueling Wing	Birmingham Arpt., Ala.
121st Air Refueling Wing	Rickenbacker ANGB, Ohio
126th Air Refueling Wing	Scott AFB, Ill.
128th Air Refueling Wing	General Mitchell Arpt./ARS, Wis.
134th Air Refueling Wing	McGhee Tyson ANGB, Tenn.
141st Air Refueling Wing	Fairchild AFB, Wash.
151st Air Refueling Wing	Salt Lake City Arpt.
155th Air Refueling Wing	Lincoln Arpt., Neb.
157th Air Refueling Wing	Pease Intl. Tradeport ANGS, N.H.
161st Air Refueling Wing	Sky Harbor Arpt., Ariz.
163rd Air Refueling Wing	March ARB, Calif.
171st Air Refueling Wing	Pittsburgh Arpt./ARS
184th Air Refueling Wing	McConnell AFB, Kan.
185th Air Refueling Wing	Sioux Gateway Arpt., Iowa
186th Air Refueling Wing	Key Field, Miss.
190th Air Refueling Wing	Forbes Field, Kan.

Pacific Air Forces

C-130	
154th Wing (204th Airlift Sq.)	Hickam AFB, Hawaii
176th Wing[c]	Kulis ANGB, Alaska
F-15	
154th Wing[d] (199th FS)	Hickam AFB, Hawaii
HC-130/HH-60	
176th Wing (210th RQS)	Kulis ANGB, Alaska
KC-135	
154th Wing (203rd ARS)	Hickam AFB, Hawaii
168th Air Refueling Wing	Eielson AFB, Alaska

[a] Also flies C-130s.
[b] Blended wing with active duty and ANG personnel.
[c] Includes 210th Rescue Squadron with HC-130 and HH-60G aircraft.
[d] Includes 203rd Air Refueling Squadron with KC-135 aircraft.

FOAs, DRUs, and Auxiliary

Field Operating Agencies

A field operating agency (FOA) is a subdivision of the Air Force that carries out field activities under the operational control of an Hq. USAF functional manager. FOAs have the same administrative and organizational responsibilities as major commands.

Air Force Agency for Modeling and Simulation

Hq.: Orlando, Fla.
Estab.: June 3, 1996
Cmdr.: Col. David M. Votipka

MISSION, PURPOSE, OPERATIONS
Serve as lead for the Distributed Mission Operations initiative
Support Air Force modeling and simulation training, analysis, acquisition, and operations and corporate M&S planning and requirements generation
Promote Air Force M&S science and technology improvement and innovation and professional development and education for the Air Force M&S workforce
Operate and maintain Air Force M&S Information Service

STRUCTURE
Three divisions in Orlando, Fla.
C4ISR Visualization Center, Pentagon

PERSONNEL

Active duty		20
Officers	16	
Enlisted	4	
Civilians		15
Total		**35**

Air Force Audit Agency

Hq.: Washington, D.C.
Estab.: July 1, 1948
Dir.: Robert E. Dawes

MISSION, PURPOSE, OPERATIONS
Provide all levels of Air Force management with independent and quality internal audit service
Produce audit products that evaluate the efficiency, effectiveness, and economy of Air Force programs and activities

STRUCTURE
Four directorates at Arlington, Va., Brooks City-Base, Tex., March ARB, Calif., and Wright-Patterson AFB, Ohio
Three regional offices
16 field offices

PERSONNEL

Civilians	742

The director of AFAA is the USAF auditor general.

Air Force Center for Environmental Excellence

Hq.: Brooks City-Base, Tex.
Estab.: July 23, 1991
Dir.: Paul A. Parker

MISSION, PURPOSE, OPERATIONS
Provide Air Force leaders with the comprehensive expertise to protect, preserve, restore, develop, and sustain the nation's environmental and installation resources

STRUCTURE
10 directorates at Brooks City-Base with regional environmental offices in Atlanta, Dallas, and San Francisco

PERSONNEL

Active duty		35
Officers	33	
Enlisted	2	
Reserve components		10
ANG	0	
AFRC	10	
Civilians		366
Total		**411**

Air Force Civil Engineer Support Agency

Hq.: Tyndall AFB, Fla.
Estab.: Aug. 1, 1991
Cmdr.: Col. Gus Elliott Jr.

MISSION, PURPOSE, OPERATIONS
Provide the best tools, practices, and professional support to maximize Air Force civil engineer capabilities in base and contingency operations

STRUCTURE
Four directorates

PERSONNEL

Active duty		93
Officers	17	
Enlisted	76	
Reserve components		25
ANG	0	
AFRC	25	
Civilians		112
Total		**230**

Air Force Command and Control and Intelligence, Surveillance, and Reconnaissance Center

Hq.: Langley AFB, Va.
Estab.: Aug. 1, 1997
Cmdr.: Maj. Gen. Tommy F. Crawford

MISSION, PURPOSE, OPERATIONS
Develop the science of control to enable the art of command by influencing, integrating, and improving Air Force C4ISR capabilities
Represent all major commands and provide operational warfighter perspective to Air Force C4ISR spiral development and system acquisition commands and processes
Deliver interoperability and combat capability to the joint warfighter

STRUCTURE
One major field unit
11 subordinate organizations

PERSONNEL

Active duty		278
Officers	206	
Enlisted	72	
Reserve Components		11
ANG	0	
AFRC	11	
Civilians		55
Total		**344**

Air Force Communications Agency

Hq.: Scott AFB, Ill.
Estab.: June 13, 1996
Cmdr.: Col. David J. Kovach

MISSION, PURPOSE, OPERATIONS

Provide C4ISR capabilities to the warfighter through architecture and lead command management of the Air Force ground, air, and space network—the ConstellationNet
Direct integration of systems into the network, assuring information superiority
Deploy engineering and network operations strike teams to improve and facilitate ConstellationNet operations

STRUCTURE

Five functional areas

PERSONNEL

Active duty		224
Officers	105	
Enlisted	119	
Reserve Components		3
ANG	0	
AFRC	3	
Civilians		300
Total		**527**

Air Force Cost Analysis Agency

Hq.: Arlington, Va.
Estab.: Aug. 1, 1992
Exec. Dir.: Richard K. Hartley

MISSION, PURPOSE, OPERATIONS

Develop independent life-cycle cost estimates of major weapon and information systems; estimates and cost factors for modernization planning, long-range planning, divestiture, and flying hour program; cost-estimation tools, techniques, methodologies, and databases
Conduct special cost reviews for the Air Force Secretariat and for other organizations as directed
Research emerging changes in technologies, acquisition priorities, and industry

STRUCTURE

Five divisions

PERSONNEL

Active duty		24
Officers	22	
Enlisted	2	
Civilians		35
Total		**59**

Air Force Flight Standards Agency

Hq.: Andrews AFB, Md.
Estab.: Oct. 1, 1991
Cmdr.: Col. Thomas Arko

MISSION, PURPOSE, OPERATIONS

Develop, standardize, evaluate, and certify USAF policy, procedures, and equipment for flight operations and centrally manage USAF air traffic control and landing systems
Represent USAF in FAA airspace management and ATC issues; DOD in international airspace and ATC issues
Provide procedures for ATC, airfield, operational evaluation of ATC systems, airspace management, and terminal instrument process

STRUCTURE

One detachment at Oklahoma City
Three directorates

PERSONNEL

Active duty		115
Officers	46	
Enlisted	69	
Reserve components		4
ANG	0	
AFRC	4	
Civilians		40
Total		**159**

Air Force Frequency Management Agency

Hq.: Alexandria, Va.
Estab.: Oct. 1, 1991
Cmdr.: Col. Louis G. Jakowatz III

MISSION, PURPOSE, OPERATIONS

Plan, provide, and ensure spectrum access for Air Force and selected DOD activities in support of national policy objectives, systems development, and global operations
Coordinate Air Force spectrum policy and guidance. Responsible for USAF representation in spectrum negotiations with civil, military, national, and international regulatory organizations
Oversee curriculum for the Electromagnetic Spectrum Management Course
Perform functional management duties for enlisted spectrum management career field

STRUCTURE

Two directorates
Technical director

PERSONNEL

Active duty		10
Officers	3	
Enlisted	7	
Civilians		20
Total		**30**

Air Force Historical Research Agency

Hq.: Maxwell AFB, Ala.
Estab.: May 25, 1979
Dir.: Charles F. O'Connell Jr.

MISSION, PURPOSE, OPERATIONS

Collect, preserve, and manage historical document collection and oral history program
Research, write, and publish books and other studies on USAF history
Provide historical support to USAF, DOD, and other government agencies
Record and disseminate USAF history, including the role of airpower in national security
Operate research facilities and automated historical data system
Determine the lineage and honors of USAF units; maintain official emblem records
Verify Air Force aerial victory credits

STRUCTURE

Three divisions

PERSONNEL

Active duty		2
Officers	1	
Enlisted	1	
Reserve components		19
ANG	0	
AFRC	19	
Civilians		61
Total		**82**

USAF photo by TSgt. Kevin J. Gruenwald

TSgt. Margie Fields (foreground) reviews mapping scenarios in the CAOC during Joint Red Flag at Nellis AFB, Nev.

Air Force Inspection Agency

Hq.: Kirtland AFB, N.M.
Estab.: Aug. 1, 1991
Cmdr.: Col. David E. Snodgrass

MISSION, PURPOSE, OPERATIONS

Provide USAF leadership with independent, timely assessments to improve the Air Force
Serve as single comprehensive inspection agency of USAF medical organizations
Recommend improvements to existing processes, practices, and programs for fulfilling peacetime, contingency, and wartime missions
Conduct special reviews and inquiries
Conduct compliance inspections for FOAs and DRUs that do not have major command oversight
Publish *TIG Brief* magazine

STRUCTURE

Four directorates

PERSONNEL

Active duty		111
Officers	89	
Enlisted	22	
Reserve components		3
ANG	0	
AFRC	3	
Civilians		20
Total		**134**

Air Force Legal Services Agency

Hq.: Bolling AFB, D.C.
Estab.: Sept. 1, 1991
Cmdr.: Col. David G. Ehrhart

MISSION, PURPOSE, OPERATIONS

Provide commanders and personnel with specialized legal services: administering military justice to protect individual rights and ensure good order and discipline; preserving command freedom of action through robust defense of USAF interests in civil litigation; training and advising the headquarters and field in military justice and civil law matters; providing programs to benefit the Air Force family; and supporting legal services worldwide with state-of-the-art, specialized information technology

STRUCTURE

Three directorates

PERSONNEL

Active duty		385
Officers	268	
Enlisted	117	
Reserve Components		3
ANG	0	
AFRC	3	
Civilians		102
Total		**490**

Air Force Logistics Management Agency

Hq.: Maxwell AFB, Gunter Annex, Ala.
Estab.: Sept. 30, 1975
Cmdr.: Col. Michael A. Morabito

MISSION, PURPOSE, OPERATIONS

Develop, analyze, test, evaluate, and recommend new or improved concepts, methods, systems, policies, and procedures to enhance logistics efficiency and effectiveness
Publish the *Air Force Journal of Logistics*

STRUCTURE

Six divisions

PERSONNEL

Active duty		52
Officers	31	
Enlisted	21	
Civilians		23
Total		**75**

USAF photo by MSgt. Val Gempis

SSgt. Norris Agnew, a broadcaster with the Air Force News Agency, prepares the nightly "Pacific Report" newscast.

Air Force Manpower Agency

Hq.: Randolph AFB, Tex.
Estab.: Sept. 1, 1999
Cmdr.: Col. William C. Bennett Jr.

MISSION, PURPOSE, OPERATIONS

Determine manpower requirements to support Air Force concepts of operations
Partner with Air Force CONOPS champions, capability lead agents, functional representatives, and commanders at all organizational levels to improve USAF mission performance effectiveness and resource efficiency
Assist with competive sourcing and commercial activities programs
Provide guidance for Air Force Effects Management Program and consultation services to Air Force senior leaders
Develop programming tools, organizational and process-related standards, organizational staffing requirements, and resource allocation studies

STRUCTURE

One squadron
Four divisions
Operating locations at Washington, D.C., Ft. Detrick, Md., and McGhee Tyson ANGB, Tenn.

PERSONNEL

Active duty		103
Officers	29	
Enlisted	74	
Civilians		14
Total		**117**

Air Force Medical Operations Agency

Hq.: Pentagon
Estab.: July 1, 1992
Cmdr.: Col. Virginia L. Wereszynski

MISSION, PURPOSE, OPERATIONS

Support the Air Force assistant surgeon general, health care operations, and the Air Force surgeon general in the planning and execution of operational policies
Coordinate and track worldwide Air Force Medical Service expeditionary operations working with the services, unified commands, and Joint Staff
Create and operate statistical tools to collect and analyze data to shape the delivery of health care
Directly support health care professionals at military treatment facilities and special duty assignments worldwide

STRUCTURE

Two divisions
Two offices

PERSONNEL

Active duty		80
Officers	68	
Enlisted	12	
Reserve Components		1
ANG	0	
AFRC	1	
Civilians		43
Total		**124**

Air Force Medical Support Agency

Hq.: Bolling AFB, D.C.
Estab.: July 1, 1978
Cmdr.: Col. Paul B. Christianson

MISSION, PURPOSE, OPERATIONS

Oversee execution of Air Force surgeon general policies and programs in support of USAF global capability and national security strategies
Provide expert consultative leadership for entire Air Force Medical Service

STRUCTURE

Six directorates
28 divisions
11 geographically separated units

PERSONNEL

Active duty		126
Officers	100	
Enlisted	26	
Civilians		79
Total		**205**

Air Force National Security Emergency Preparedness Agency

Hq.: Atlanta
Estab.: Sept. 1, 1988
Cmdr.: Col. Lawrence Garrison

MISSION, PURPOSE, OPERATIONS

Facilitate Air Force support to civil authorities for natural or man-made disasters/emergencies

STRUCTURE

Two divisions
Three offices in Arlington, Va., Ft. McPherson, Ga., and Tyndall AFB, Fla.
Reserve personnel assigned to each state and emergency action agencies

PERSONNEL

Active duty		17
Officers	8	
Enlisted	9	
Reserve components		102
ANG	0	
AFRC	102	
Civilians		5
Total		**124**

Air Force News Agency

Hq.: San Antonio
Estab.: June 1, 1978
Cmdr.: Col. Anthony J. Epifano

MISSION, PURPOSE, OPERATIONS

Create, print, and broadcast Web-based products that support Air Force and DOD communication goals
Provide news, information, and entertainment programs through American Forces Radio and Television Service
Provide senior Air Force leaders with the means of communicating news and information to the Air Force community and the public

Organize, train, and equip AFNEWS to accomplish its mission
Create an IT environment that ensures the efficient and secure production and delivery of information

STRUCTURE
Air Force Broadcasting Service
Army and Air Force Hometown News Service
Air Force News Service
Command Resources and Readiness
Communications and Information Systems

PERSONNEL

Active duty		312
Officers	16	
Enlisted	296	
Reserve components		33
ANG	0	
AFRC	33	
Civilians		93
Total		**436**

Air Force Nuclear Weapons and Counterproliferation Agency

Hq.: Pentagon
Estab.: August 1998
Cmdr.: Lt. Col. Donald W. Robbins

MISSION, PURPOSE, OPERATIONS
Oversee nuclear stockpile stewardship programs, including planning, development, and sustainment of USAF nuclear weapons
Provide technical analysis on counterproliferation issues and lead all technical aspects of USAF arms control process
Provide technical advice to Air Staff, major commands, unified commands, and OSD on nuclear weapons, counterproliferation, and arms control issues

STRUCTURE
Four divisions
Two operating locations at Pentagon and Arlington, Va.

PERSONNEL

Active duty		16
Officers	8	
Enlisted	8	
Civilians		21
Total		**37**

Air Force Office of Special Investigations

Hq.: Andrews AFB, Md.
Estab.: Aug. 1, 1948
Cmdr.: Brig. Gen. Leonard E. Patterson

MISSION, PURPOSE, OPERATIONS
Provide professional criminal and counterintelligence investigative services to commanders of all Air Force activities
Identify and resolve crime impacting Air Force readiness or good order and discipline
Detect and provide early warning of worldwide threats to the Air Force
Combat threats to Air Force information systems and technologies

USN photo by PH2 Sandra M. Palumbo

TSgt. Mark Kenyon, videographer, observes an Army M1 Abrams tank during a combat exercise in South Korea.

Defeat and deter fraud in the acquisition of Air Force prioritized weapons systems
Serve as DOD's executive agent for Defense Cyber Crime Center

STRUCTURE
Eight regional offices
Eight squadrons
180 detachments and operating locations
USAF Special Investigations Academy located at the Federal Law Enforcement Training Center

PERSONNEL

Active duty		1,525
Officers	407	
Enlisted	1,118	
Reserve components		361
ANG	0	
AFRC	361	
Civilians		632
Total		**2,518**

Air Force Operations Group

Hq.: Pentagon
Estab.: July 26, 1977
Cmdr.: Col. Steven Pennington

MISSION, PURPOSE, OPERATIONS
Support USAF Chief of Staff and DCS for Air and Space Operations on current operational issues, including a 24-hour watch on all current operations and processing emergency messages
Provide facilities, policy, procedures, training, and staffing for Crisis Action Team during crises, contingencies, and exercises
Coordinate actions among major USAF organizations for JCS and USAF taskings
Prepare and provide weather data to the President, Secretary of Defense, JCS, NMCC, Army Operations Center, and other federal agencies

STRUCTURE
Six divisions

PERSONNEL

Active duty		71
Officers	32	
Enlisted	39	
Reserve components		4
ANG	0	
AFRC	4	
Total		**75**

Air Force Pentagon Communications Agency

Hq.: Pentagon
Estab.: Oct. 1, 1984
Cmdr.: Col. Gerald F. Alexander Jr.

MISSION, PURPOSE, OPERATIONS
Provide effective and timely information systems services and capabilities for Hq. USAF, OSD, and Joint Staff for military operations and missions

STRUCTURE
Seven directorates

PERSONNEL

Active duty		195
Officers	12	
Enlisted	183	
Civilians		185
Total		**380**

Air Force Personnel Center

Hq.: Randolph AFB, Tex.
Estab.: Oct. 1, 1995
Cmdr.: Maj. Gen. Anthony F. Przybyslawski

MISSION, PURPOSE, OPERATIONS
Provide service in worldwide personnel operations to Air Force commanders, military members, civilian employees, families, retirees, and other customers
Manage programs for individual career development, awards and decorations, assignments, retirements, promotions, and civilian personnel operations

STRUCTURE
Seven directorates

PERSONNEL

Active duty		725
Officers	238	
Enlisted	487	
Reserve components		14
ANG	0	
AFRC	14	
Civilians		1,000
Total		**1,739**

AFPC was formerly the Air Force Military Personnel Center and the Air Force Civilian Personnel Management Center.

USAF photo by TSgt. Bobbie Jo King

Air Force OSI agents and Army security forces respond to a rocket attack near Bagram AB, Afghanistan.

Air Force Personnel Operations Agency

Hq.: Pentagon
Estab.: Aug. 15, 1993
Dir.: Timothy A. Beyland

MISSION, PURPOSE, OPERATIONS

Provide in-depth analytical insight across the personnel life cyle to DCS for Personnel decision-makers
Develop and operate officer, enlisted, and civilian models
Support DCS for Personnel

STRUCTURE

One division

PERSONNEL

Active duty		25
Officers	15	
Enlisted	10	
Civilians		4
Total		**29**

Air Force Program Executive Office

Hq.: Pentagon
Estab.: November 1990
Exec.: Michael L. Dominguez (acting)

MISSION, PURPOSE, OPERATIONS

Manage and account for the cost, schedule, and performance of all Air Force non-space acquisition programs

STRUCTURE

Program Executive Officers:
Lt. Gen. Charles L. Johnson II, Command & Control & Combat Support
Lt. Gen. William R. Looney III, Aircraft Procurement & Modernization
Maj. Gen. Robert W. Chedister, Weapons
Maj. Gen. Richard B.H. Lewis, F/A-22 Programs
Ronald A. Poussard, Combat & Mission Support
Brig. (sel.) Charles R. Davis, deputy, Joint Strike Fighter

PERSONNEL

Active duty		18
Officers	15	
Enlisted	3	
Civilians		7
Total		**25**

Air Force Real Property Agency

Hq.: Arlington, Va.
Estab.: Nov. 1, 2002
Dir.: Kathryn Halvorson

MISSION, PURPOSE, OPERATIONS

Execute Air Force acquisition and disposal of all Air Force-controlled real property worldwide and environmental programs and real and personal property disposal for major Air Force bases being closed or realigned under the authorities of the Base Closure and Realignment Act of 1988 and the Defense Base Closure and Realignment Act of 1990
Assist communities in the conversion of closing and realigning bases from military to civilian use and ensure that property at these Air Force installations is made available for reuse as safely and efficiently as possible

STRUCTURE

Regional divisions
Base-level operating locations

PERSONNEL

Civilians	198

Air Force Review Boards Agency

Hq.: Andrews AFB, Md.
Estab.: June 1, 1980
Dir.: Joe G. Lineberger

MISSION, PURPOSE, OPERATIONS

Manage military and civilian appellate processes for the Secretary of the Air Force
Develop overall policy of the organization and oversee the activities and operations of the agency

STRUCTURE

Air Force Board for Correction of Military Records
Air Force Civilian Appellate Review Office
Secretary of the Air Force Personnel Council
Review Boards Support Office, Randolph AFB, Tex.

PERSONNEL

Active duty		11
Officers	6	
Enlisted	5	
Reserve components		7
ANG	0	
AFRC	7	
Civilians		49
Total		**67**

Air Force Safety Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1996
Cmdr.: Maj. Gen. Maurice L. McFann Jr.

MISSION, PURPOSE, OPERATIONS

Manage USAF mishap prevention, risk management, and nuclear surety programs
Develop regulatory guidance
Provide technical assistance in flight, ground, weapons, and space safety disciplines
Maintain USAF database for all safety mishaps
Oversee all major command mishap investigations and evaluate corrective actions for applicability and implementation USAF-wide
Direct safety education programs for all safety disciplines

USAF photo by MSgt. Terry L. Blevins

A1Cs Michael Pendleton and Sarah Harwood, 379th Expeditionary Security Force Squadron, patrol a base in Southwest Asia.

STRUCTURE

10 divisions

PERSONNEL

Active duty		67
Officers	52	
Enlisted	15	
Reserve components		1
ANG	0	
AFRC	1	
Civilians		48
Total		**116**

The commander is also the Air Force chief of safety. AFSC publishes *Flying Safety, Road and Rec,* and *Weapons Journal.*

Air Force Security Forces Center

Hq.: Lackland AFB, Tex.
Estab.: March 17, 1997
Cmdr.: Col. John T. Salley Jr.

MISSION, PURPOSE, OPERATIONS

Develop USAF security forces guidance, policy, and training requirements to safeguard and protect personnel and resources
Prepare guidance on air base defense operations and security forces continuation training; mission-related security and law enforcement operations; resource protection; anti-terrorism
Develop and implement base-level and combat arms training and ground combat weapons maintenance programs
Manage USAF corrections program and activities; DOD military working dog activities; contingency taskings

STRUCTURE

Four divisions
Force Protection Battlelab
Three detachments at Ft. Leavenworth, Kan., NAS Miramar, Calif., and Charleston NWC, S.C.

PERSONNEL

Active duty		384
Officers	50	
Enlisted	334	
Reserve components		8
ANG	0	
AFRC	8	
Civilians		14
Total		**406**

Air Force Services Agency

Hq.: San Antonio
Estab.: Feb. 5, 1991
Cmdr.: Col. Timothy J. Hansen

MISSION, PURPOSE, OPERATIONS

Provide combat support to commanders directly in support of the Air Force mission
Provide community service programs that enhance the quality of life for Air Force

members and their families
Manage Air Force nonappropriated central funds and operate central systems such as banking, investments, purchasing, data flow, insurance, and benefit programs

STRUCTURE
Eight directorates

PERSONNEL

Active duty		87
Officers	31	
Enlisted	56	
Reserve components		8
ANG	0	
AFRC	8	
Civilians		177
Total		**272**

Air Force Technical Applications Center

Hq.: Patrick AFB, Fla.
Estab.: July 7, 1959
Cmdr.: Col. Guy D. Turner

MISSION, PURPOSE, OPERATIONS
Monitor compliance with several international treaties, including the 1974 Threshold Test Ban Treaty and 1976 Peaceful Nuclear Explosions Treaty
Operate the US Atomic Energy Detection System, a global network of subsurface, surface, airborne, and space-based sensors that detect nuclear explosions
Operate analytical laboratories that provide national authorities with technical measurements with which to monitor foreign nuclear tests

STRUCTURE
Analysis Center, Patrick AFB, Fla.
Operational sites/detachments worldwide

PERSONNEL

Active duty		543
Officers	129	
Enlisted	414	
Total		**543**

EQUIPMENT
Multiple seismic arrays and single-instrument locations consisting of seismometers and associated data acquisition systems and workstations
Several hydroacoustic recording locations
More than 100 sensors and 35 support satellites, with associated ground systems instrumentation and data-processing equipment
Ground-based equipment to collect nuclear event debris

Air Force Weather Agency

Hq.: Offutt AFB, Neb.
Estab.: Oct. 15, 1997
Cmdr.: Col. John M. Lanicci

MISSION, PURPOSE, OPERATIONS
Maximize the nation's aerospace and ground combat effectiveness by providing accurate, relevant, and timely air and space weather information to DOD, coalition, and national users and by providing standardized training and equipment to Air Force weather

STRUCTURE
Air Force Combat Climatology Center, Asheville, N.C.
Air Force Combat Weather Center, Hurlburt Field, Fla.
Six solar observatories around the world
Nine operating locations worldwide

PERSONNEL

Active duty		626
Officers	114	
Enlisted	512	
Reserve components		6
ANG	0	
AFRC	6	
Civilians		188
Total		**820**

Formerly Air Weather Service, established July 1, 1937.

ANG Readiness Center

Hq.: Andrews AFB, Md.
Estab.: August 1997
Cmdr.: Col. Michael Hillestad

MISSION, PURPOSE, OPERATIONS
Provide combat capability to the warfighter and security to the homeland

STRUCTURE
201st Mission Support Squadron
13 directorates

PERSONNEL

Active duty		130
Officers	85	
Enlisted	45	
Reserve Components		643
ANG	639	
AFRC	4	
Civilians		467
Total		**1,240**

Direct Reporting Units

A direct reporting unit (DRU) is a subdivision directly subordinate to Hq. USAF, separate from any major command or FOA because of a unique mission, legal requirements, or other factors. DRUs have the same administrative and organizational responsibilities as major commands.

Air Force Doctrine Center

Hq.: Maxwell AFB, Ala.
Estab.: Feb. 24, 1997
Cmdr.: Maj. Gen. Bentley B. Rayburn

MISSION, PURPOSE, OPERATIONS
Provide a focal point for air, space, and information operational doctrine
Develop basic and operational doctrine for USAF Total Force
Advocate doctrinally correct representation and execution at the operational level of war in service, joint, and multinational operations, exercises, and other events
Collect inputs from exercises and operations for lessons learned
Participate in the investigation of future operational concepts and strategies to capture emerging doctrine
Present USAF doctrine to Air Force, other service, and joint audiences

STRUCTURE
Four operating locations
Joint and Air Staff Liaison, Pentagon

PERSONNEL

Active duty		58
Officers	51	
Enlisted	7	
Reserve components		10
ANG	0	
AFRC	10	
Civilians		16
Total		**84**

Air Force Operational Test and Evaluation Center

Hq.: Kirtland AFB, N.M.
Estab.: Jan. 1, 1974
Cmdr.: Maj. Gen. Felix Dupre

MISSION, PURPOSE, OPERATIONS
Assess the capability of new systems to meet warfighter needs by planning, executing, and reporting independent operational evaluations
Provide effectiveness, suitability, and operational impact expertise in the battlespace environment

STRUCTURE
Six detachments at Edwards AFB, Calif., Eglin AFB, Fla., Peterson AFB, Colo., and Kirtland AFB, N.M.
More than 20 operating locations

PERSONNEL

Active duty		577
Officers	392	
Enlisted	185	
Reserve components		1
ANG	0	
AFRC	1	
Civilians		196
Total		**774**

Air Force Studies and Analyses Agency

Hq.: Pentagon
Estab.: May 1, 2001
Dir.: Jacqueline R. Henningsen

MISSION, PURPOSE, OPERATIONS

Provide independent, timely, and objective analyses of key USAF capabilities and critical operational issues in direct support of senior USAF decision-makers
Ensure quality of USAF analysis in defense reviews, force structure assessments, resource allocation processes, and AEF capability enhancement
Lead USAF-wide centers of analytic excellence community
Oversee USAF operational and combat analyst career development programs

STRUCTURE

Four directorates and one support group
USAF Analytic Community Steering Group

PERSONNEL

Active duty		69
Officers	63	
Enlisted	6	
Civilians		29
Total		**98**

US Air Force Academy

Hq.: Colorado Springs, Colo.
Estab.: April 1, 1954
Supt.: Lt. Gen. John W. Rosa Jr.

MISSION, PURPOSE, OPERATIONS

Develop and inspire young men and women to become Air Force officers with knowledge, character, and discipline
Produce dedicated Air Force officers and leaders
Instill leadership through academics, military training, athletic conditioning, and character development

STRUCTURE

The cadet student body is designated the Cadet Wing. The wing is composed of four groups consisting of nine squadrons each, with more than 100 cadets assigned to a squadron. Each squadron consists of members of all four classes.

PERSONNEL

Active duty		2,254
Officers	940	
Enlisted	1,314	
Reserve components		46
ANG	0	
AFRC	46	
Civilians		1,315
Total		**3,615**

EQUIPMENT

73 aircraft

Cadets complete four years of study for a bachelor of science degree, choosing from 30 different academic majors. Four primary areas of military development are stressed in military art and science, theoretical and applied leadership experiences, aviation science and airmanship programs, and military training.

USAF photo by SSgt. Ben Bloker

Stephen Olivares, academy cadet first class, instructs a trainee at the beginning of USAFA cadet basic training.

11th Wing

Hq.: Bolling AFB, D.C.
Estab.: July 15, 1994
Cmdr.: Col. Duane A. Jones

MISSION, PURPOSE, OPERATIONS

Provide comprehensive base-operating and logistical support to USAF personnel in the National Capital Region
Supply personnel, programming, and comptroller support and UCMJ authority for Hq. USAF elements across the US and in 150 countries
Direct USAF Band and Honor Guard for joint ceremonial activities
Produce ceremonial and musical events worldwide
Execute military funeral mission around the country
Maintain daily operations at Bolling for DOD, Navy, and Coast Guard tenant units

STRUCTURE

Objective wing

PERSONNEL

Active duty		1,699
Officers	203	
Enlisted	1,496	
Reserve components		34
ANG	0	
AFRC	34	
Civilians		786
Total		**2,519**

The 11th Wing is still listed as a DRU even though it was subordinated to the Air Force District of Washington, which was provisionally reactivated in January 2005. On July 1, when the AFDW becomes fully operational, it will replace 11th Wing as a DRU.

Auxiliary

An Air Force auxiliary is an organization created by statute which the Secretary of the Air Force may use to fulfill the Air Force's noncombat programs and missions. The Civil Air Patrol (CAP) is the only USAF auxiliary to date.

Civil Air Patrol

Hq.: Maxwell AFB, Ala.
Estab.: Dec. 1, 1941
Natl. Cmdr.: Maj. Gen. Dwight H. Wheless, CAP
Exec. Dir.: Albert A. Allenback

MISSION, PURPOSE, OPERATIONS

Provide vital operational capabilities in support of aerial and ground search and rescue (SAR), disaster relief, a nationwide communications network, and counterdrug and homeland security missions
Conduct 95 percent of all inland SAR missions as tasked by the Air Force Rescue Coordination Center, Langley AFB, Va.
Build strong citizens for the future by providing leadership training, technical education, scholarships, and career education to young men and women, ages 12 to 21, in the CAP Cadet Program
Promote and support aerospace education, both for its own members and the general public

STRUCTURE

CAP is a nonprofit, 501(c)3 corporation with a national headquarters that oversees:
Eight regions
52 wings (each state, Puerto Rico, and Washington, D.C.)
1,550 squadrons

PERSONNEL

Hq. staff		153
Volunteers		58,456
Senior members	34,100	
Cadets	24,356	
Total		**58,609**

EQUIPMENT

550 single-engine, piston aircraft
1,000 vehicles
Communications equipment

CAP photo by CAP Capt. Dave Hurtado

Civil Air Patrol Lt. Chad Morris photographs a vehicle during a homeland security practice mission.

Guide to Air Force Installations Worldwide

2005 USAF Almanac

Major Active Duty Installations

Altus AFB, Okla. 73523-5000; 120 mi. SW of Oklahoma City. **Phone:** 580-482-8100; DSN 866-1110. **Majcom:** AETC. **Host:** 97th Air Mobility Wing. **Mission:** trains aircrew members for C-5, C-17, and KC-135 aircraft. **History:** activated January 1943; inactivated May 1945; reactivated January 1953. **Area:** 6,593 acres. **Runways:** 13,440 ft., 9,000-ft. parallel runway, and 3,500-ft. assault strip. **Altitude:** 1,381 ft. **Personnel:** permanent party military, 1,837; DOD civilians, 1,323. **Housing:** single family, officer, 230, enlisted, 653; unaccompanied, UAQ/UEQ, 478; visiting, 315, TLF, 30. **Clinic.**

Andersen AFB, Guam, APO AP 96543-5000; 2 mi. N of Yigo. **Phone:** (cmcl, from CONUS) 671-366-1110; DSN 315-366-1110. **Majcom:** PACAF. **Host:** 36th Air Expeditionary Wing. **Mission:** Pacific center for power projection, regional cooperation, and multinational training; serves as a logistic support and staging base for aircraft operating in the Pacific and Indian Oceans. **Major tenants:** 13th Air Force (PACAF); Det. 5, 22nd Space Operations Sq. (AFSPC); 613th Contingency Response Gp. (AMC); 734th Air Mobility Sq. (AMC); Helicopter Combat Support Sq. 5 (US Navy). **History:** activated 1945. Named for Gen. James Roy Andersen, who was chief of staff, Hq. AAF, Pacific Ocean Areas, and lost at sea in February 1945. **Area:** 20,270 acres. **Runways:** 11,182 ft. and 10,555 ft. **Altitude:** 612 ft. **Personnel:** permanent party military, 2,108; DOD civilians, 1,561. **Housing:** single family, officer, 236, enlisted, 1,153; unaccompanied, UOQ, 74, UAQ/UEQ, 1,018; visiting, VOQ, 74, VAQ/VEQ, 204, TLF, 18. **Clinic.**

Andrews AFB, Md. 20762-5000; 10 mi. SE of Washington, D.C. **Phone:** 301-981-1110; DSN 858-1110. **Majcom:** AMC. **Host:** 89th Airlift Wing. **Mission:** gateway to nation's capital and home of Air Force One. Provides worldwide airlift for the President, vice president, top US officials, and foreign heads of state. Also responsible for Presidential support and base operations; supports all branches of the armed services, several major commands, and federal agencies. **Major tenants:** Air Force Flight Standards Agency; Hq. AFOSI; AFOSI Academy; Air National Guard Readiness Center; 113th Wing (ANG), F-16; 459th ARW (AFRC), KC-135; Naval Air Facility; Marine Aircraft Gp. 49, Det. A; Air Force Review Boards Agency. **History:** activated May 1943. Named for Lt. Gen. Frank M. Andrews, military air pioneer and WWII commander of the European Theater, killed in aircraft accident May 3, 1943, in Iceland. **Area:** 6,853 acres. **Runways:** 9,755 ft. and 9,300 ft. **Altitude:** 281 ft. **Personnel:** permanent party military, 5,522; DOD civilians, 3,247. **Housing:** single family, officer, 383 (including 96 govt.-leased), enlisted, 1,667 (including 318 govt.-leased); unaccompanied, UAQ/UEQ, 923; visiting, VOQ, 136, VAQ/VEQ, 66, TLF, 68. **Hospital.**

Arnold AFB, Tenn. 37389; approx. 7 mi. SE of Manchester. **Phone:** 931-454-4204; DSN 340-4204. **Majcom:** AFMC. **Host:** Arnold Engineering Development Center. **Mission:** supports acquisition and sustainment of aerospace systems by conducting research, development, and evaluation testing for DOD, other government agencies, and commercial aerospace firms with the world's largest complex of wind tunnels, jet and rocket engine test cells, space simulation chambers, and hyperballistic ranges. **History:** base dedicated June 25, 1951. Named for Gen. of the Army H.H. "Hap" Arnold, wartime Chief of the Army Air Forces. **Area:** 39,081 acres. **Runway:** 6,000 ft. **Altitude:** 1,100 ft. **Personnel:** permanent party military, 102; DOD civilians, 177. **Housing:** single family, officer, 14, enlisted, 25; unaccompanied, visiting, 38. **Medical aid station and small VA clinic.**

Aviano AB, Italy, APO AE 09604; adjacent to Aviano, 50 mi. N of Venice. **Phone:** (cmcl, from CONUS) 011-39-0434-66-7111; DSN 632-1110. **Majcom:** USAFE. **Host:** 31st Fighter Wing. **Mission:** maintains two LANTIRN-equipped F-16 fighter squadrons, the 510th and the 555th, and 603rd Air Control Sq. **Major tenants:** 16th Air Force (USAFE); Hq. 401st Air Expeditionary Wing. **Geographically Separated Units (GSUs):** Det. 2, 401st AEW Pristina (Kosovo) Serbia; Det. 1, 401st AEW, Sarajevo, Bosnia; 774th Expeditionary Air Base Gp., Istres AB, France; Det. 3, 401st AEW, Rhein-Main AB, Germany; 31st RED HORSE Flt. and 31st Munitions Sq., Camp Darby, Italy; 31st Munitions Support Sq., Ghedi AB, Italy; 99th Ex. Recon. Sq., RAF Akrotiri, Cyprus; 496th Air Base Sq., Morón AB, Spain. **History:** one of the oldest Italian air bases, dating to 1911. USAF began operations 1954. **Area:** 1,467 acres. **Runway:** 8,596 ft. **Altitude:** 413 ft. **Personnel:** permanent party military, 3,500; DOD civilians, 260. **Housing:** 681 govt.-leased (189 officer, 592 enlisted); unaccompanied, UAQ/UEQ, 812; visiting, 74, DV, 6. **Clinic** (contracted with local hospital).

Barksdale AFB, La. 71110-5000; in Bossier City. **Phone:** 318-456-1110; DSN 781-1110. **Majcom:** ACC. **Host:** 2nd Bomb Wing. **Mission:** B-52H operations and training. **Major tenants:** 8th Air Force (ACC); 917th Wing (AFRC), A-10, B-52H; 8th Air Force Museum. **History:** activated Feb. 3, 1933. Named for Lt. Eugene H. Barksdale, WWI airman killed in an August 1926 crash. **Area:** 22,000 acres (18,000 acres reserved for recreation). **Runway:** 11,756 ft. **Altitude:** 166 ft. **Personnel:** permanent party military, 6,230; DOD civilians, 1,155. **Housing:** single family, officer, 135, enlisted, 594; unaccompanied, 876; visiting, VOQ, 125, VAQ/VEQ, 102, TLF, 24. **Superclinic.**

Beale AFB, Calif. 95903-5000; 13 mi. E of Marysville. **Phone:** 530-634-3000; DSN 368-1110. **Majcom:** ACC. **Host:** 9th Reconnaissance Wing. **Mission:** U-2, KC-135, and Global Hawk missions. **Major tenants:** 940th ARW (AFRC), KC-135; 7th Space Warning Sq. (AFSPC), PAVE PAWS; 548th Intelligence Gp. (ACC). **History:** originally US Army's Camp Beale; transferred to Air Force April 1948; became Air Force base in November 1951. Named for Brig. Gen. E.F. Beale, Indian agent in California prior to Civil War. **Area:** 22,944 acres. **Runway:** 12,000 ft. **Altitude:** 113 ft. **Personnel:** permanent party military, 3,462; DOD civilians, 673. **Housing:** single family, officer, 159, enlisted, 1,294; unaccompanied, 545; visiting, VOQ, 53, VAQ/VEQ, 125, TLF, 46. **Clinic.**

Bolling AFB, D.C. 20032-5000; 3 mi. S of US Capitol. **Phone:** 703-545-6700; DSN 227-0101. **Host:** 11th Wing, which includes the USAF Band and USAF Honor Guard. **Mission:** Hq. USAF direct reporting unit with support responsibilities for 40,000 USAF members worldwide. **Major tenants:** Air Force Chief of Chaplains; Air Force Surgeon General; Air Force Medical Operations Agency; Defense Intelligence Agency; Air Force Legal Services Agency; 497th Intelligence Gp. (ACC). **His-**

tory: activated October 1917. Named for Col. Raynal C. Bolling, first high-ranking Army Air Service officer killed in WWI. **Area:** 607 acres. **Runway:** Helipad only. **Altitude:** 20 ft. **Personnel:** permanent party military, 1,935; DOD civilians, 914. **Housing:** single family, officer, 285, enlisted, 860; unaccompanied, UAQ/UEQ, 331; visiting, VOQ, 62, VAQ/VEQ, 87, TLF, 100. **Clinic.**

Buckley AFB, Colo. 80011-9524; 8 mi. E of Denver. **Phone:** 720-847-9011 DSN 847-9011. **Majcom:** AFSPC. **Host:** 460th Space Wing. **Mission:** provides superior global surveillance for combatant commanders, worldwide missile warning, expeditionary forces, and support to homeland defense missions. Focal point for transition to Space Based Infrared System. **Major tenants:** 2nd SWS, 140th Wing (ANG); Aerospace Data Facility; Navy/Marine Reserve Center; Air Reserve Personnel Center; Army Aviation Support Facility; Defense Finance and Accounting Center-Denver. **History:** activated April 1, 1942, as a gunnery training facility. Named for 1st Lt. John H. Buckley, National Guardsman, killed Sept. 17, 1918. ANG assumed control from US Navy in 1959. Became active duty Air Force base Oct. 2, 2000. **Area:** 3,832 acres. **Runway:** 11,000 ft. **Altitude:** 5,663 ft. **Personnel:** permanent party military, 3,626; DOD civilians, 3,337. **Housing:** unaccompanied, UAQ/UEQ, 380 **Clinic.**

Cannon AFB, N.M. 88103-5000; 7 mi. W of Clovis. **Phone:** 505-784-4131; DSN 681-1110. **Majcom:** ACC. **Host:** 27th FW. **Mission:** F-16 operations. **History:** activated August 1942. Named for Gen. John K. Cannon, WWII commander of all Allied air forces in the Mediterranean Theater and former commander, Tactical Air Command. **Area:** 3,789 acres, excluding range. **Runways:** 10,000 ft. and 8,200 ft. **Altitude:** 4,295 ft. **Personnel:** permanent party military, 3,485; DOD civilians, 661. **Housing:** single family, officer, 143, enlisted, 1,501; unaccompanied, 835; visiting, 57. TLF, 36. **Ambulatory care clinic.**

Charleston AFB, S.C. 29404-5000; 10 mi. from downtown Charleston. **Phone:** 843-963-2100; DSN 673-2100. **Majcom:** AMC. **Host:** 437th AW. **Mission:** C-17 operations. **Major tenant:** 315th AW (AFRC assoc.), C-17. **History:** activated October 1942; inactivated March 1946; reactivated August 1953. **Area:** 6,033 acres (including auxiliary airfield). **Runway:** 9,000 ft.; joint-use airfield. **Altitude:** 46 ft. **Personnel:** permanent party military, 4,169; DOD civilians, 984. **Housing:** single family, officer, 148, enlisted, 1,178; unaccompanied, UAQ/UEQ, 587; visiting, VOQ, 156, VAQ/VEQ, 40, TLF, 40. **Clinic.**

Columbus AFB, Miss. 39710-1000; 7.5 mi. NW of Columbus. **Phone:** 662-434-7322; DSN 742-1110. **Majcom:** AETC. **Host:** 14th Flying Training Wing. **Mission:** Specialized Undergraduate Pilot Training (T-1, T-37, T-38). **History:** activated 1942 for pilot training. **Area:** 5,325 acres. **Runways:** 12,000 ft., 8,000 ft., and 6,300 ft. **Altitude:** 219 ft. **Personnel:** permanent party military, 1,492; DOD civilians, 653. **Housing:** single family, 539; unaccompanied, UOQ, 234, UAQ/UEQ, 166; visiting, 73, DV, 4; TLF, 20. **Clinic.**

Davis-Monthan AFB, Ariz. 85707-5000; within Tucson. **Phone:** 520-228-1110; DSN 228-1110. **Majcom:** ACC. **Host:** 355th Wing. **Mission:** A-10 combat crew training; OA-10 and FAC HC-130 training and operations; EC-130H; HH-60 Pavehawk; and CSAR operations. **Major tenants:** 12th Air Force (ACC); Aerospace Maintenance and Regeneration Center (AFMC), storage location for excess DOD aerospace vehicles; 305th Rescue Sq. (AFRC), HH-60; 55th ECG (ACC); 563rd RQG (AFSOC); US Customs. **History:** activated 1927. Named for two local aviators: 2nd Lt. Samuel H. Davis, killed Dec. 28, 1921, and 2nd Lt. Oscar Monthan, killed March 27, 1924. **Area:** 10,633 acres. **Runway:** 13,643 ft. **Altitude:** 2,404 ft. **Personnel:** permanent party military, 6,900; DOD civilians, 1,312. **Housing:** single family, officer, 125, enlisted, 1,129; unaccompanied, 756; visiting, VOQ, 20, VAQ/VEQ, 61, DV, 165, TLF, 50. **Clinic.**

Dover AFB, Del. 19902-7209; 3 mi. SE of Dover. **Phone:** 302-677-3000; DSN 445-3000. **Majcom:** AMC. **Host:** 436th AW. **Mission:** provides 25 percent of nation's intertheater airlift capability; only combat-ready C-5 wing capable of employing airdrop and special operations tactics for worldwide airlift; operates largest DOD aerial port facility; houses military's East Coast mortuary. **Major tenant:** 512th AW (AFRC assoc.). **History:** activated December 1941; inactivated 1946; reactivated February 1951. **Area:** 3,908 acres. **Runways:** 12,900 ft. and 9,600 ft. **Altitude:** 28 ft. **Personnel:** permanent party military, 4,400; DOD civilians, 721. **Housing:** single family, officer, 142, enlisted, 1,274; unaccompanied, UAQ/UEQ, 725; visiting, VOQ, 252, VAQ/VEQ, 34, TLF, 19. **Clinic.**

Dyess AFB, Tex. 79607-1980; WSW border of Abilene. **Phone:** 325-696-1110; DSN 461-1110. **Majcom:** ACC. **Host:** 7th BW. **Mission:** B-1 operations. **Major tenant:** 317th Airlift Gp. (AMC), C-130. **History:** activated April 1942; deactivated December 1945; reactivated as Abilene AFB September 1955. In December 1956, renamed for Lt. Col. William E. Dyess, WWII fighter pilot who escaped from a Japanese prison camp, killed in P-38 crash in December 1943. **Area:** 6,342 acres (including offbase sites). **Runway:** 13,500 ft. **Altitude:** 1,789 ft. **Personnel:** permanent party military, 5,160; DOD civilians, 526. **Housing:** single family, officer, 166, enlisted, 1,228; unaccompanied, 808; visiting, VOQ, 77, VAQ/VEQ, 96, TLF, 39. **Clinic.**

Edwards AFB, Calif. 93524; adjacent to Rosamond. **Phone:** 661-277-1110; DSN 527-3510. **Majcom:** AFMC. **Host:** 95th Air Base Wing. **Mission:** Air Force Flight Test Center conducts developmental and follow-on testing and evaluation of manned and unmanned aircraft and related avionics, and flight-control and weapon systems. AFFTC also operates the USAF Test Pilot School, which trains test pilots, flight-test engineers, and flight-test navigators. Base is a secondary landing site for space shuttle missions. **Major tenants:** AFRL's Propulsion Directorate (AFMC); Dryden Flight Research Center (NASA); USMC Air Reserve helicopter squadrons and detachment headquarters, HMM 764 and HMH 769. **History:** activities began in September 1933 when the Muroc Bombing and Gunnery Range was established. In 1942 it was designated Muroc Army Air Base. Renamed in 1949 for Capt. Glen W. Edwards, killed June 5, 1948, in crash of a YB-49 "Flying Wing." **Area:** 301,000 acres. **Runways:** 21, from 4,000 to 39,000 ft. **Altitude:** 2,302 ft. **Personnel:** permanent party military, 3,711; DOD civilians, 4,450. **Housing:** single family, officer, 400, enlisted, 1,233; unaccompanied, UOQ, 80, UAQ, 630; UEQ, 94; visiting, VOQ, 67, VAQ/VEQ, 52, DV, 34, TLF, 50. **Medical and dental clinics.**

Eglin AFB, Fla. 32542; 2 mi. SW of the twin cities of Niceville and Valparaiso; 7 mi. NE of Fort Walton Beach. **Phone:** 850-882-1110; DSN 872-1110. **Majcom:** AFMC. **Host:** 96th ABW. **Mission:** Air Armament Center is responsible for development, acquisition, testing, deployment, and sustainment of all air-delivered weapons. **Major tenants:** AFRL's Munitions Directorate (AFMC); 33rd FW (ACC), F-15; 53rd Wing (ACC); 919th Special Operations Wing (AFRC) at Duke Field, MC-130; Air Force Armament Museum; Army 6th Ranger Battalion; Naval Explosive Ordnance Disposal School. **History:** activated 1935. Named for Lt. Col. Frederick I. Eglin, WWI flier killed in aircraft accident Jan. 1, 1937. **Area:** 463,452 acres. Eglin is the nation's largest Air Force base in terms of acreage, covering an area roughly two-thirds the size of Rhode Island. **Runways:** 12,000 ft. and 10,000 ft. **Altitude:** 85 ft. **Personnel:** permanent party military, 4,302; DOD civilians, 3,012 (excluding Hurlburt Field). **Housing:** single family, officer, 218, enlisted, 2,116; unaccompanied, UAQ/UEQ, 1,212; visiting, VOQ, 169, VAQ/VEQ, 156, TLF, 87. **Hospital.**

Eielson AFB, Alaska 99702-5000; 26 mi. SE of Fairbanks. **Phone:** 907-377-1110; DSN 317-377-1110. **Majcom:** PACAF. **Host:** 354th FW. **Mission:** F-16C/D and A/OA-10 operations. **Major tenants:** Arctic Survival School (AETC); 168th Air Refueling Wing (ANG), KC-135; 353rd Combat Training Sq. **History:** activated October 1944. Named for Carl Ben Eielson, Arctic aviation pioneer who died in an Arctic rescue mission in November 1929. **Area:** 19,790 acres (including 16 remote sites, 63,195 acres). **Runway:** 14,500 ft. **Altitude:** 534 ft. **Personnel:** permanent party military, 3,068; DOD civilians, 963. **Housing:** single family, officer, 181, enlisted, 1,243; unaccompanied, UOQ, 8, UAQ, 522, UEQ, 16; visiting, VOQ, 206, VAQ/VEQ, 328, TLF, 40. **Outpatient clinic.**

Ellsworth AFB, S.D. 57706-5000; 12 mi. ENE of Rapid City. **Phone:** 605-385-5056; DSN 675-5056. **Majcom:** ACC. **Host:** 28th BW. **Mission:** B-1 operations. **Major tenants:** Det. 21, Belle Fourche Electronic Scoring Site; Det. 8, 372nd Training Sq. (AETC); Det. 226, AFOSI. **History:** activated January 1942 as Rapid City AAB; renamed June 13, 1953, for Brig. Gen. Richard E. Ellsworth, killed March 18, 1953, in RB-36 crash. **Area:** 5,411 acres. **Runway:** 13,500 ft. **Altitude:** 3,276 ft. **Personnel:** permanent party military, 3,550; DOD civilians, 659. **Housing:** single family, officer, 430, enlisted, 1,524; unaccompanied, 728; visiting, 80, TLF, 29. **Clinic.**

Elmendorf AFB, Alaska 99506-5000; bordering Anchorage. **Phone:** 907-552-1110; DSN 317-552-1110. **Majcom:** PACAF. **Host:** 3rd Wing. **Mission:** C-12, C-130, E-3 Airborne Warning and Control System, F-15C/D, and F-15E operations. Hub for air traffic to and from Far East. **Major tenants:** Alaskan Command; 11th Air Force (PACAF); Alaskan NORAD Region. **History:** activated July 1940. Named for Capt. Hugh Elmendorf, killed Jan. 13, 1933. **Area:** 13,100 acres. **Runways:** 10,000 ft. and 7,500 ft. **Altitude:** 213 ft. **Personnel:** permanent party military, 7,123; DOD civilians, 1,006. **Housing:** single family, officer, 172, enlisted, 1,640; unaccompanied, UAQ/UEQ, 1,044; visiting, VOQ, 196, VAQ/VEQ, 203, TLF, 86. **Hospital.**

Fairchild AFB, Wash. 99011-5000; 12 mi. WSW of Spokane. **Phone:** 509-247-1110; DSN 657-1110. **Majcom:** AMC. **Host:** 92nd Air Refueling Wing. **Mission:** KC-135R operations. **Major tenants:** 336th Training Gp. (USAF Survival School, AETC); 141st ARW (ANG), KC-135E. **History:** activated January 1942. Named for Gen. Muir S. Fairchild, USAF vice chief of staff at his death in 1950. **Area:** 5,823 acres. **Runway:** 13,901 ft. **Altitude:** 2,426 ft. **Personnel:**

permanent party military, 3,560; DOD civilians, 474. **Housing:** single family, officer, 150, enlisted, 1,171; unaccompanied, UAQ/UEQ, 796; visiting, VOQ, 120, VAQ/VEQ, 187, TLF, 18. **Clinic.**

F.E. Warren AFB, Wyo. 82005-5000; adjacent to Cheyenne. **Phone:** 307-773-1110; DSN 481-1110. **Majcom:** AFSPC. **Host:** 90th SW. **Mission:** controls, maintains, and operates fewer than 50 Peacekeeper and 150 Minuteman III ICBMs; UH-1N. **Major tenants:** 20th Air Force (AFSPC); Air Force ICBM Museum. **History:** activated as Ft. D.A. Russell July 4, 1867; under Army jurisdiction until 1949, when reassigned to USAF; renamed in 1930 for Francis Emory Warren, Wyoming Senator and first state governor. **Area:** 5,866 acres. Missile site area covering more than 12,600 sq. mi. in Wyoming, Colorado, and Nebraska. **Runway:** none. **Altitude:** 6,142 ft. **Personnel:** permanent party military, 3,792; DOD civilians, 555. **Housing:** single family, officer, 114, enlisted, 717; unaccompanied, UAQ/UEQ, 786; visiting, 30, TLF, 38. **Clinic.**

Goodfellow AFB, Tex. 76908-4410; SE of San Angelo. **Phone:** 325-654-3231; DSN 477-3231. **Majcom:** AETC. **Host:** 17th Training Wing. **Mission:** trains intelligence, fire protection, and special instruments personnel for US military and DOD and international agencies. **Major tenants:** 344th Military Intelligence Battalion (US Army); Navy Technical Training Center det.; USMC det.; NCO Academy. **History:** activated January 1941. Named for Lt. John J. Goodfellow Jr., WWI observation airplane pilot killed in combat Sept. 14, 1918. **Area:** 1,136 acres. **Runway:** none. **Altitude:** 1,900 ft. **Personnel:** permanent party military, 1,716; DOD civilians, 851. **Housing:** single family, officer, 2, enlisted, 296; unaccompanied, UOQ, 51, UAQ/UEQ, 180; visiting, VOQ, 188, VAQ/VEQ, 371, TLF, 31. **Clinic.**

Grand Forks AFB, N.D. 58205-5000; 16 mi. W of Grand Forks. **Phone:** 701-747-3000; DSN 362-3000. **Majcom:** AMC. **Host:** 319th ARW. **Mission:** KC-135R operations. **History:** activated 1956. Named after town of Grand Forks, whose citizens bought the property for the Air Force. **Area:** 5,418 acres. **Runway:** 12,351 ft. **Altitude:** 911 ft. **Personnel:** permanent party military, 2,793; DOD civilians, 400. **Housing:** single family, officer, 152, enlisted, 938; unaccompanied, UAQ/UEQ, 587; visiting, VOQ, 31, VAQ/VEQ, 17, TLF, 27. **Hospital.**

Hanscom AFB, Mass. 01731-5000; 17 mi. NW of Boston. **Phone:** 781-377-4441; DSN 478-5980. **Majcom:** AFMC. **Host:** 66th ABW. **Mission:** Electronic Systems Center manages development and acquisition of command and control systems. **Major tenants:** AFRL's Space Vehicles Directorate-Hanscom; AFRL's Sensors Directorate-Hanscom. **History:** activated 1941. Named for Laurence G. Hanscom, a pre-WWII advocate of private aviation, killed in a lightplane accident in 1941. **Area:** 846 acres. **Runway:** no flying mission; transient USAF aircraft use runways of Laurence G. Hanscom Field, state-operated airfield adjoining the base. **Altitude:** 133 ft. **Personnel:** permanent party military, 1,478; DOD civilians, 1,371. **Housing:** single family, officer, 359, enlisted, 491; unaccompanied, UOQ, 17, UAQ/UEQ, 220; visiting, VOQ 25, VAQ/VEQ, 93, TLF, 39. **Clinic.**

Hickam AFB, Hawaii 96853-5000; 9 mi. W of Honolulu. **Phone:** 808-449-7110 (Oahu military operator); DSN 315-449-7110. **Majcom:** PACAF. **Host:** 15th AW. **Mission:** provides base and logistical support for 140 associate and tenant units in Hawaii and other Pacific-region locations; airlift for commander, PACOM, and commander, PACAF; and maintenance and refueling support for aircraft transiting between the US mainland and the western Pacific. **Major tenants:** PACAF; 154th Wing (ANG), C-130, F-15, KC-135R; Joint POW/MIA Accounting Command. **History:** activated September 1938. Named for Lt. Col. Horace M. Hickam, aviation pioneer killed in crash Nov. 5, 1934. **Area:** 2,761 acres. **Runways:** Four joint-use runways shared with Honolulu Arpt.: 12,357 ft., 12,000 ft., 9,000 ft., and 6,952 ft. **Altitude:** 13 ft. **Personnel:** permanent party military, 4,968; DOD civilians, 1,301. **Housing:** single family, officer, 461, enlisted, 2,044; unaccompanied, UAQ/UEQ, 766; visiting, VOQ, 200, VAQ/VEQ, 115, TLF, 40. **Clinic.**

Hill AFB, Utah 84056-5990; 25 mi. N. of Salt Lake City. **Phone:** 801-777-1110; DSN 777-1110. **Majcom:** AFMC. **Host:** 75th ABW. **Mission:** Ogden Air Logistics Center provides worldwide engineering and logistics management for F-16s; maintains the A-10, C-130, and F-16; handles logistics management and maintenance for Minuteman and Peacekeeper ICBMs; provides sustainment and logistics support for space and C3I programs; overhauls and repairs landing gear for all USAF (and 70 percent of DOD) aircraft; leading provider of rocket motors, small missiles, air munitions and guided bombs, photonics imaging and reconnaissance equipment, simulators and training devices, avionics, hydraulics and pneudraulics instruments, and software. **Major tenants:** 388th FW (ACC); 419th FW (AFRC), F-16; Hill Aerospace Museum; Defense Enterprise Computing Center (DISA); Defense Distribution Depot Hill Utah; Defense Logistics Agency; 372nd Recruiting Gp. (USAF). **History:** activated 1940. Named for Maj. Ployer P. Hill, killed Oct. 30, 1935, while test flying the first B-17. **Area:** 6,797 acres; manages 962,076 acres (Utah Test and Training Range). **Runway:** 13,500 ft. **Altitude:** 4,789 ft. **Personnel:** permanent party military, 5,322; DOD civilians, 11,055. **Housing:** single family, officer, 178, enlisted, 960; unaccompanied, UAQ/UEQ, 786; visiting, VOQ, 13, VAQ/VEQ, 147, TLF, 61. **Clinic.**

Holloman AFB, N.M. 88310; 8 mi. SW of Alamogordo. **Phone:** 505-572-1110; DSN 572-1110. **Majcom:** ACC. **Host:** 49th FW. **Mission:** F-117 operations. **Major tenants:** 46th Test Gp. (AFMC); 4th Space Control Sq. (AFSPC); German Air Force Flying Training Center. **History:** activated 1941. Named for Col. George Holloman, guided-missile pioneer. **Area:** 58,000 acres. **Runways:** 12,000 ft., 10,500 ft., and 8,000 ft. **Altitude:** 4,350 ft. **Personnel:** permanent party military, 3,982; DOD civilians, 838. **Housing:** single family, officer, 190, enlisted, 1,250; unaccompanied, 945; visiting, 195, TLF, 48. **Clinic.**

Hurlburt Field, Fla. 32544-5000; 5 mi. W of Fort Walton Beach. **Phone:** 850-884-7464; DSN 579-7464. **Majcom:** AFSOC. **Host:** 16th Special Operations Wing. **Mission:** specialized airpower, equipped with AC-130H/U, MC-130H, MC-130P, MH-53J/M (located at Eglin AFB). **Major tenants:** AFSOC; USAF C2 Training Innovation Gp.; 823rd RED HORSE Sq.; USAF Combat Weather Center; C2 Warrior School; USAF Special Operations School; Joint Special Operations University; 505th Command and Control Wing; 605th Test and Evaluation Sq.; 25th Information Operations Sq.; 18th Flight Test Sq.; Det. 1, 334th Training Sq. **History:** activated 1943. Named for Lt. Donald W. Hurlburt, WWII pilot killed Oct. 1, 1943. **Area:** 6,600 acres. **Runway:** 6,900 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 8,000; DOD civilians, 700. **Housing:** single family, officer, 52, enlisted, 628; unaccompanied, UAQ/UEQ, 1,103; visiting, VOQ, 163, VAQ/VEQ, 51, TLF, 24. **Clinic.**

Incirlik AB, Turkey, APO AE 09824; 6 mi. E of Adana. **Phone:** (cmcl, from CONUS) 011-90-322-316-6060; DSN (from CONUS) 676-6060. **Majcom:** USAFE. **Host:** 39th ABW. **Mission:** supports rotational weapons training deployments and contingency actions. **History:** activated May 1954. Present unit began operations March 1966. Incirlik, in Turkish, means fig orchard. **Area:** 3,400 acres. **Runway:** 10,000 ft. **Altitude:** 240 ft. **Personnel:** permanent party military, 1,500; DOD civilians, 65. **Housing:** unaccompanied, UOQ, 120, UEQ, 672; visiting, VOQ, 91, VAQ/VEQ, 255, DV, 16, TLF, 80. **Hospital.**

Kadena AB, Japan, APO AP 96368-5000; 15 mi. N of Naha. **Phone:** (cmcl, from CONUS) 011-81-6117-34-1110; DSN 315-634-1110. **Majcom:** PACAF. **Host:** 18th Wing. **Mission:** E-3, F-15C/D, KC-135R, and HH-60 operations. **Major tenants:** 353rd Special Operations Gp. (AFSOC), 390th Intelligence Sq.; 82nd Reconnaissance Sq. (ACC); 733rd Air Mobility Support Sq. (AMC); Commander, Fleet Activities Okinawa (US Navy). **History:** occupied by US forces in April 1945. Named for city of Kadena, Okinawa. **Area:** 11,210 acres. **Runway:** 12,100 ft. **Altitude:** 146 ft. **Personnel:** permanent party military, 8,000; DOD civilians, 1,300. **Housing:** single family, officer, 1,677, enlisted, 5,800; unaccompanied, UOQ, 47, UAQ/UEQ, 2,080; visiting, VOQ, 226, VAQ/VEQ, 222, TLF, 122. **Clinic.**

Air Force Installations

Major Installations	FY00	FY01	FY02	FY03	FY04	FY05
US and possessions	74	74	72	72	72	72
Foreign	13	13	13	13	13	13
Worldwide	87	87	85	85	85	85
Minor installations						
US and possessions	80	80	80	80	80	80
Foreign	3	2	2	2	2	2
Worldwide	83	82	82	82	82	82

Includes Air National Guard and Air Force Reserve Command.

Major Air Force Installations in the US

Keesler AFB, Miss. 39534-5000; located in Biloxi. **Phone:** 228-377-1110; DSN 597-1110. **Majcom:** AETC. **Host:** 81st TRW. **Mission:** conducts Air Force, joint service, and international training for basic electronics, communications electronic systems, communications computer systems, air traffic control, airfield management, command post, air weapons control, weather, precision measurement, education and training, financial management and comptroller, information management, manpower and personnel, and medical, dental, and nursing specialities. **Major tenants:** 2nd Air Force (AETC); 45th Airlift Sq. (AETC), C-21; 403rd Wing (AFRC), C-130, WC-130. **History:** activated June 12, 1941. Named for 2nd Lt. Samuel R. Keesler Jr., a native of Mississippi and WWI aerial observer killed in action Oct. 9, 1918. **Area:** 3,554 acres, excluding off-base housing. **Runway:** 6,600 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 4,257; DOD civilians, 2,860. **Housing:** single family, officer, 280, enlisted, 1,551; unaccompanied, UAQ/UEQ, 809; visiting, 1,306, TLF, 79. **Keesler Medical Center.**

Kirtland AFB, N.M. 87117-5606; SE quadrant of Albuquerque. **Phone:** 505-846-0011; DSN 246-0011. **Majcom:** AFMC. **Host:** 377th ABW. **Mission:** provides munitions maintenance; worldwide training; research, development, and testing; base operating support. **Major tenants:** 58th SOW (AETC), HC-130, MC-130, HH-60, MH-53, UH-1; Air Force Operational Test and Evaluation Center; Air Force Research Laboratories (AFMC); 150th FW (ANG), F-16; Defense Threat Reduction Agency; Sandia National Laboratories; DOE's Albuquerque Operations Office; Defense Nuclear Weapons School; Air Force Inspection Agency; Air Force Safety Center. **History:** activated January 1941. Named for Col. Roy C. Kirtland, aviation pioneer who died May 2, 1941. **Area:** 52,678 acres. **Runways:** two, each 13,000 ft.; 10,000 ft.; and 6,000 ft. **Altitude:** 5,352 ft. **Personnel:** permanent party military, 4,293; DOD civilians, 4,435. **Housing:** single family, officer, 187, enlisted, 892; unaccompanied, UAQ/UEQ, 828; visiting, VOQ, 181, VAQ/VEQ, 216, DV, 38, TLF, 39. **Air Force-VA joint medical center.**

Kunsan AB, South Korea, APO AP 96264-5000; 8 mi. SW of Kunsan City. **Phone:** (cmcl, from CONUS) 011-82-63-470-1110; DSN 782-1110. **Majcom:** PACAF. **Host:** 8th FW. **Mission:** F-16C/D operations; home of the "Wolf Pack" and the first active overseas F-16 wing (September 1981). **Major tenants:** US Army's Echo and Foxtrot Batteries, 1st Battalion, 43rd Air Defense Artillery; US Army Contracting Command Korea. **History:** built by the Japanese in 1938. **Area:** 2,556 acres. **Runway:** 9,000 ft. **Altitude:** 29 ft. **Personnel:** permanent party military, 2,556; DOD civilians, 31. **Housing:** unaccompanied, UOQ, 228, UAQ/UEQ, 2,120; visiting, VOQ, 26, VAQ/VEQ, 60. **Clinic.**

Lackland AFB, Tex. 78236-5000; 8 mi. SW of downtown San Antonio. **Phone:** 210-671-1110; DSN 473-1110. **Majcom:** AETC. **Host:** 37th TRW. **Mission:** One of the largest USAF training wings. Provides basic military training for civilian recruits entering Air Force, ANG, and AFRC; conducts courses in base support functions, English language training for international and US military students, and professional operations and management training in Spanish to military forces and government agencies from 26 Latin American nations. **Major tenants:** Air Intelligence Agency; 433rd AW (AFRC); 149th FTW (ANG); 67th Information Operations Wing (ACC); Medina Regional Security Operations Center; 59th Medical Wing; Air Force Security Forces Center; Force Protection Battlelab; Cryptologic Systems Gp. **History:** activated 1941. Named for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, who died in 1943. **Area:** 9,572 acres. **Runway:** 11,550 ft. **Altitude:** 691 ft. **Personnel:** permanent party military, 3,162; DOD civilians, 3,800. **Housing:** single family, officer, 151, enlisted, 1,084; unaccompanied, UAQ, 1,105; visiting, VOQ, 901, VAQ/VEQ, 1,889, TLF, 97. **Wilford Hall Medical Center.**

Lajes Field, Azores, Portugal, APO AE 09720-5000; Terceira Island, 900 mi. W of Portugal. **Phone:** (cmcl, from CONUS) 011-351-295-57-1110; DSN from US 535-1110, from Europe 312-535-1110. **Majcom:** USAFE. **Host:** 65th ABW. **Mission:** provides support to US and allied aircraft and personnel transiting the Atlantic, through US military and host-nation coordination. **Major tenants:** 65th ABW; 729th AMS (AMC). **History:** US operations began at Lajes Field 1943. **Area:** 1,192 acres. **Runway:** 10,865 ft. **Altitude:** 180 ft. **Personnel:** permanent party military, 1,000; DOD civilians, 177. **Housing:** single family, officer, 80, enlisted, 336; unaccompanied, UOQ, 20, UAQ/UEQ, 269; visiting, 252, TLF, 30. **Clinic.**

Langley AFB, Va. 23665-5000; 3 mi. N of Hampton. **Phone:** 757-764-1110; DSN 574-1110. **Majcom:** ACC. **Host:** 1st FW. **Mission:** F-15 air superiority operations. **Major tenants:** Air Combat Command; Air Force Rescue Coordination Center; Aerospace C2ISR Center; USAF Heritage of America Band; 12th Airlift Flight (AMC); 480th Intelligence Wg. (ACC); Air and Space Expeditionary Force Center (ACC). **History:** activated Dec. 30, 1916. Langley is the first military base in the US purchased and built specifically for military aviation. Named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. **Area:** 2,900 acres. **Runway:** 10,000 ft. **Altitude:** 11 ft. **Personnel:** permanent party military, 8,861; DOD civilians, 2,016. **Housing:** single family, officer, 328, enlisted, 1,184; unaccompanied, 1,153; visiting, VOQ, 78, VAQ/VEQ, 153, TLF, 60. **Hospital.**

Laughlin AFB, Tex. 78843-5000; 6 mi. E of Del Rio. **Phone:** 830-298-3511; DSN 732-1110. **Majcom:** AETC. **Host:** 47th FTW. **Mission:** SUPT (T-1, T-6, T-38). **History:** activated July 1942. Named for 1st Lt. Jack Thomas Laughlin, Del Rio native, B-17 pilot, killed Jan. 29, 1942. **Area:** 5,212 acres. **Runways:** 8,858 ft., 8,316 ft., and 6,326 ft. **Altitude:** 1,081 ft. **Personnel:** permanent party military, 904; DOD civilians, 897. **Housing:** single family, officer, 320, enlisted, 238; unaccompanied, UOQ, 284, UAQ/UEQ, 264; visiting, 96, TLF, 20. **Clinic.**

Little Rock AFB, Ark. 72099-4940; 17 mi. NE of Little Rock (Jacksonville). **Phone:** 501-987-1110; DSN 731-1110. **Majcom:** AETC. **Host:** 314th AW. **Mission:** largest C-130 training base in DOD; trains crew members from all services and 27 allied nations. **Major tenants:** 463rd Airlift Gp. (AMC), C-130; 189th AW (ANG), C-130; US Air Force Mobility Weapons School (AMC); Hq. Ark. ANG. **History:** activated Oct. 9, 1955. **Area:** 6,130 acres. **Runway:** 12,000 ft. **Altitude:** 310 ft. **Personnel:** permanent party military, 5,173; DOD civilians, 506. **Housing:** single family, officer, 185, enlisted, 1,348; unaccompanied, 840; visiting, VOQ, 102, VAQ/VEQ, 52. **Clinic.**

Los Angeles AFB, Calif. 90245-4657; in El Segundo, 3 mi. SE of Los Angeles Arpt.; base housing and support facilities 18 mi. S of the main base, in San Pedro. **Phone:** 310-363-1110; DSN 833-1110. **Majcom:** AFSPC. **Host:** Space and Missile Systems Center. **Mission:** responsible for research, development, acquisition, on-orbit testing, and sustainment of military space and missile systems. **History:** activated as Air Research and Development Command's Western Development Division July 1, 1954. **Area:** 112 acres at Los Angeles AFB and 127 acres at Ft. MacArthur Military Family Housing Annex. **Runway:** none. **Altitude:** 95 ft. **Personnel:** permanent party military, 1,810; DOD civilians, 1,491. **Housing:** single family, officer, 357, enlisted, 287; unaccompanied, UAQ/UEQ, 52; visiting, 28, TLF, 25. **Clinic.**

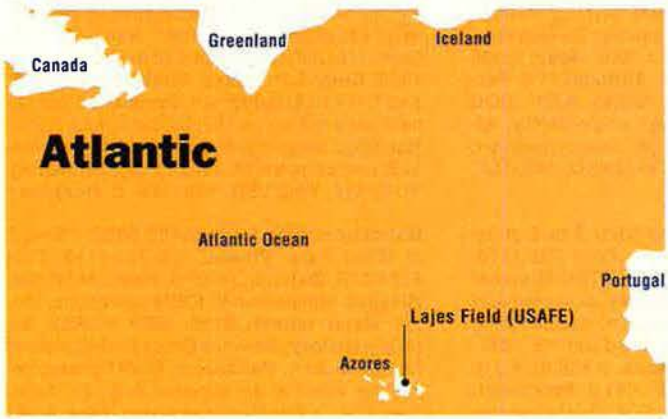
Luke AFB, Ariz. 85309-5000; 20 mi. WNW of downtown Phoenix. **Phone:** 623-856-1110; DSN 896-1110. **Majcom:** AETC. **Host:** 56th FW. **Mission:** F-16 operations; conducts USAF and allied F-16 pilot and crew chief training. **Major tenant:** 944th FW (AFRC), F-16. **History:** activated 1941. Named for 2nd Lt. Frank Luke Jr., observation balloon-busting ace of WWI and first American aviator to receive the Medal of Honor, killed in action Sept. 29, 1918. Luke is the largest fighter training base in the world. **Area:** 4,200 acres, plus 1.9 million-acre Barry M. Goldwater Range. **Runways:** 10,000 ft. and 9,910 ft. **Altitude:** 1,090 ft. **Personnel:** permanent party military, 5,585; DOD civilians, 2,281. **Housing:** single family, 742; unaccompanied, UAQ/UEQ, 730; visiting, 193, TLF, 39. **Hospital.**

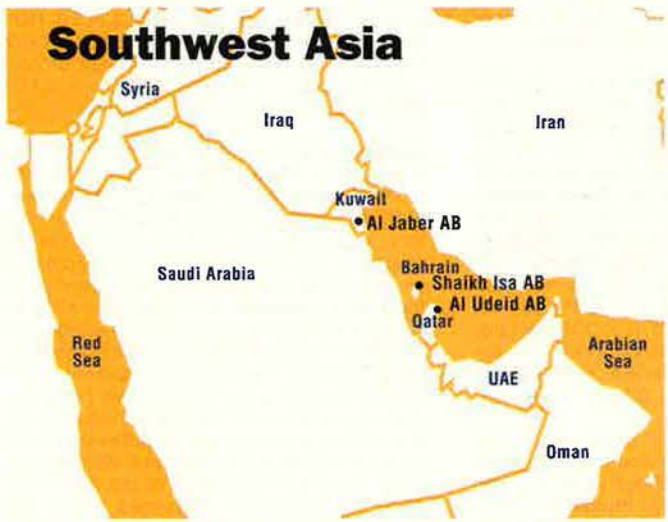
MacDill AFB, Fla. 33621-5000; on the Interbay Peninsula in southern Tampa. **Phone:** 813-828-1110; DSN 968-1110. **Majcom:** AMC. **Host:** 6th AMW. **Mission:** KC-135 operations; provides worldwide air refueling and combatant commander support. **Major tenants:** SOCOM; CENTCOM; Joint Communications Support Element; NOAA Aircraft Operations Center. **History:** activated April 15, 1941. Named for Col. Leslie MacDill, killed in aircraft accident Nov. 8, 1938. **Area:** 5,767 acres. **Runways:** 11,420 ft. and 7,167 ft. **Altitude:** 6 ft. **Personnel:** permanent party military, 4,182; DOD civilians, 1,271. **Housing:** single family, officer, 45, enlisted, 629; unaccompanied, UAQ/UEQ, 610; visiting, VOQ, 112, VAQ/VEQ, 130, TLF, 5. **Hospital.**

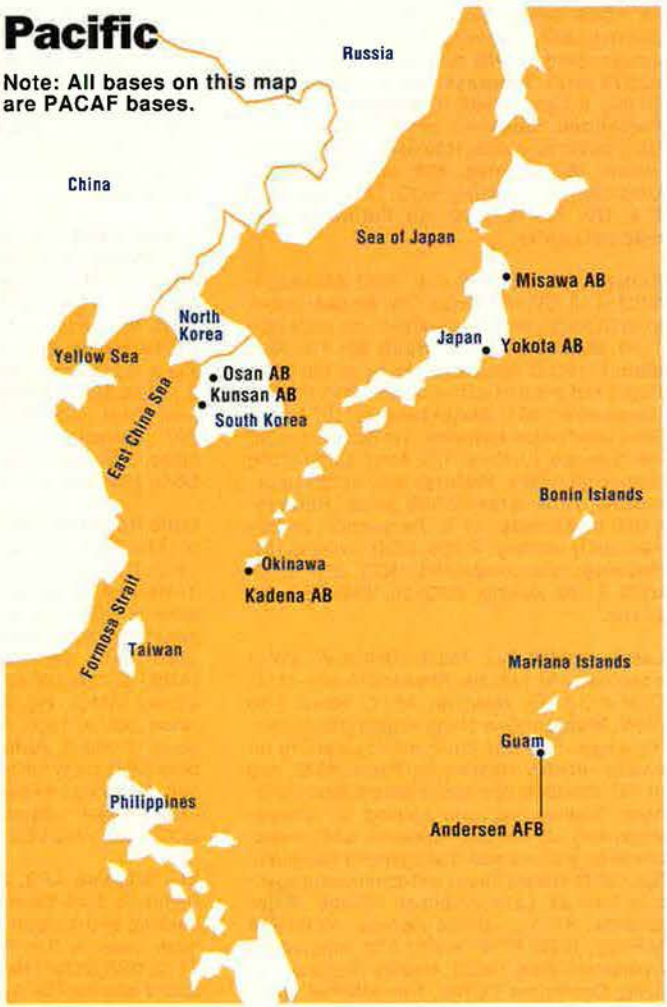
Malmstrom AFB, Mont. 59402-5000; 1.5 mi. E of Great Falls. **Phone:** 406-731-1110; DSN 632-1110. **Majcom:** AFSPC. **Host:** 341st SW. **Mission:** Minuteman III ICBM operations, UH-1N. **Major tenant:** 819th RED HORSE Sq. (ACC). **History:** activated Dec. 15, 1942. Named for Col. Einar A. Malmstrom, WWII fighter commander killed in air accident Aug. 21, 1954. Site of SAC's first Minuteman wing. **Area:** 4,041 acres, plus about 24,000 sq. mi. for missile sites. **Runway:** closed. **Altitude:** 3,525 ft. **Personnel:** permanent party military, 3,719; DOD civilians, 370. **Housing:** single family, officer, 258, enlisted, 1,136; unaccompanied, UAQ/UEQ, 882; visiting, 53, TLF, 30. **Clinic.**

Maxwell AFB, Ala. 36112-5000; 1 mi. WNW of Montgomery. **Phone:** 334-953-1110; DSN 493-1110. **Majcom:** AETC. **Host:** 42nd ABW. **Mission:** Air University conducts professional military, graduate, and professional continuing education for precommissioned and commissioned officers, enlisted personnel, and civilians. **Major tenants:** Air University; Air War College; Air Command and Staff College; Air University Library; College of Aerospace Doctrine, Research, and Education; School of Advanced Air and Space Studies; Air Force Officer Accession and Training Schools; Ira C. Eaker College for Professional Development; College for Enlisted Professional Military Education; Community College of the Air Force; Air Force Institute for Advanced Distributed Learning; Squadron Officer College; Civil Air Patrol; 908th AW (AFRC), C-130; Air Force

Major Air Force Installations Overseas







Bases in Gulf Cooperation Council nations do not meet criteria for major installations; however, thousands of USAF personnel are deployed in these locations.

Historical Research Agency; Air Force Doctrine Center; Standard Systems Gp.; USAF Counterproliferation Center. **History:** activated 1918. Named for 2nd Lt. William C. Maxwell, killed in air accident Aug. 12, 1920. **Area:** 4,221 acres (includes Gunter Annex). **Runway:** 8,000 ft. **Altitude:** 172 ft. **Personnel:** permanent party military, 6,886; DOD civilians, 3,332. **Housing:** single family, officer, 326, enlisted, 460; unaccompanied, UAQ/UEQ, 348; visiting, VOQ, 1,705, VAQ/VEQ, 506, TLF, 30. **Clinic.**

McChord AFB, Wash. 98438-5000; 10 mi. S of Tacoma. **Phone:** 253-982-1110; DSN 382-1110. **Majcom:** AMC. **Host:** 62nd AW. **Mission:** C-17 operations. Base is adjacent to Ft. Lewis, its primary customer for strategic airlift worldwide. **Major tenants:** 446th AW (AFRC assoc.); Western Air Defense Sector (ANG); 22nd Special Tactics Sq. (AFSOC). **History:** activated May 5, 1938. Named for Col. William C. McChord, killed Aug. 18, 1937. **Area:** 4,616 acres. **Runway:** 10,100 ft. **Altitude:** 323 ft. **Personnel:** permanent party military, 3,975; DOD civilians, 2,148. **Housing:** single family, officer, 229, enlisted, 752; unaccompanied, UOQ, 2, UAQ/UEQ, 752; visiting, VOQ, 68, VAQ/VEQ, 232, TLF, 20. **Dispensary.** Madigan Army Medical Center is located 4 mi. SE.

McConnell AFB, Kan. 67221-5000; SE corner of Wichita. **Phone:** 316-759-6100; DSN 734-1110. **Majcom:** AMC. **Host:** 22nd ARW. **Mission:** KC-135 operations. **Major tenants:** 184th ARW (ANG); 931st Air Refueling Gp. (AFRC assoc.). **History:** activated June 5, 1951. Named for the three McConnell brothers, WWII B-24 pilots from Wichita—Lt. Col. Edwin M. McConnell (died Sept. 1, 1997), Capt. Fred J. McConnell (died in a private airplane crash Oct. 25, 1945), and 2nd Lt. Thomas L. McConnell (killed July 10, 1943). **Area:** 3,533 acres. **Runways:** two, 12,000 ft. each. **Altitude:** 1,371 ft. **Personnel:** permanent party military, 2,940; DOD civilians, 403. **Housing:** single family, officer, 83, enlisted, 506; unaccompanied, UAQ/UEQ, 615; visiting, VOQ, 42, VAQ/VEQ, 44, TLF, 45. **Clinic.**

McGuire AFB, N.J. 08641-5000; 18 mi. SE of Trenton. **Phone:** 609-754-1100; DSN 650-1100. **Majcom:** AMC. **Host:** 305th AMW. **Mission:** C-17 and KC-10 operations. **Major tenants:** 21st Expeditionary Mobility Task Force (AMC); Air Mobility Warfare Center, Ft. Dix, N.J.; N.J. Civil Air Patrol; 108th ARW (ANG), KC-135; 514th AMW (AFRC assoc.). **History:** adjoins Army's Ft. Dix. Formerly Ft. Dix AAB; activated as Air Force base 1949. Named for Maj. Thomas B. McGuire Jr., P-38 pilot, second leading US ace of WWII, Medal of Honor recipient, killed in action Jan. 7, 1945. **Area:** 3,598 acres. **Runways:** 10,001 ft. and 7,129 ft. **Altitude:** 133 ft. **Personnel:** permanent party military, 5,238, DOD civilians, 1,419. **Housing:** single family, officer, 223, enlisted, 1,658; unaccompanied, UAQ/UEQ, 1,162; visiting, VOQ, 33, VAQ/VEQ, 385, TLF, 55. **Clinic.**

Minot AFB, N.D. 58705-5000; 13 mi. N of Minot. **Phone:** 701-723-1110; DSN 453-1110. **Majcom:** ACC. **Host:** 5th BW. **Mission:** B-52 operations. **Major tenant:** 91st SW (AFSPC), Minuteman III, UH-1N. **History:** activated January 1957. Named after the city of Minot, whose citizens donated $50,000 toward purchase of the land for USAF. **Area:** 4,732 acres, plus additional 330 acres for missile sites spread over 8,500 sq. miles. **Runway:** 13,200 ft. **Altitude:** 1,668 ft. **Personnel:** permanent party military, 4,951; DOD civilians, 518. **Housing:** single family, officer, 309, enlisted, 1,324; unaccompanied, 813; visiting, 51, TLF, 15. **Clinic.**

Misawa AB, Japan, APO AP 96319-5000; within Misawa city limits. **Phone:** (cmcl, from CONUS) 011-81-176-53-5181 ext. 226-3075; DSN 315-226-5181. **Majcom:** PACAF. **Host:** 35th FW. **Mission:** F-16C/D operations. **Major tenants:** 301st Intelligence Sq. (ACC); Naval Air Facility; Naval Security Gp. Activity; 750th Military Intelligence Det. (US Army); Co. E, US Marine Support Battalion; Northern Air Defense Force (JASDF). **History:** occupied by US forces September 1945. **Area:** 3,865 acres. **Runway:** 10,000 ft. **Altitude:** 119 ft. **Personnel:** permanent party military, 4,564; DOD civilians, 122. **Housing:** single family, officer, 298, enlisted, 1,810; unaccompanied, UOQ, 40, UAQ/UEQ, 951; visiting, VOQ, 82, VAQ/VEQ, 44, TLF, 40. **Hospital.**

Moody AFB, Ga. 31699-5000; 10 mi. NNE of Valdosta. **Phone:** 229-257-1110; DSN 460-1110. **Majcom:** AFSOC. **Host:** 347th Rescue Wing. **Mission:** HC-130 and HH-60 operations. **Major tenants:** 479th Flying Training Gp. (AETC); 820th Security Forces Gp. (ACC). **History:** activated June 1941. Named for Maj. George P. Moody, killed May 5, 1941. **Area:** 6,050 acres. **Runways:** 9,300 ft. and 8,000 ft. **Altitude:** 235 ft. **Personnel:** permanent party military, 3,733; DOD civilians, 409. **Housing:** single family, officer, 32, enlisted, 271; unaccompanied, 714; visiting, VOQ, 37, VAQ/VEQ, 19, TLF, 32. **Clinic.**

Mountain Home AFB, Idaho 83648-5000; 50 mi. SE of Boise. **Phone:** 208-828-6800; DSN 728-1110. **Majcom:** ACC. **Host:** 366th FW. **Mission:** F-15C/D, F-15E, and F-16CJ/D operations. **Major tenant:** Air Warfare Battlelab. **History:** activated August 1943. **Area:** 9,112 acres. **Runway:** 13,500 ft. **Altitude:** 3,000 ft. **Personnel:** permanent party military, 4,800; DOD civilians, 524. **Housing:** single family, officer, 175, enlisted, 1,260; unaccompanied, 884; visiting, VOQ, 45, VAQ/VEQ, 54, TLF, 16. **Hospital.**

Nellis AFB, Nev. 89191-5000; 8 mi. NE of Las Vegas. **Phone:** 702-652-1110; DSN 682-1110. **Majcom:** ACC. **Host:** 99th ABW. **Mission:** Air Warfare Center manages advanced pilot training and tactics development and integrates test and evaluation programs; its 98th Range Wing oversees Tonopah Test Range, several electronic scoring site GSUs, 5,000 sq.-mile Nellis Range Complex, and two emergency airfields. 57th Wing, A-10A, F-15C/D/E, F-16C/D, F/A-22, HH-60G, and Predator RQ-1A UAV. 57th Wing missions include Red Flag exercises (414th Combat Training Sq.); graduate-level pilot training (USAF Weapons School); support for US Army exercises (549th Combat Training Sq.); training for international personnel in joint firepower procedures and techniques (Hq. USAF Air Ground Operations School); USAF Air Demonstration Sq. (Thunderbirds). 53rd Wing, at 17 locations nationwide, serves as focal point for combat air forces in electronic warfare, armament and avionics, chemical defense, reconnaissance, and aircrew training devices; and operational testing and evaluation of proposed new equipment and systems. 505th Command and Control Wing builds the predominant air and space command and control ability for combined joint warfighters through training, testing, exercising, and experimentation. **Major tenants:** Aerospace Integration Center, OSD Joint Suppression of Enemy Air Defenses, Triservice Reserve Center, 67th Intelligence Gp. (ACC), 66th RQS (AFSOC), 820th RED HORSE Sq. (ACC), 896th Munitions Sq. (AFMC). **History:** activated July 1941 as Las Vegas AAF with Army Air Corps Flexible Gunnery School; closed 1947; reopened 1948. Named for 1st Lt. William H. Nellis, WWII P-47 fighter pilot, killed Dec. 27, 1944. **Area:** Main base is 14,000 acres. NRC occupies 2.9 million acres of restricted air-land use and an additional 7,000 sq.-mile military operating area shared with civilian aircraft. **Runways:** 10,119 ft. and 10,051 ft. **Altitude:** 1,868 ft. **Personnel:** permanent party military, 8,251; DOD civilians, 2,808. **Housing:** single family, officer, 88, enlisted, 1,190; unaccompanied, 1,190; visiting, VOQ, 340, VAQ/VEQ, 354, TLF, 60. **Air Force-VA joint hospital.**

Offutt AFB, Neb. 68113-5000; 8 mi. S of Omaha. **Phone:** 402-294-1110; DSN 271-1110. **Majcom:** ACC. **Host:** 55th Wing. **Mission:** provides worldwide reconnaissance, intelligence, information warfare, and command and control to warfighting commanders and national leadership. **Major**

Minor Active Duty Installations

In addition to the installations listed above, the Air Force has a number of minor installations. These air stations perform various missions, including space operations and missile warning. Here is a listing of such installations with state (or APO), ZIP code, and major command.

Brooks City-Base, San Antonio, Tex. 78235-5115 (AFMC)	DSN 240-1110
Cape Canaveral AFS, Fla. 32925-5000 (AFSPC)	DSN 467-1110
Cape Cod AFS, Mass. 02561-0428 (AFSPC)	DSN 557-2235
Cavalier AFS, N.D. 58220-9314 (AFSPC)	DSN 330-3695
Cheyenne Mountain AFS, Colo. 80914-6066 (AFSPC)	DSN 268-1110
Clear AFS, Alaska, APO AP 99704-0013 (AFSPC)	DSN 317-585-6110
Indian Springs AFAF, Nev. 89018-1230 (ACC)	DSN 682-1110
Onizuka AFS, Calif. 94088-3430 (AFSPC)	DSN 561-3000
Thule AB, Greenland, APO AE 09704-5000 (AFSPC) (ask for Thule operator)	DSN 268-3840

tenants: STRATCOM; Joint Intelligence Center (STRATCOM); Air Force Weather Agency; National Airborne Operations Center (JCS); USAF Heartland of America Band. **History:** activated 1896 as Army's Ft. Crook. Landing field named for 1st Lt. Jarvis J. Offutt, WWI pilot who died Aug. 13, 1918. **Area:** 4,039 acres. **Runway:** 11,700 ft. **Altitude:** 1,048 ft. **Personnel:** permanent party military, 8,359; DOD civilians, 2,134. **Housing:** single family, officer, 344, enlisted, 2,256; unaccompanied, 793; visiting, 171, TLF, 60. **Hospital.**

Osan AB, South Korea, APO AP 96278-5000; 38 mi. S of Seoul. **Phone:** (cmcl, from CONUS) 011-82-31-661-1110; DSN 315-784-1110. **Majcom:** PACAF. **Host:** 51st FW. **Mission:** A/OA-10, C-12, and F-16C/D operations. **Major tenants:** 7th Air Force (PACAF); 5th RS (ACC); 31st SOS (AFSOC); 33rd Rescue Sq. (PACAF); 303rd Intelligence Sq. (AIA); 731st Air Mobility Sq. (AMC); Charlie and Delta Batteries, 1st Battalion, 43rd ADA (Army). **History:** originally designated K-55; runway opened December 1952. Renamed Osan AB in 1956 for nearby town that was the scene of first fighting between US and North Korean forces in July 1950. **Area:** 1,674 acres. **Runway:** 9,000 ft. **Altitude:** 38 ft. **Personnel:** permanent party military, 6,300; DOD civilians, 235. **Housing:** single family, 211; unaccompanied, UOQ, 457, UAQ/UEQ, 3,615; visiting, VOQ, 57, VAQ/VEQ, 20, DV, 350, TLF, 15. **Hospital.**

Patrick AFB, Fla. 32925-3237; 2 mi. S of Cocoa Beach. **Phone:** 321-494-1110; DSN 854-1110. **Majcom:** AFSPC. **Host:** 45th SW. **Mission:** supports DOD, NASA, US Navy (Trident), and other government agency and commercial missile and space programs. Host responsibilities include Cape Canaveral AFS and tracking stations on Antigua and Ascension islands. **Major tenants:** Defense Equal Opportunity Management Institute; Air Force Technical Applications Center; 920th Rescue Wing (AFRC), HC-130, HH-60; Army Training Support Brigade; Joint Task Force for Joint STARS at Melbourne, Fla. **History:** activated 1940. Named for Maj. Gen. Mason M. Patrick, Chief of AEF's Air Service in WWI and Chief of the Air Service/Air Corps, 1921-27. **Area:** 2,341 acres. **Runway:** 9,000 ft. **Altitude:** 9 ft. **Personnel:** permanent party military, 2,200; DOD civilians, 1,550. **Housing:** single family, enlisted, 550; unaccompanied, UAQ/UEQ, 278; visiting, VOQ, 52, VAQ/VEQ, 102, TLF, 71. **Clinic.**

Peterson AFB, Colo. 80914-5000; at eastern edge of Colorado Springs. **Phone:** 719-556-7321; DSN 834-7321. **Majcom:** AFSPC. **Host:** 21st SW. **Mission:** provides missile warning and space control; detects, tracks, and catalogs objects in space. **Major tenants:** NORAD; AFSPC; NORTHCOM; US Army Space and Missile Dfense Command; 302nd AW (AFRC), C-130; Edward J. Peterson Air and Space Museum. **History:** activated 1942. Named for 1st Lt. Edward J. Peterson, killed Aug. 8, 1942. **Area:** 1,277 acres. **Runway:** shared with city. **Altitude:** 6,200 ft. **Personnel:** permanent party military, 5,542; DOD civilians, 4,427. **Housing:** single family, officer, 103, enlisted, 384; unaccompanied, UAQ/UEQ, 704; visiting, VOQ, 100, VAQ/VEQ, 54, TLF, 68. **Clinic.**

Pope AFB, N.C. 28308-2391; 12 mi. NNW of Fayetteville. **Phone:** 910-394-1110; DSN 424-1110. **Majcom:** AMC. **Host:** 43rd AW. **Mission:** C-130 operations. Adjoins Army's Ft. Bragg and provides intratheater combat airlift and close air support for airborne forces and other personnel, equipment, and supplies. **Major tenants:** 23rd Fighter Gp. (ACC), A/OA-10; 18th Air Support Operations Gp. (ACC); 21st and 24th STSs (AFSOC); USAF Combat Control School. **History:** activated 1919. Named after 1st Lt. Harley H. Pope, WWI pilot, killed Jan. 7, 1919. **Area:** 2,198 acres. **Runway:** 7,500 ft. **Altitude:** 218 ft. **Personnel:** permanent party military, 5,790; DOD civilians, 554. **Housing:** single family, officer, 84, enlisted, 543; unaccompanied, UAQ/UEQ, 668; visiting, VOQ, 8, VAQ/VEQ, 159, TLF, 22. **Clinic.**

RAF Lakenheath, UK, APO AE 09461-5000; 70 mi. NE of London; 25 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-52-3000; DSN 226-1110. **Majcom:** USAFE. **Host:** 48th FW (USAFE). **Mission:** F-15C/D and F-15E operations. **GSU:** 85th Group, NAS Keflavik, Iceland. **History:** activated 1941. US forces arrived August 1948; the 48th FW arrived January 1960. Named after nearby village. **Area:** 2,290 acres. **Runway:** 9,000 ft. **Altitude:** 32 ft. **Personnel:** permanent party military, 4,800; DOD civilians, 260; **Housing:** single family, officer, 354, enlisted, 1,967; unaccompanied, UAQ/UEQ, 984; visiting, VOQ, 88, VAQ/VEQ, 48, TLF, 33. **Regional medical center.**

RAF Mildenhall, UK, APO AE 09459-5000; 20 mi. NE of Cambridge. **Phone:** (cmcl, from CONUS) 011-44-1638-54-3000; DSN 238-3000. **Majcom:** USAFE. **Host:** 100th ARW. **Mission:** KC-135R operations. **Major tenants:** 3rd Air Force (USAFE); 352nd SOG (AFSOC), MC-130, MH-53; 95th RS (ACC); 488th Intelligence Sq. (ACC); Naval Air Facility, UC-12M aircraft. **History:** activated 1934; US presence began July 1950. Named after nearby town. **Area:** 1,144 acres. **Runway:** 9,227 ft. **Altitude:** 33 ft. **Personnel:** permanent party military, 4,400; DOD civilians, 540. **Housing:** single family, officer, 64, enlisted, 137; unaccompanied, UAQ/UEQ, 783; visiting, 328, TLF, 36.

Ramstein AB, Germany, APO AE 09094-0385; adjacent to the city of Ramstein, 10 mi. W of Kaiserslautern. **Phone:** (cmcl, from CONUS) 011-49-6371-47-1110; DSN 480-1110. **Majcom:** USAFE. **Host:** 86th AW. **Mission:** C-9, C-20, C-21, and C-130E operations; provides inter- and intratheater airlift, intratheater aeromedical evacuation, and CONUS staging and aeromedical evacuation. 435th ABW commander also serves as commander of the Kaiserslautern Military Community. **Major tenant:** USAFE. **History:** activated and US presence began 1953. **Area:** 3,212 acres. **Runway:** 8,015 ft. **Altitude:** 782 ft. **Personnel:** permanent party military, 14,300; DOD civilians, 6,700. **Housing:** single family, officer, 473, enlisted, 4,588; unaccompanied, UOQ, 32, UAQ/UEQ, 1,795; visiting, 547, TLF, 70. **Clinic.**

Randolph AFB, Tex. 78150-5000; 17 mi. NE of San Antonio. **Phone:** 210-652-1110; DSN 487-1110. **Majcom:** AETC. **Host:** 12th FTW. **Mission:** conducts T-1, T-6, T-37, and T-38 instructor pilot training; Joint Undergraduate Navigator Training in the T-43; and electronic warfare officer training. **Major tenants:** AETC; 19th Air Force; Air Force Personnel Center; Air Force Manpower Agency; Air Force Services Agency; Air Force Recruiting Service. **History:** dedicated June 1930. Named for Capt. William M. Randolph, killed Feb. 17, 1928. **Area:** 5,044 acres. **Runways:** two, 8,350 ft. each. **Altitude:** 761 ft. **Personnel:** permanent party military, 3,930; DOD civilians, 4,261. **Housing:** single family, officer, 218, enlisted, 427; unaccompanied, UOQ, 200, UEQ, 276; visiting, VOQ, 376, VAQ/VEQ, 164, TLF, 30. **Clinic.**

Rhein-Main AB, Germany, APO AE 09050-5000; 5 mi. S of Frankfurt. **Phone:** (cmcl, from CONUS) 011-49-69-699-1110; DSN 330-1110. **Majcom:** USAFE. **Host:** 469th Air Base Gp. **Mission:** contingency operations; provides support for major airlift contingencies. **Major tenants:** 726th Air Mobility Sq., US Army 64th Replacement Co. **History:** activated July 1936. US forces began operations March 1945. Named after the confluence of the Rhein and Main Rivers west of Frankfurt. Base returns to Germany Dec. 31, 2005. **Area:** 533 acres. **Runways:** three, 13,123 ft. each. **Altitude:** 365 ft. **Personnel:** permanent party military, 534; DOD civilians, 273. **Housing:** single family, officer, 61, enlisted, 235; visiting, VOQ, 72, VAQ/VEQ, 83, TLF, 12. Housing is drawing down and will be closed by Oct. 1, 2005. **Clinic.**

Robins AFB, Ga. 31098; 15 mi. SSE of Macon at Warner Robins. **Phone:** 478-926-1110; DSN 468-1001. **Majcom:** AFMC. **Host:** 78th ABW. **Mission:** Warner Robins Air Logistics Center provides worldwide logistics management for the C-5, C-17, C-130, E-8, F-15, U-2, and various special operations forces aircraft and helicopters. Support for general-purpose computers, avionics, missiles, aircraft propellers, vehicles, airborne electronic warfare and communications equipment, airborne bomb- and gun-directing systems, fire-fighting equipment, Joint Tactical Information Distribution System, and emergency software programming of Air Force, other DOD, and allied electronic warfare systems. **Major tenants:** Air Force Reserve Command; 116th Air Control Wing (ACC), E-8; 19th ARG (AMC), KC-135; 5th Combat Communications Gp. (ACC). **History:** activated March 1942. Named for Brig. Gen. Augustine Warner Robins, an early chief of the Materiel Division of the Army Air Corps, who died June 16, 1940. **Area:** 8,700 acres. **Runway:** 12,000 ft. **Altitude:** 294 ft. **Personnel:** permanent party military, 6,452; DOD civilians, 13,247. **Housing:** single family, officer, 108, enlisted, 699; visiting, VOQ, 134, VAQ/VEQ, 157, TLF, 50. **Clinic.**

Schriever AFB, Colo. 80912-5000; 10 mi. E of Colorado Springs. **Phone:** 719-567-1110; DSN 560-1110. **Majcom:** AFSPC. **Host:** 50th SW. **Mission:** command and control of DOD satellites. **Major tenants:** Joint National Integration Center; Space Warfare Center; Space Battlelab; 310th Space Gp. (AFRC). **History:** activated October 1985 as Falcon AFB. Renamed in June 1998 for Gen. Bernard A. Schriever. **Area:** 3,840 acres. **Runway:** none. **Altitude:** 6,267 ft. **Personnel:** permanent party military, 1,492; DOD civilians, 904. **Housing:** none. **Medical and dental clinics.**

Scott AFB, Ill. 62225-5000; 6 mi. ENE of Belleville. **Phone:** 618-256-1110; DSN 576-1110. **Majcom:** AMC. **Host:** 375th AW. **Mission:** C-9 and C-21 operations. **Major tenants:** TRANSCOM; AMC; 18th Air Force; Air Force Communications Agency; Defense Information Technology Contracting Office; 126th ARW (ANG), KC-135; 932nd AW (AFRC), C-9. **History:** activated June 14, 1917. Named for Cpl. Frank S. Scott, the first enlisted man to die in an aircraft accident, killed Sept. 28, 1912. **Area:** 3,230 acres. **Runways:** 10,000 ft. and 8,000 ft. (joint-use airfield). **Altitude:** 453 ft. **Personnel:** permanent party military, 5,753; DOD civilians, 3,246. **Housing:** single family, officer, 298, enlisted, 1,122; unaccompanied, UAQ/UEQ, 569; visiting, VOQ, 222, VAQ/VEQ, 173, TLF, 60. **Hospital.**

Seymour Johnson AFB, N.C. 27531; within city limits of Goldsboro. **Phone:** 919-722-1110; DSN 722-1110. **Majcom:** ACC. **Host:** 4th FW. **Mission:** F-15E operations and training. **Ma-**

jor tenant: 916th ARW (AFRC), KC-135R. **History:** activated June 12, 1942. Named for Navy Lt. Seymour A. Johnson, Goldsboro native, killed March 5, 1941. **Area:** 3,558 acres. **Runway:** 11,758 ft. **Altitude:** 110 ft. **Personnel:** permanent party military, 6,409; DOD civilians, 1,091. **Housing:** single family, officer, 150, enlisted, 1,210; unaccompanied, 652; visiting, VOQ, 63, VAQ/VEQ, 40, DV, 10, TLF, 49. **Clinic.**

Shaw AFB, S.C. 29152-5000; 8 mi. WNW of Sumter. **Phone:** 803-895-1110; DSN 965-1110. **Majcom:** ACC. **Host:** 20th FW. **Mission:** F-16CJ operations. **Major tenants:** 9th Air Force (ACC); CENTCOM Air Forces. **History:** activated Aug. 30, 1941. Named for 1st Lt. Ervin D. Shaw, one of the first Americans to see air action in WWI, killed in France July 9, 1918. **Area:** 121,930 acres. **Runways:** 10,000 ft. and 8,000 ft. **Altitude:** 242 ft. **Personnel:** permanent party military, 5,600; DOD civilians, 1,038. **Housing:** single family, officer, 164, enlisted, 1,538; unaccompanied, 1,112; visiting, 97, TLF, 39. **Hospital** (no emergency room).

Sheppard AFB, Tex. 76311-5000; 5 mi. N of Wichita Falls. **Phone:** 940-676-1110; DSN 736-2511. **Majcom:** AETC. **Host:** 82nd TRW. **Mission:** largest of AETC's four technical training centers. Conducts resident training in aircraft maintenance, civil engineering, communications, transportation, and various medical specialties; provides instruction in a wide range of specialties at more than 40 USAF installations worldwide. **Major tenant:** 80th FTW (AETC), conducts T-37 and T-38 UPT, instructor pilot training in the Euro-NATO Joint Jet Pilot Training program, and Introduction to Fighter Fundamentals course with AT-38 aircraft. **History:** activated June 14, 1941. Named for US Sen. Morris E. Sheppard, who died April 9, 1941. **Area:** 6,158 acres. **Runways:** 13,101 ft., 10,003 ft., 7,021 ft., and 6,000 ft. **Altitude:** 1,019 ft. **Personnel:** permanent party military, 3,932; DOD civilians, 1,451. **Housing:** single family, officer, 200, enlisted, 1,037; unaccompanied, UOQ, 187, UAQ/UEQ, 291; visiting, VOQ, 427, VAQ/VEQ, 1,363, TLF, 77. **Clinic.**

Spangdahlem AB, Germany, APO AE 09126-5000; 20 mi. NE of Trier; 9 mi. E of Bitburg. **Phone:** (cmcl, from CONUS) 011-49-6565-61-1110; DSN 452-1110. **Majcom:** USAFE. **Host:** 52nd FW. **Mission:** A/OA-10A and HARM-equipped F-16CJ operations; air control squadron ops with logistics responsibilities at dozens of GSUs. **History:** built by the French in 1951 and turned over to US in 1952. Named after nearby town. **Area:** 1,616 acres. **Runway:** 10,000 ft. **Altitude:** 1,196 ft. **Personnel:** permanent party military, 5,500; DOD civilians, 230. **Housing:** single family, officer, 126, enlisted, 1,299; unaccompanied, UAQ/UEQ, 856, UOQ, 8; visiting, 114, TLF, 52. **Hospital.**

Tinker AFB, Okla. 73145-3010; 8 mi. SE of Oklahoma City. **Phone:** 405-732-7321; DSN 884-1110. **Majcom:** AFMC. **Host:** 72nd ABW. **Mission:** Oklahoma City Air Logistics Center manages and repairs the engines that power cruise missiles and a variety of Air Force and Navy aircraft. The center also accomplishes aircraft modifications and repairs and maintains bombers, refuelers, and reconnaissance aircraft, including the B-1, B-2, B-52, C/KC-135, E-3 AWACS, and E-6 Mercury. **Major tenants:** 552nd Air Control Wing (ACC), E-3; Navy Strategic Communications Wing One, E-6; 507th ARW (AFRC), KC-135; 513th Air Control Gp. (AFRC assoc.), E-3; Defense Information Systems Agency; Defense Logistics Agency; Defense Distribution Center Oklahoma; 3rd Combat Communications Gp. (ACC); 38th Engineering Installation Gp. (AFMC). **History:** activated March 1942. Named for Maj. Gen. Clarence L. Tinker, who went down at sea June 7, 1942, while leading a group of LB-30 bombers against Japan. **Area:** 5,033 acres. **Runways:** 11,100 ft. and 10,000 ft. **Altitude:** 1,291 ft. **Personnel:** permanent party military, 8,400; DOD civilians, 15,242. **Housing:** single family, officer, 107, enlisted, 587; unaccompanied, UAQ/UEQ, 1,220; visiting, VOQ, 109, VAQ/VEQ, 50, TLF, 40. **Clinic.**

Travis AFB, Calif. 94535-5000; 50 mi. NE of San Francisco at Fairfield. **Phone:** 707-424-1110; DSN 837-1110. **Majcom:** AMC. **Host:** 60th AMW. **Mission:** C-5 and KC-10 operations. **Major tenants:** 15th Expeditionary Mobility Task Force (AMC); 349th AMW (AFRC assoc.); USAF Band of the Golden West; Air Museum. **History:** activated May 17, 1943. Named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950. **Area:** 6,383 acres. **Runways:** two, approx. 11,000 ft. each. **Altitude:** 62 ft. **Personnel:** permanent party military, 7,869; DOD civilians, 3,612. **Housing:** single family, officer, 343, enlisted, 2,384; unaccompanied, UAQ/UEQ, 1,627; visiting, VOQ, 260, VAQ/VEQ, 212, TLF, 69. **David Grant Medical Center.**

Tyndall AFB, Fla. 32403-5000; 12 mi. E of Panama City. **Phone:** 850-283-1113; DSN 523-1113. **Majcom:** AETC. **Host:** 325th FW. **Mission:** F-15 and F/A-22 operations; trains USAF F-15 and F/A-22 pilots. **Major tenants:** 1st Air Force (ANG); Southeast Air Defense Sector (ANG); 53rd Weapons Evaluation Gp. (ACC); Air Force Civil Engineer Support Agency. **History:** activated Dec. 7, 1941. Named for 1st Lt. Frank B. Tyndall, WWI fighter pilot killed July 15, 1930. **Area:** 29,102 acres. **Runways:** 10,000 ft., 8,075 ft., and 7,000 ft. **Altitude:** 18 ft. **Personnel:** permanent party military, 2,801; DOD civilians, 538. **Housing:** single family, officer, 123, enlisted, 801; unaccompanied, UAQ/UEQ, 448; visiting, VOQ, 219, VAQ/VEQ, 388, TLF, 40. **Clinic.**

US Air Force Academy, Colo. 80840-5025; N of Colorado Springs. **Phone:** 719-333-1110; DSN 333-1110. **Host:** USAFA. **Mission:** inspires and develops outstanding young men and women to become Air Force officers with knowledge, character, and discipline. **History:** established April 1, 1954. Moved to permanent location August 1958. **Area:** 18,325 acres. **Runways:** 4,500 ft., 3,500 ft., and 2,300 ft. **Altitude:** 7,200 ft. **Personnel:** permanent party military, 1,960; DOD civilians, 1,295. **Housing:** single family, officer, 393, enlisted, 848; unaccompanied, 164; visiting, 83, TLF, 30. **Hospital.**

Vance AFB, Okla. 73705-5000; 3 mi. SSW of Enid. **Phone:** 580-213-5000; DSN 448-7110. **Majcom:** AETC. **Host:** 71st FTW. **Mission:** provides Joint SUPT in T-1, T-37, and T-38 aircraft. **History:** activated November 1941. Named for Lt. Col. Leon R. Vance Jr., Enid native, 1939 West Point graduate, and Medal of Honor recipient, killed July 26, 1944. **Area:** 4,555 acres. **Runways:** 9,200 ft., 9,200 ft., and 5,001 ft. **Altitude:** 1,307 ft. **Personnel:** permanent party military, 1,109; DOD civilians, 140. **Housing:** single family, officer, 112, enlisted, 54; unaccompanied, UOQ, 202, UAQ/UEQ, 108; visiting, 64, TLF, 10. **Clinic.**

Vandenberg AFB, Calif. 93437-5000; 8 mi. NNW of Lompoc. **Phone:** 805-606-1110; DSN 276-1110. **Majcom:** AFSPC. **Host:** 30th SW. **Mission:** conducts polar-orbiting space launches and supports R&D tests and launch range operations for DOD, USAF, and NASA space, ballistic missile, and aeronautical systems and commercial space launches; provides test support for DOD space and ICBM systems; furnishes facilities and essential services to more than 36 aerospace contractors. **Major tenants:** 14th Air Force (AFSPC); 381st Training Gp. (AETC); 576th Flight Test Sq. (Space Warfare Center). **History:** originally Army's Camp Cooke. Activated October 1941; taken over by USAF June 7, 1957. Renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff. **Area:** 98,400 acres. **Runway:** 15,000 ft. **Altitude:** 367 ft. **Personnel:** permanent party military, 3,400; DOD civilians, 1,400. **Housing:** single family, officer, 403, enlisted, 1,566; unaccompanied, dorm rooms, 670, UOQ, 43, UAQ/UEQ, 59; visiting, VOQ, 111, VAQ/VEQ, 124, DV, 18, TLF, 26. **Clinic.**

Whiteman AFB, Mo. 65305-5000; 2 mi. S of Knob Noster. **Phone:** 660-687-1110; DSN 975-1110. **Majcom:** ACC. **Host:** 509th BW. **Mission:** B-2 operations. **Major tenants:** 442nd FW (AFRC), A/OA-10; 1st Battalion, 135th Aviation Regiment (ARNG); Mobile Inshore Undersea Warfare Unit 114 (Navy Reserve); Joint Fires Network Unit 1 (Navy Reserve). **History:** activated 1942. Named for 2nd Lt. George A. Whiteman, first pilot to die in aerial combat during the attack on Pearl Harbor. **Area:** 5,219 acres. **Runway:** 12,400 ft. **Altitude:** 871 ft. **Personnel:** permanent party military, 4,948; DOD civilians, 1,702. **Housing:** single family, officer, 102, enlisted, 1,027; unaccompanied, 674; visiting, VOQ, 52, VAQ/VEQ, 35, TLF, 31. **Clinic.**

Wright-Patterson AFB, Ohio 45433; 10 mi. ENE of Dayton. **Phone:** 937-257-1110; DSN 787-1110. **Majcom:** AFMC. **Host:** 88th ABW. **Mission:** Aeronautical Systems Center develops, acquires, modernizes, and sustains aerospace systems. **Major tenants:** Air Force Materiel Command; Materiel System Gp.; Air Force Research Laboratory (AFMC); Air Force Security Assistance Center (AFMC); 445th AW (AFRC), C-141; Air Force Institute of Technology (AETC); National Museum of the US Air Force. **History:** originally separate, Wright Field and Patterson Field were merged and redesignated Wright-Patterson AFB Jan. 13, 1948. Named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918. The Wright brothers did much of their early flying on Huffman Prairie, now in Area C of present base. The prairie is part of the Dayton Aviation Heritage National Historical Park. Site of US Air Force Marathon, held annually on Saturday nearest Sept. 18. **Area:** 8,357 acres. **Runway:** 12,600 ft. **Altitude:** 824 ft. **Personnel:** permanent party military, 8,002; DOD civilians, 11,343. **Housing:** single family, officer, 836, enlisted, 1,603; unaccompanied, UAQ/UEQ, 576; visiting, 469, TLF, 38. **Wright-Patterson Medical Center.**

Yokota AB, Japan, APO AP 96328-5000; approx. 28 mi. W of downtown Tokyo. **Phone:** (cmcl, from CONUS) 011-81-311-755-1110; DSN 315-225-1110. **Majcom:** PACAF. **Host:** 374th AW. **Mission:** C-21, C-130, and UH-1N operations. Primary aerial port in Japan. **Major tenants:** US Forces, Japan; 5th Air Force (PACAF); 730th AMS (AMC); Det. 1, Air Force Band of the Pacific-Asia; American Forces Network Tokyo; DFAS-Japan. **History:** opened as Tama AAF by the Japanese in 1939. **Area:** 1,750 acres. **Runway:** 11,000 ft. **Altitude:** 457 ft. **Personnel:** permanent party military, 3,414; DOD civilians, 199. **Housing:** single family, officer, 683, enlisted, 1,956; unaccompanied, UOQ, 184, UAQ/UEQ, 896; visiting, VOQ, 202, VAQ/VEQ, 23, TLF, 189. **Hospital.**

ANG and AFRC Installations

This section consolidates Air National Guard and Air Force Reserve Command facilities into a single listing. Units are listed by base names or according to the airports whose facilities they share. In addition, some ANG and AFRC units are located on USAF bases and are included as major tenants on those bases in the "Major Active Duty Installations" section.

ANG and AFRC personnel are organized into two categories. Part-time personnel are traditional Guardsmen and Reservists who work in the private sector during the week, serve in ANG or AFRC one weekend each month, and go on active duty for two weeks during the year. If called up by the President, they go on active military status.

ANG's second category, full-time support personnel, are Title 32 Active Guard Reserve (AGR), Title 32 civilians, and Title 5 civilians. Guard AGR positions are controlled by the state. They do not serve at the national level. They receive the same benefits as regular active duty military. Title 32 civilian personnel are civilians employed full-time by the Guard and must also serve in military status one weekend per month and for two weeks of training per year. They can also be activated and mobilized during times of national crisis. Title 5 civilian personnel are federal civilian employees who hold administrative positions in ANG.

AFRC's second category, full-time support personnel, are Title 32 AGR, Title 32 Air Reserve Technicians (ART), and Title 5 civilians. Reservists in AGR positions serve primarily in flight training and flight testing units, as recruiters, or at the headquarters level. They receive the same benefits as regular active duty military. Title 32 ARTs are full-time federal civilian employees who serve in the same position as Reservists at least one weekend per month and for two weeks of training per year. They can also be activated and mobilized during times of national crisis. Title 5 personnel are federal civilian employees who hold administrative positions in AFRC.

Allen C. Thompson Field, Miss. 39232-8881; 6 mi. E of Jackson. **Phone:** 601-936-8370; DSN 731-9370. **Unit:** 172nd Airlift Wing (ANG). **Area:** 140 acres. **Runway:** 8,500 ft. **Altitude:** 346 ft. **Full-time personnel:** 279.

Alpena County Arpt., Mich. 49707; 5 mi W of Alpena. **Phone:** 989-354-6210; DSN 741-3210. **Unit:** Combat Readiness Training Center (ANG). **Area:** 610 acres. **Runways:** 9,000 ft. and 5,030 ft. **Altitude:** 682 ft. **Full-time personnel:** 83.

AGS	Air Guard Station
ANGB	Air National Guard Base
ANGS	Air National Guard Station
ARB	Air Reserve Base
Arpt.	Airport
ARS	Air Reserve Station
JRB	Joint Reserve Base
NAS	Naval Air Station

Atlantic City Arpt., N.J. 08234-9500; 9 mi. NW of Atlantic City. **Phone:** 609-645-6000; DSN 455-6000. **Unit:** 177th Fighter Wing (ANG). **Area:** 296 acres. **Runways:** 10,000 ft. and 6,144 ft. **Altitude:** 71 ft. **Full-time personnel:** 272.

Bangor Arpt., Maine 04401-3051; within city of Bangor. **Phone:** 207-990-7700; DSN 698-7700. **Units:** 101st Air Refueling Wing (ANG); 776th Radar Sq. (ACC). **Area:** 503 acres. **Runway:** 11,400 ft. **Altitude:** 178 ft. **Full-time personnel:** 306. Commissary; exchange.

Barnes Arpt., Mass. 01085-1482; 3 mi. N of downtown Westfield. **Phone:** 413-568-9151; DSN 636-9210. **Unit:** 104th Fighter Wing (ANG). **Area:** 186 acres. **Runway:** 9,000 ft. **Altitude:** 271 ft. **Full-time personnel:** 263.

Birmingham Arpt., Ala. 35217-3545, 7 mi. E of Birmingham. **Phone:** 205-714-2000; DSN 778-2210. **Unit:** 117th Air Refueling Wing (ANG). **Area:** 145 acres. **Runway:** 10,000 ft. **Altitude:** 644 ft. **Full-time personnel:** 240.

Boise Air Terminal (Gowen Field), Idaho 83705-8006; 1 mi. S of Boise. **Phone:** 208-422-5322; DSN 422-5322. **Units:** 124th Wing (ANG). Also host for the Army National Guard (ARNG); Army Reserve; Army Research Institute; Navy/Marine Corps Reserves; and Civil Air Patrol. **History:** named for Lt. Paul R. Gowen, killed in B-10 crash in Panama July 11, 1938. **Area:** 576 acres. **Runway:** 9,800 ft. **Altitude:** 2,836 ft. **Full-time personnel:** 457. Limited transient facilities available during ARNG camps.

Bradley Arpt., Conn. 06026-9309; 15 mi. N of Hartford. **Phone:** 860-292-2526; DSN 636-8310. **Units:** 103rd Fighter Wing (ANG); ARNG aviation battalion. **History:** named for Lt. Eugene M. Bradley, killed in P-40 crash August 1941. **Area:** 148 acres. **Runway:** 9,600 ft. **Altitude:** 172 ft. **Full-time personnel:** 278.

Burlington Arpt., Vt. 05403-5872; 1 mi. E of Burlington. **Phone:** 802-660-5215; DSN 220-5215. **Unit:** 158th Fighter Wing (ANG). **Area:** 230 acres. **Runway:** 7,800 ft. **Altitude:** 355 ft. **Full-time personnel:** 297.

Capital Arpt., Ill. 62707-5001; 4 mi. NW of Springfield. **Phone:** 217-757-1219; DSN 892-8219. **Unit:** 183rd Fighter Wing (ANG). **Area:** 91 acres. **Runways:** 8,000 ft., 7,000 ft., and 5,300 ft. **Altitude:** 588 ft. **Full-time personnel:** 304.

Channel Islands ANGS, Calif. 93041-4002, 3 mi. SE of Oxnard. **Phone:** 805-986-8000; DSN 893-7000. **Unit:** 146th Airlift Wing (ANG). **Area:** 206 acres. **Runway:** 11,100 ft. **Altitude:** 12 ft. **Full-time personnel:** 290.

Charlotte/Douglas Arpt., N.C. 28208, 6 mi. W of downtown Charlotte. **Phone:** 704-391-4100; DSN 583-9129. **Unit:** 145th Airlift Wing (ANG). **Area:** 79 acres. **Runway:** 10,000 ft. **Altitude:** 745 ft. **Full-time personnel:** 285.

Cheyenne Arpt., Wyo. 82009. **Phone:** 307-772-6110; DSN 943-6110. **Unit:** 153rd Airlift Wing (ANG). **Area:** 77 acres. **Runway:** 9,202 ft. **Altitude:** 6,250 ft. **Full-time personnel:** 252.

Dannelly Field, Ala. 36108; 7 mi. SW of downtown Montgomery. **Phone:** 334-394-7200; DSN 358-9200. **Units:** 187th Fighter Wing (ANG); 232nd Combat Communications Sq. **History:** named for Ens. Clarence Dannelly, Navy pilot killed during WWII. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 221 ft. **Full-time personnel:** 268.

Des Moines Arpt., Iowa 50321-2799; within Des Moines. **Phone:** 515-256-8210; DSN 946-8210. **Unit:** 132nd Fighter Wing (ANG). **Area:** 162 acres. **Runway:** 9,000 ft. **Altitude:** 942 ft. **Full-time personnel:** 304.

Dobbins ARB, Ga. 30069-4904; 16 mi. NW of Atlanta. **Phone:** 678-655-5000; DSN 625-1110. **Units:** Hq. 22nd Air Force (AFRC); 94th Airlift Wing (AFRC); Hq. Ga. ANG; Army Aviation Group (Ga. ARNG); US Army Reserve Center; 283rd Combat Communications Sq.; and Marine Corps Reserve Center Atlanta. **History:** activated 1943. Named for Capt. Charles Dobbins, pilot killed in WWII. **Area:** 1,660 acres. NAS Atlanta and Lockheed Martin Aeronautical Systems Co./Air Force Plant 6 adjoin Dobbins ARB and use airfield facilities. **Runway:** 10,000 ft. **Altitude:** 193 ft. **Full-time personnel:** AFRC, 385, ANG, 29.

Duke Field, Fla. 32542-6644; 6 mi. S of Crestview. **Phone:** 850-883-6347; DSN 875-6347. **Unit:** 919th Special Operations Wing (AFRC). **History:** Named for Lt. Robert L. Duke, pilot killed Dec. 29, 1943, in test flight. **Area:** 1,348 acres. **Runway:** 8,000 ft. **Altitude:** 193 ft. **Full-time personnel:** active duty, 300; ARTs, 300.

Duluth Arpt., Minn. 55811-6036; 5 mi. WNW of Duluth. **Phone:** 218-788-7210; DSN 825-7210. **Unit:** 148th Fighter Wing (ANG). **Area:** 285 acres. **Runway:** 10,150 ft. **Altitude:** 1,430 ft. **Full-time personnel:** 282.

Eastern West Virginia Arpt. (Shepherd Field), W. Va. 25401-7702; 4 mi. S of Martinsburg. **Phone:** 304-262-5100; DSN 242-9210. **Unit:** 167th Airlift Wing (ANG). **Area:** 206 acres. **Runway:** 7,000 ft. **Altitude:** 557 ft. **Full-time personnel:** 278.

Ellington Field, Tex. 77034-5586; a city of Houston airport 10 mi. SE of downtown Houston. **Phone:** 281-929-2337; DSN 454-2337. **Units:** 147th Fighter Wing (ANG); 111th FIS, NASA Flight Operations; US Coast Guard; ARNG; FAA. **History:** named for Lt. Eric L. Ellington, pilot killed November 1913. **Area:** 190 acres. **Runway:** 9,000 ft. **Altitude:** 34 ft. **Full-time personnel:** 272.

Forbes Field, Kan. 66619-5370; 6 mi. S of Topeka. **Phone:** 785-861-4210; DSN 720-4210. **Unit:** 190th Air Refueling Wing (ANG). **History:** named for Maj. Daniel H. Forbes Jr., pilot killed June 5, 1948, test-flying the Northrop YB-49 "Flying Wing." **Area:** 193 acres. **Runway:** 12,819 ft. **Altitude:** 1,079 ft. **Full-time personnel:** 253.

Fort Smith Arpt., Ark. 72903; within Fort Smith. **Phone:** 501-648-5210; DSN 962-8210. **Unit:** 188th Fighter Wing (ANG). **Area:** 130 acres. **Runway:** 8,000 ft. **Altitude:** 468 ft. **Full-time personnel:** 280.

Fort Wayne Arpt., Ind. 46809-0122; 8 mi. SSW of downtown Fort Wayne. **Phone:** 219-478-3210; DSN 786-1210. **Unit:** 122nd Fighter Wing (ANG). **Area:** 166 acres. **Runway:** 12,000 ft. **Altitude:** 802 ft. **Full-time personnel:** 277.

Francis S. Gabreski Arpt., N.Y. 11978-1201;

1 mi. N of Westhampton Beach. **Phone:** 631-288-7335; DSN 456-7335. **Unit:** 106th Rescue Wing (ANG). **History:** named for Col. Francis S. Gabreski, WWII and Korean War ace. **Area:** 88 acres. **Runways:** 9,000 ft., 5,000 ft., and 3,000 ft. **Altitude:** 68 ft. **Full-time personnel:** 245.

Fresno Yosemite Arpt., Calif. 93727-2199; within Fresno. **Phone:** 559-454-5100; DSN 949-9100. **Unit:** 144th Fighter Wing (ANG). **Area:** 111 acres. **Runway:** 9,222 ft. **Altitude:** 332 ft. **Full-time personnel:** 278.

General Mitchell Arpt./ARS, Wis. 53207-6299; SW corner of Milwaukee. **AFRC phone:** 414-482-5000; DSN 741-5000. **ANG phone:** 414-944-8410; DSN 580-8410. **Units:** 440th Airlift Wing (AFRC); 128th Air Refueling Wing (ANG). **History:** named for Maj. Gen. William "Billy" Mitchell. **Area:** AFRC, 103 acres; ANG, 70 acres. **Runway:** 9,690 ft. **Altitude:** 670 ft. **Full-time personnel:** AFRC, 359; ANG, 267.

Greater Peoria Arpt., Ill. 61607-5023; 5 mi. SW of Peoria. **Phone:** 309-633-5210; DSN 724-5210. **Unit:** 182nd Airlift Wing (ANG). **Area:** 339 acres. **Runways:** 10,000 ft. and 8,006 ft. **Altitude:** 656 ft. **Full-time personnel:** 289.

Great Falls Arpt., Mont. 59404-5570; 5 mi. SW of Great Falls. **Phone:** 406-791-6285; DSN 279-2285. **Unit:** 120th Fighter Wing (ANG). **Area:** 141 acres. **Runways:** 10,502 ft. and 6,357 ft. **Altitude:** 3,679 ft. **Full-time personnel:** 290.

Grissom ARB, Ind. 46971-5000; 15 mi. N of Kokomo. **Phone:** 765-688-5211; DSN 928-1110. **Unit:** 434th Air Refueling Wing (AFRC). **History:** activated January 1943 as Bunker Hill NAS. Reactivated June 1954 as Bunker Hill AFB. Renamed in May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967, in Apollo capsule fire. Realigned as an AFRC base Oct. 1, 1994. **Area:** 1,127 acres. **Runway:** 12,500 ft. **Altitude:** 800 ft. **Housing:** 485 transient. **Full-time personnel:** 327.

Gulfport-Biloxi Arpt., Miss. 39507; within Gulfport. **Phone:** 228-214-6002; DSN 363-6002. **Units:** Combat Readiness Training Center; 255th Air Control Sq. (ANG); 209th Civil Engineering Sq. An air-to-ground gunnery range is located 70 mi. N of site. **History:** established as a Permanent Field Training Site in 1954 and redesignated as a CRTC in 1990. **Area:** 224 acres. **Runway:** 9,000 ft. **Altitude:** 26 ft. **Full-time personnel:** 119.

Hancock Field, N.Y. 13211-7099; 4 mi. NE of Syracuse. **Phone:** 315-454-6100; 1-800-982-3696; DSN 489-9100. **Units:** 174th Fighter Wing (ANG); 152nd Air Operations Gp.; 274th Air Support Operations Sq. (N.Y. ARNG). **Area:** 356 acres. **Runways:** 9,300 ft. and 7,500 ft. **Altitude:** 410 ft. **Full-time personnel:** 325.

Harrisburg Arpt., Pa. 17057; 6 mi. SE of Harrisburg. **Phone:** 717-948-2200; DSN 423-2200. **Unit:** 193rd Special Operations Wing (ANG). **Area:** 39 acres. **Runway:** 9,501 ft. **Altitude:** 355 ft. **Full-time personnel:** 297.

Hector Arpt., Fargo, N.D. 58102. **Phone:** 701-241-7241; DSN 362-8110. **Unit:** 119th Fighter Wing (ANG). **Area:** 250 acres. **Runway:** 9,545 ft. **Altitude:** 896 ft. **Full-time personnel:** 302.

Homestead ARB, Fla. 33039-1299; 5 mi. NE of Homestead. **Phone:** 305-224-7000; DSN 791-7000. **Units:** 482nd Fighter Wing (AFRC); Det. 1, 125th Fighter Wing (Fla. ANG, NORAD); US Customs Miami Aviation Branch; Fla. ARNG 50th ASG; Defense Logistics Agency; Civil Air Patrol Sq. 279; AFOSI; Naval Intelligence; FBI. **Area:** approx. 1,000 acres. **Runway:** 11,200 ft. **Altitude:** 11 ft. **Full-time personnel:** AFRC, 279; ANG, 17. Billeting available.

Hulman Arpt., Ind. 47803; 6 mi. E of Terre Haute. **Phone:** 812-877-5210; DSN 724-1210. **Unit:** 181st Fighter Wing (ANG). **Area:** 279 acres. **Runways:** 9,025 ft. and 7,250 ft. **Altitude:** 585 ft. **Full-time personnel:** 274.

Jacksonville Arpt., Fla. 32218-7933; within Jacksonville. **Phone:** 904-741-7100; DSN 641-7100. **Unit:** 125th Fighter Wing (ANG). **Area:** 332 acres. **Runway:** 10,000 ft. **Altitude:** 25 ft. **Full-time personnel:** 359.

Joe Foss Field, S.D. 57104-0264; N side of Sioux Falls. **Phone:** 605-988-5700; DSN 798-7700. **Unit:** 114th Fighter Wing (ANG). **History:** named for Brig. Gen. Joseph J. Foss, WWII ace, former governor, former AFA national president, and founder of the S.D. ANG. **Area:** 214 acres. **Runways:** 9,000 ft. and 5,070 ft. **Altitude:** 1,420 ft. **Full-time personnel:** 280.

Kelly Field Annex, Tex. 78236-0112; 5 mi. SW of San Antonio. **Phone:** 210-671-1110; DSN 473-1110. **Units:** 149th Fighter Wing (ANG); 433rd Airlift Wing (AFRC). **History:** activated Nov. 21, 1916, and deactivated July 13, 2001. Named for Lt. George E.M. Kelly, first Army pilot to lose his life flying a military aircraft, killed May 10, 1911. **Area:** 4,660 acres. **Runway:** 11,550 ft. **Altitude:** 689 ft. **Full-time personnel:** 323.

Key Field, Miss. 39307-7112; 3 mi. S of Meridian. **Phone:** 601-484-9000; DSN 778-9000. **Units:** 186th Air Refueling Wing (ANG); 238th Air Support Operations Sq. (ANG). **History:** named after Fred and Al Key, pioneers in air-to-air refueling and holders of flight endurance record (27 continuous days) in 1935 in *Ole Miss,* on permanent display at the National Air and Space Museum. **Area:** 117 acres. **Runways:** 10,000 ft. and 5,000 ft. **Altitude:** 295 ft. **Full-time personnel:** 304.

Klamath Falls Arpt./Kingsley Field, Ore. 97603; 5 mi. S of Klamath Falls. **Phone:** 541-885-6350; DSN 830-6350. **Units:** 173rd Fighter Wing (ANG); 114th FS (ANG); 116th OLAA (ANG); 270th ATCS (ANG). **Area:** 381 acres. **Runway:** 10,301 ft. **Altitude:** 4,088 ft. **Full-time personnel:** 415.

Kulis ANGB, Alaska 99502-1988. **Phone:** 907-249-1176; DSN 317-626-1176. **Units:** 176th Wing (ANG); 144th Airlift Sq. (ANG); 210th Rescue Sq. (ANG). **History:** named for Lt. Albert Kulis, killed in training flight in 1954. **Area:** 129 acres. **Runway:** 10,897 ft. **Altitude:** 94 ft. **Full-time personnel:** 433.

Lambert-St. Louis Arpt., Mo. 63044-2371; 20 mi. NW of downtown St. Louis. **Phone:** 314-263-6222; DSN 693-6222. **Unit:** 131st Fighter Wing (ANG). **Area:** 48 acres. **Runway:** 11,000 ft. **Altitude:** 604 ft. **Full-time personnel:** 368.

Lincoln Arpt., Neb. 68524-1880; 4 mi. NW of downtown Lincoln. **Phone:** 402-458-1234; DSN 946-1234. **Units:** 155th Air Refueling Wing (ANG); ARNG unit. **Area:** 179 acres. **Runways:** 13,500 ft. and 8,620 ft. **Altitude:** 1,050 ft. **Full-time personnel:** 280.

Louisville Arpt./AGS (Standiford Field), Ky. 40213; 5 mi. S of downtown Louisville. **Phone:** 502-364-9400; DSN 989-4400. **Units:** 123rd Airlift Wing (ANG); 223rd Communications Sq. (ANG). **Area:** 81 acres. **Runways:** 10,000 ft. and 7,800 ft. **Altitude:** 500 ft. **Full-time personnel:** 318.

Luis Munoz Marin Arpt., Puerto Rico 00979-1502; E of San Juan. **Phone:** 787-253-5101; DSN 860-9101. **Units:** 156th Airlift Wing (ANG); 612th ASOS Det. Coronet Oak. **Area:** 95 acres. **Runway:** 10,000 ft. **Altitude:** 6 ft. **Full-time personnel:** 305.

Mansfield Lahm Arpt., Ohio 44903-0179; 3 mi. N of Mansfield. **Phone:** 419-520-6100; DSN 696-6100. **Unit:** 179th Airlift Wing (ANG). **History:** named for nearby city and aviation pioneer Brig. Gen. Frank P. Lahm in 1948. **Area:** 67 acres. **Runways:** 9,000 ft. and 6,795 ft. **Altitude:** 1,299 ft. **Full-time personnel:** 230.

March ARB, Calif. 92518-9888; 9 mi. SE of downtown Riverside. **Phone:** 951-655-1110; DSN 447-1110. **ANG Phone:** 951-655-2556; DSN 447-2556. **Units:** 4th Air Force (AFRC); 452nd Air Mobility Wing (AFRC); Det.1, 144th FW (Calif. ANG); 163rd Air Refueling Wing (Calif. ANG); 4th Combat Camera Sq.; American Forces Radio and Television Broadcast Center; Defense Visual Information Center; Air Force Audit Agency directorate; US Customs Service Domestic Air Interdiction Coordination Center. **History:** activated March 1, 1918; named for 2nd Lt. Peyton C. March Jr., who died of crash injuries Feb. 18, 1918. **Area:** 2,300 acres. **Runway:** 13,300 ft. **Altitude:** 1,530 ft. **Full-time personnel:** AFRC, 669; ANG, 262. **Housing:** VOQ, 138, VAQ, 302.

Martin State Arpt., Md. 21220-2899; 8 mi. NE of Baltimore. **Phone:** 410-918-6210; DSN 243-6210. **Unit:** 175th Wing (ANG). **Area:** 175 acres. **Runway:** 8,100 ft. **Altitude:** 21 ft. **Full-time personnel:** 383.

McEntire ANGS, S.C. 29044; 15 mi. E of Columbia. **Phone:** 803-647-8300; DSN 583-8201. **Units:** 169th Fighter Wing (ANG); 240th Combat Communications Sq. (ANG); 245th Air Traffic Control Sq. (ANG); Combined Support Maintenance Shop (ARNG); 1/151st Aviation Battalion (ARNG). **History:** named for ANG Brig. Gen. B.B. McEntire Jr., killed in 1961 F-104 accident. **Area:** 2,301 acres. **Runway:** 9,000 ft. **Altitude:** 252 ft. **Full-time personnel:** 330.

McGhee Tyson ANGB, Tenn. 37777; 10 mi. SW of Knoxville. **Phone:** 865-985-3200; DSN 266-3200. **Units:** 134th Air Refueling Wing (ANG); 119th Air Control Sq.; 228th Combat Communications Sq.; ANG's I.G. Brown Training and Education Center. **Area:** 346 acres. **Runway:** 9,008 ft. **Altitude:** 923 ft. **Full-time personnel:** 332.

Memphis Arpt., Tenn. 38118; within Memphis. **Phone:** 901-541-7120; DSN 726-7120. **Unit:** 164th Airlift Wing (ANG). **Area:** 103 acres. **Runway:** 11,120 ft. **Altitude:** 332 ft. **Full-time personnel:** 278. Fitness center and mini-exchange.

Minneapolis-St. Paul Arpt./ARS, Minn. 55450-2100; in Minneapolis, near confluence of the Mississippi and Minnesota Rivers. **AFRC phone:** 612-713-1110; DSN 783-1000. **ANG phone:** 612-713-2501; DSN 783-2501. **Units:** 934th Airlift Wing (AFRC), C-130; 133rd Airlift Wing (ANG), C-130; 210th Engineering Installation Sq. (ANG); Naval Reserve Readiness Command, Region 16; Civil Air Patrol, NCLR, and MNLO; Rothe Development Inc. (AFRC). **Area:** AFRC, 300 acres; ANG, 128 acres. **Runways:** 11,006 ft., 10,000 ft., and 8,200 ft. **Altitude:** 840 ft. **Full-time personnel:** AFRC, 176; ANG, 267. Lodging, clubs, fitness center, and exchange.

Moffett Federal Airfield, Calif. 94035; 2 mi. N of Mountain View. **Phone:** 650-603-9129; DSN 359-9129. **Unit:** 129th Rescue Wing (ANG). **Area:** 97 acres. **Runway:** 9,200 ft. **Altitude:** 34 ft. **Full-time personnel:** 271.

NAS JRB Fort Worth, Tex. 76127-6200, 7 mi. NW of Fort Worth. **Navy hosted switchboard:** 817-782-5000; DSN 739-5000. **ANG Phone:** 817-852-3202; DSN 874-3202. **Units:** 10th Air Force and 301st Fighter Wing (AFRC); 136th Airlift Wing (ANG). **Area:** Navy hosted base is 1,805 acres; ANG, 81 acres. **Runway:** 12,000 ft. **Altitude:** 650 ft. **Full-time personnel:** AFRC, 402; ANG, 91.

NAS JRB New Orleans, La. 70143-0050, 15 mi. S of New Orleans. **ANG Phone:** 504-391-8600; DSN 457-8600. **AFRC Phone:** 504-678-

9673; DSN 678-9673. **Units:** 159th Fighter Wing (ANG); 926th Fighter Wing (AFRC). **Area:** 3,239 acres. **Runways:** 8,000 ft. and 6,000 ft. **Altitude:** 3 ft. **Full-time personnel:** ANG, 324; AFRC, 214.

NAS JRB Willow Grove, Pa. 19090-5203; 14 mi. N of Philadelphia. **AFRC phone:** 215-443-1000; DSN 991-1062. **ANG phone:** 215-443-1500; DSN 991-1500. **Units:** 913th Airlift Wing (AFRC); 111th Fighter Wing (ANG). **History:** activated August 1958. **Area:** AFRC, 162 acres; ANG, 55 acres. **Altitude:** 356 ft. **Runway:** share use of NAS JRB Willow Grove runway (8,000 ft.). **Full-time personnel:** AFRC, 33; ANG, 273.

Nashville Arpt., Tenn. 37217-2538; 6 mi. SE of downtown Nashville. **Phone:** 615-399-5410; DSN 788-6210. **Unit:** 118th Airlift Wing (ANG). **Area:** 88 acres. **Runway:** 11,150 ft. **Altitude:** 570 ft. **Full-time personnel:** 297.

New Castle County Arpt., Del. 19720; 5 mi. S of Wilmington. **Phone:** 302-323-3500; DSN 445-7500. **Unit:** 166th Airlift Wing (ANG). **Area:** 79 acres. **Runways:** 7,170 ft. and 7,000 ft. **Altitude:** 80 ft. **Full-time personnel:** 240.

Niagara Falls Arpt./ARS, N.Y. 14304-5001; 6 mi. E of Niagara Falls. **Phone:** 716-236-2000; DSN 238-2000. **Units:** 914th Airlift Wing (AFRC), C-130H; 107th Air Refueling Wing (ANG), KC-135. **History:** activated January 1952. **Area:** 979 acres; ANG area, 108 acres. **Runway:** 9,135 ft. **Altitude:** 590 ft. **Full-time personnel:** AFRC, 185; ANG, 257. Lodging, exchange, and consolidated club.

Otis ANGB, Mass. 02542-1330; 7 mi. NNE of Falmouth. **Phone:** 508-968-4667; DSN 557-4667. **Units:** 102nd Fighter Wing (ANG), F-15A/B; 101st Fighter Sq. (ANG). **Tenant Units:** 202nd Weather Flt. (ANG); 253rd CCG (ANG); 267th CCS (ANG). **History:** named for 1st Lt. Frank J. Otis, Mass. ARNG flight surgeon and pilot killed in 1937 crash. **Area:** 4,069 acres. **Runways:** 9,500 ft. and 8,000 ft. **Altitude:** 103 ft. **Full-time personnel:** 374.

Pease Intl. Tradeport ANGS, Portsmouth, N.H. 03803-0157. **Phone:** 603-430-2453; DSN 852-2453. **Unit:** 157th Air Refueling Wing (ANG). **Area:** 218 acres. **Runway:** 11,318 ft. **Altitude:** 101 ft. **Full-time personnel:** 320.

Pittsburgh Arpt./ARS, Pa. 15108-4403; 12 mi. NW of Pittsburgh. **AFRC phone:** 412-474-8000; DSN 277-8000. **ANG phone:** 412-474-7359; DSN 277-7359. **Units:** 911th Airlift Wing, C-130H; 171st Air Refueling Wing (ANG), KC-135E. **History:** activated 1943. **Area:** AFRC, 115 acres; ANG, 179 acres. **Runway:** 11,500 ft. **Altitude:** 1,203 ft. **Full-time personnel:** AFRC, 184; ANG, 376. **Housing:** VOQ, 24, VEQ, 230. No on-base housing. Limited exchange.

Portland Arpt., Portland, Ore. 97218-2797. **Phone:** 503-335-4000; DSN 638-4000. **Units:** 142nd Fighter Wing (ANG); 244th Combat Communications Sq. (ANG); 272nd Combat Communications Sq. (ANG); Oregon Wing, CAP; 939th Air Refueling Wing (AFRC); Ore. ARNG. **Area:** 246 acres. **Runways:** 11,000 ft., 8,000 ft., and 7,000 ft. **Altitude:** 18 ft. **Full-time personnel:** ANG, 405; AFRC, 287.

Quonset State Arpt., R.I. 02852; 20 mi. S of Providence. **Phone:** 401-886-1210; DSN 476-3210. **Unit:** 143rd Airlift Wing (ANG). **Area:** 94 acres. **Runway:** 7,800 ft. **Altitude:** 19 ft. **Full-time personnel:** 230.

Reno/Tahoe Arpt. (May Field), Nev. 89502; 5 mi. SE of downtown Reno at 1776 ANG Way. **Phone:** 775-788-4500; DSN 830-4500. **Unit:** 152nd Airlift Wing (ANG). **History:** named for Maj. Gen. James A. May, Nevada adjutant general, 1947-67. **Area:** 64 acres. **Runways:** 10,00 ft., 9,000 ft., and 6,101 ft. **Altitude:** 4,660 ft. **Full-time personnel:** 280.

Richmond Arpt. (Byrd Field), Va. 23150; 7 mi. SE of downtown Richmond. **Phone:** 804-236-6000; DSN 864-6000. **Unit:** 192nd Fighter Wing (ANG). **History:** named for Adm. Richard E. Byrd, Arctic and Antarctic explorer. **Area:** 143 acres. **Runway:** 9,000 ft. **Altitude:** 168 ft. **Full-time personnel:** 293.

Rickenbacker ANGB, Ohio 43217-5931; 13 mi. SSE of Columbus. **Phone:** 614-492-4468; DSN 950-4468. **Units:** 121st Air Refueling Wing (ANG); Naval Air Reserve and Naval Construction; 164th Weather Flight (ANG); 52nd CST; Army Aviation Support Facility (ARNG). **History:** activated 1942. Formerly Lockbourne AFB; renamed May 7, 1974, for Capt. Edward V. Rickenbacker. Base transferred from SAC to ANG April 1, 1980. **Area:** 203 acres. **Runway:** 12,100 ft. **Altitude:** 744 ft. **Full-time personnel:** 357.

Rosecrans Memorial Arpt., Mo. 64503; 4 mi. W of St. Joseph. **Phone:** 816-236-3300; DSN 956-3300. **Unit:** 139th Airlift Wing (ANG). **Area:** 102 acres. **Runway:** 8,059 ft. **Altitude:** 813 ft. **Full-time personnel:** 302.

Salt Lake City Arpt., Utah 84116; 3 mi. W of downtown Salt Lake City. **Phone:** 801-245-2200; DSN 245-2200. **Units:** 151st Air Refueling Wing (ANG); 169th Electronic Security Sq. (ANG); 130th Engineering Installation Sq. (ANG); 109th Tactical Control Flt. (ANG). **Area:** 135 acres. **Runway:** 9,600 ft. **Altitude:** 4,226 ft. **Full-time personnel:** 356.

Savannah Arpt., Ga. 31408; 4 mi. NW of Savannah. **Phone:** 912-966-8204; DSN 860-8204. **Units:** 165th Airlift Wing (ANG); Combat Readiness Training Center. **Area:** 234 acres. **Runway:** 9,351 ft. **Altitude:** 51 ft. **Full-time personnel:** 319.

Schenectady County Arpt. (Stratton ANGB), N.Y. 12302-9752; 2 mi. N of Schenectady. **Phone:** 518-344-2300; DSN 974-9300. **Unit:** 109th Airlift Wing (ANG), 14 C-130s, 10 with skis for Antarctic and Greenland missions. **Area:** 122 acres. **Runway:** 7,000 ft. **Altitude:** 328 ft. **Full-time personnel:** 474.

Selfridge ANGB, Mich. 48045-5046; 3 mi. NE of Mount Clemens. **Phone:** 586-307-4011; DSN 273-4011. **Units:** 127th Wing (ANG); 927th Air Refueling Wing (AFRC); Air Force, Army, Navy, and Marine Corps Reserve units; ARNG; US Coast Guard Air Station for Detroit. **History:** activated July 1917; transferred to Mich. ANG July 1971. Named for 1st Lt. Thomas E. Selfridge, killed Sept. 17, 1908, at Ft. Myer, Va., when airplane piloted by Orville Wright crashed. **Area:** 3,070 acres. **Runway:** 9,000 ft. **Altitude:** 580 ft. **Full-time personnel:** ANG, 454; AFRC, 247.

Sioux Gateway Arpt., Iowa 51111-1300; 7 mi. S of downtown Sioux City. **Phone:** 712-233-0210; DSN 585-0210. **Unit:** 185th Air Refueling Wing (ANG). **Area:** 288 acres. **Runway:** 9,000 ft. **Altitude:** 1,089 ft. **Full-time personnel:** 281.

Sky Harbor Arpt., Phoenix, Ariz. 85034. **Phone:** 602-302-9000; DSN 853-9000. **Unit:** 161st Air Refueling Wing (ANG). **Area:** 60 acres. **Runway:** 12,000 ft. **Altitude:** 1,000 ft. **Full-time personnel:** 256.

Springfield-Beckley Arpt., Ohio 45502-8783; 5 mi. S of Springfield. **Phone:** 937-327-2100; DSN 346-2100. **Units:** 178th Fighter Wing (ANG); 251st Combat Communications Gp. (ANG); 269th Combat Communications Sq. (ANG). **Area:** 114 acres. **Runway:** 8,999 ft. **Altitude:** 1,053 ft. **Full-time personnel:** 385.

Stewart ANGB, N.Y. 12550-5042; 15 mi. N of US Military Academy (West Point). **Phone:** 914-563-2001; DSN 636-2001. **Units:** 105th Airlift Wing (ANG). **History:** Stewart AFB until 1969; acquired by state of New York in 1970. **Area:** ANG, 267 acres. **Runway:** 12,000 ft. **Altitude:** 491 ft. **Full-time personnel:** 605 (ANG). Most military services available through West Point or subpost.

Toledo Express Arpt., Ohio 43558; 14 mi. W of Toledo. **Phone:** 419-868-4180; DSN 580-4180. **Unit:** 180th Fighter Wing (ANG). **Area:** 135 acres. **Runways:** 10,600 ft. and 5,600 ft. **Altitude:** 664 ft. **Full-time personnel:** 272.

Truax Field, Wis. 53704-2591; at Dane County Arpt. 2 mi. N of downtown Madison. **Phone:** 608-245-4300; DSN 724-8300. **Unit:** 115th Fighter Wing (ANG). **History:** activated June 1942 as AAF base; taken over by Wis. ANG April 1968. Named for Lt. T.L. Truax, killed in P-40 training accident in 1941. **Area:** 130 acres. **Runway:** 12,000 ft. **Altitude:** 800 ft. **Full-time personnel:** 289.

Tucson Arpt., Ariz. 85706-6099; within Tucson. **Phone:** 520-295-6210; DSN 924-6210. **Unit:** 162nd Fighter Wing (ANG). **Area:** 92 acres. **Runways:** 11,000 ft., 9,000 ft., and 7,000 ft. **Altitude:** 2,556 ft. **Full-time personnel:** 929.

Tulsa Arpt., Okla. 74115-1699; 6 mi. NE of downtown Tulsa. **Phone:** 918-833-7370; DSN 894-7370. **Units:** 138th Fighter Wing (ANG); 219th Engineering Installation Sq. **Area:** 81 acres. **Runway:** 10,000 ft. **Altitude:** 677 ft. **Full-time personnel:** 298.

Volk Field ANGB, Wis. 54618-5001; 87 mi. NW of Madison. **Phone:** 608-427-1210; DSN 946-3210. **Units:** Combat Readiness Training Center (ANG) featuring air-to-air and air-to-ground gunnery ranges; 128th Air Control Sq. **History:** named for Lt. Jerome A. Volk, first Wis. ANG pilot to be killed in the Korean War. **Area:** 2,336 acres. **Runway:** 9,000 ft. **Altitude:** 912 ft. **Full-time personnel:** 117.

W.K. Kellogg Arpt., Mich. 49015-5512; 1 mi. W of Battle Creek. **Phone:** 616-969-3400; DSN 580-3210. **Unit:** 110th Fighter Wing (ANG). **Area:** 320 acres. **Runway:** 10,003 ft. **Altitude:** 929 ft. **Full-time personnel:** 267.

Westover ARB, Mass. 01022-1825; 10 mi. NE of Springfield. **Phone:** 413-557-1110; DSN 589-1110. **Units:** 439th Airlift Wing (AFRC); Army, Navy, and Marine Corps Reserve units. **History:** dedicated April 6, 1940. Named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938. **Area:** 2,386 acres. **Runway:** 11,600 ft. **Altitude:** 245 ft. **Full-time personnel:** 480. **Housing:** VOQ, 41, VAQ, 142 beds.

Will Rogers World Arpt., Oklahoma City. 73179-1090; 9 mi. SW of downtown. **Phone:** 405-686-5210; DSN 940-5210. **Units:** 137th Airlift Wing (ANG); 205th Electronic Installation Sq. (ANG). **Area:** 133 acres. **Runways:** two, 9,800 ft. each, and 7,800 ft. **Altitude:** 1,272 ft. **Full-time personnel:** 263.

Yeager Arpt., W.Va. 25311; 4 mi. NE of downtown Charleston. **Phone:** 304-341-6126; DSN 366-6210. **Unit:** 130th Airlift Wing (ANG). **History:** named for Brig. Gen. Charles E. "Chuck" Yeager. **Area:** 109 acres. **Runway:** 6,300 ft. **Altitude:** 982 ft. **Full-time personnel:** 242.

Youngstown-Warren Arpt./ARS, Ohio 44473-5912; 14 mi. N of Youngstown. **Phone:** 330-609-1000; DSN 346-1000. **Units:** 910th Airlift Wing (AFRC); Army Corps of Engineers; Army, Navy, and Marine Corps Reserve units; FAA. **History:** activated 1953. **Area:** 230 acres. **Runways:** three, primary length 9,000 ft. **Altitude:** 1,196 ft. **Full-time personnel:** 281. **Lodging:** 142 beds. Limited exchange.

Records and Trophies

2005 USAF Almanac

Absolute Aviation World Records

The desirability of a standard procedure to certify air records was recognized early in the history of powered flight. In 1905, representatives of Belgium, France, Germany, Great Britain, Italy, Spain, Switzerland, and the US met in Paris to form the Federation Aeronautique Internationale, the world body of national aeronautic sporting interests. The FAI today comprises the national aero clubs of some 100 nations and certifies national records as world records. Since 1922, the National Aeronautic Association, based in Arlington, Va., has been the US representative to the FAI. The NAA supervises all attempts at world and world-class records in the United States. Absolute world records are the supreme achievements of all the records open to flying machines.

Speed around the world, nonstop, nonrefueled: 115.65 mph (186.11 kph). Richard G. Rutan and Jeana L. Yeager in *Voyager* experimental aircraft at Edwards AFB, Calif., Dec. 14-23, 1986.

Great circle distance without landing: 24,986.727 miles (40,212.139 kilometers). Richard G. Rutan and Jeana L. Yeager in *Voyager* at Edwards AFB, Calif., Dec. 14-23, 1986.

Distance in a closed circuit without landing: 24,986.727 miles (40,212.139 kilometers). Richard G. Rutan and Jeana L. Yeager in *Voyager* at Edwards AFB, Calif., Dec. 14-23, 1986.

Altitude: 123,523.58 feet (37,650.00 meters). Alexander Fedotov flying E-266M, a modified MiG-25, at Podmoskovnoye, USSR, Aug. 31, 1977.

Altitude in horizontal flight: 85,068.997 feet (25,929.031 meters). USAF Capt. Robert C. Helt (pilot) and USAF Maj. Larry A. Elliott (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 28, 1976.

Speed over a straight course: 2,193.16 mph (3,529.56 kph). USAF Capt. Eldon W. Joersz (pilot) and USAF Maj. George T. Morgan Jr. (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 28, 1976.

Speed over a closed circuit: 2,092.294 mph (3,367.221 kph). USAF Majs. Adolphus H. Bledsoe Jr. (pilot) and John T. Fuller (RSO) in Lockheed SR-71A Blackbird at Beale AFB, Calif., July 27, 1976.

On July 27, 1976, USAF Maj. Adolphus Bledsoe (left) and USAF Maj. John Fuller set the world record for speed over a closed course. Their SR-71A exceeded 2,902 mph.

The Robert J. Collier Trophy

This award, presented by the National Aeronautic Association, is the most prestigious in American aviation. It recognizes the "greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency, and safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year." The award is named for a prominent publisher, sportsman, and aviator. Collier, the first person to purchase a Wright airplane for personal use, commissioned the trophy and presented it to the Aero Club of America (the forerunner of the NAA) in 1911.

1911 Glenn H. Curtiss. Hydro-aeroplane.
1912 Glenn H. Curtiss. Flying boat.
1913 Orville Wright. Automatic stabilizer.
1914 Elmer A. Sperry. Gyroscopic control.
1915 W. Sterling Burgess. Burgess-Dunne hydro-aeroplane.
1916 Elmer A. Sperry. Drift indicator.
1917 No award.
1918 No award.
1919 No award.
1920 No award.
1921 Grover Loening. Aerial yacht.
1922 US Air Mail Service. One year without fatality.
1923 US Air Mail Service. Commercial night flying.
1924 US Army Air Service. First aerial flight around world.
1925 S. Albert Reed. Metal propeller.
1926 Maj. E.L. Hoffman. Practical parachute.
1927 Charles L. Lawrance. Radial air-cooled engine.
1928 Commerce Dept., Aeronautics Branch. Airways, air navigation facilities.
1929 National Advisory Committee for Aeronautics. Cowling for radial air-cooled engines.
1930 Harold Pitcairn and staff. Autogiro.
1931 Packard Motor Car. Diesel aircraft engine.
1932 Glenn L. Martin. Two-engined, high-speed, weight-carrying airplane.
1933 Hamilton Standard Propeller, Frank W. Caldwell. Controllable-pitch propeller.
1934 Maj. Albert F. Hegenberger. Blind-landing experiments.
1935 Donald Douglas and staff. DC-2.
1936 Pan American Airways. Trans-Pacific and overwater operations.
1937 Army Air Corps. Design, flight test of XC-35 first pressurized cabin.
1938 Howard Hughes and crew. Around-the-world flight.
1939 US airlines. Air travel safety record.
1940 Sanford Moss, Army Air Corps. Turbo-supercharger.
1941 US Army Air Forces and US airlines. Pioneering worldwide operations.
1942 Gen. H.H. Arnold. Leadership of US Army Air Forces.
1943 Capt. Luis De Florez (USNR). Synthetic training devices.
1944 Gen. Carl A. Spaatz. US air campaign against Germany.
1945 Luis W. Alvarez. Ground-control approach radar landing system.
1946 Lewis A. Rodert. Thermal ice-prevention system.
1947 Lawrence D. Bell, John Stack, Capt. Charles E. Yeager. Supersonic flight.
1948 Radio Technical Commission for Aeronautics. All-weather air traffic control system.
1949 William P. Lear. F-5 automatic pilot, automatic approach control coupler system.
1950 Helicopter industry, military services, Coast Guard. Rotary-wing aircraft in air rescue.
1951 John Stack, associates at Langley Aeronautical Laboratory, NACA. Transonic wind tunnel throat.
1952 Leonard S. Hobbs. J57 jet engine.
1953 James H. Kindelberger, Edward H. Heinemann. Supersonic airplanes (F-100, F4D).
1954 Richard Travis Whitcomb. Discovery, verification of area rule, yielding higher speed and greater range.
1955 William M. Allen, Boeing Airplane, Gen. Nathan F. Twining, US Air Force. B-52 bomber.
1956 Charles J. McCarthy; Chance-Vought Aircraft; Vice Adm. James S. Russell; US Navy Bureau of Aeronautics. F8U Crusader.
1957 Edward P. Curtis. "Aviation Facilities Planning" report. USAF/Lockheed/GE F-104 team. F-104.
1958 Clarence L. Johnson, airframe design; Neil Burgess, Gerhard Neumann, J79 turbojet engines; Maj. Howard C. Johnson, landplane altitude record; Capt. Walter W. Irwin, straightaway speed record.
1959 USAF, General Dynamics-Convair, Space Technology Laboratories. Atlas ICBM.
1960 Vice Adm. William F. Raborn. Polaris ballistic missile.
1961 A. Scott Crossfield, Cmdr. Forrest Petersen, Joseph A. Walker, Maj. Robert M. White. X-15 test flights.
1962 Lt. Col. John H. Glenn Jr. (USMC), Cmdr. Walter M. Schirra Jr., Cmdr. Alan B. Shepard Jr., Lt. Cmdr. M. Scott Carpenter, Maj. L. Gordon Cooper, Maj. Virgil I. Grissom, Maj. Donald K. Slayton. Pioneering US manned spaceflight.
1963 Clarence L. Johnson. A-11 (A-12) Mach 3 aircraft.
1964 Gen. Curtis E. LeMay. Expanding frontiers of American aeronautics and astronautics.
1965 James E. Webb, Hugh L. Dryden. Gemini spaceflight program.
1966 James S. McDonnell. F-4 Phantom and Gemini space vehicles.
1967 Lawrence A. Hyland, Hughes Aircraft, Jet Propulsion Laboratory, associated organizations. Surveyor program.
1968 Col. Frank Borman, Capt. James A. Lovell Jr. (USN), Lt. Col. William A. Anders. Apollo 8, first manned lunar orbit mission.
1969 Col. Edwin E. Aldrin Jr., Neil A. Armstrong, Col. Michael Collins. Apollo 11 moon landing.
1970 Boeing with Pratt & Whitney and Pan Am. Commercial 747 service.
1971 Robert T. Gilruth, Col. James B. Irwin, Col. David R. Scott, Lt. Col. Alfred M. Worden. Apollo 15 mission.
1972 Adm. Thomas H. Moorer, USAF 7th and 8th Air Forces, Navy Task Force 77. Operation Linebacker II.
1973 Skylab Program, William C. Schneider, Skylab astronauts. Skylab operations.
1974 John F. Clark, NASA; Daniel J. Fink, GE; RCA; Hughes. Resource and environmental management in space technology; LANDSAT.
1975 David S. Lewis, General Dynamics, USAF-industry team. F-16 aviation technologies.
1976 USAF, Rockwell, B-1 industry team. B-1 bomber.
1977 Gen. Robert J. Dixon; Tactical Air Command. Red Flag.
1978 Sam B. Williams, Williams Research. Turbofan cruise missile engines.
1979 Paul B. MacCready, AeroEnvironment, Inc., Bryan Allen. *Gossamer Albatross.*
1980 NASA's Voyager mission team, Edward Stone. Voyager flyby of Saturn.
1981 NASA, Rockwell, Martin Marietta, Thiokol, government-industry shuttle team, and astronauts Capt. Robert L. Crippen (USN), Col. Joe H. Engle, Capt. Richard H. Truly (USN), John W. Young. First flights of *Columbia,* first shuttle.
1982 T.A. Wilson, Boeing, supported by FAA, industry, airlines. 757 and 767 airliners.
1983 US Army, Hughes Helicopters, industry team. AH-64A Apache helicopter.

1984 NASA, Martin Marietta, Walter W. Bollendonk, astronaut Capt. Bruce McCandless II (USN), Charles E. Whitsett Jr. Manned maneuvering units, satellite rescues.
1985 Russell W. Meyer, Cessna Aircraft, Cessna Citation business jets. Outstanding safety.
1986 Jeana L. Yeager, Richard G. Rutan, Elbert L. Rutan, Bruce Evans, team of volunteers. *Voyager* flight.
1987 NASA Lewis Research Center, NASA-industry team. Advanced turboprop propulsion concepts.
1988 Rear Adm. Richard H. Truly. Manned space recovery program.
1989 Ben R. Rich, Lockheed-USAF team. F-117A.
1990 Bell-Boeing team. V-22 Osprey.
1991 Northrop-USAF industry team. B-2.
1992 Global Positioning System team: USAF, US Naval Research Lab, Aerospace Corp., Rockwell, IBM Federal Systems. Navstar GPS system.
1993 Hubble Space Telescope recovery team. Successful orbital recovery and repair.
1994 USAF, McDonnell Douglas, US Army, C-17 industry team. C-17.
1995 Boeing 777 team. Boeing 777.
1996 Cessna Citation X design team. Cessna Citation X.
1997 Gulfstream Aerospace, Gulfstream V industry team. Gulfstream V.
1998 Lockheed Martin, GE Aircraft Engines, NASA, Air Combat Command, Defense Intelligence Agency. U-2S/ER-2.
1999 Boeing, Hornet industry team, and US Navy. F/A-18E/F.
2000 Northrop Grumman, Rolls Royce, Raytheon, L-3 Communications, USAF, DARPA. Global Hawk.
2001 Pratt & Whitney, Rolls Royce, Lockheed Martin, Northrop Grumman, BAE Systems, JSF Program Office. Integrated lift fan propulsion system.
2002 Sikorsky Aircraft and the S-92 industry team. S-92 helicopter.
2003 Gulfstream G550 team. Ultra long-range business jet.

The Mackay Trophy

The Mackay Trophy was established by Clarence H. Mackay, an industrialist, philanthropist, communications pioneer, and aviation enthusiast. Presented by the National Aeronautic Association, the trophy recognizes "the most meritorious flight of the year" by an Air Force member, members, or organization.

1912 2nd Lt. H.H. Arnold.
1913 2nd Lts. J.E. Carberry and F. Seydel.
1914 Capt. T.F. Dodd and Lt. S.W. Fitzgerald.
1915 Lt. B.Q. Jones.
1916 No award.
1917 No award.
1918 Capt. E.V. Rickenbacker.
1919 Lt. Col. H.E. Hartney; Capts. J.O. Donaldson, L.H. Smith, and F. Steinle; Lts. B.G. Bagby, D.B. Gish, E.M. Manzelman (posthumously), B.N. Maynard, R.S. Northington, and A. Pearson Jr.
1920 Capt. St.C. Streett; 1st Lt. C.C. Nutt; 2nd Lts. C.H. Crumrine, R.C. Kirkpatrick, and E.H. Nelson; Sgts. J.E. English, E. Henriques, and A.T. Vierra.
1921 Lt. J.A. Macready.
1922 Lts. J.A. Macready and O.G. Kelly.
1923 Lts. J.A. Macready and O.G. Kelly.
1924 Capt. L.H. Smith; 1st Lts. L.P. Arnold, E.H. Nelson, and L. Wade; 2nd Lts. J. Harding Jr. and H.H. Ogden.
1925 Lts. C.K. Bettis and J. Doolittle.
1926 Pan American Goodwill Fliers: Maj. H.A. Dargue; Capts. I.C. Eaker, A.B. McDaniel, and C.F. Woolsey (posthumously); 1st Lts. J.W. Benton (posthumously), M.S. Fairchild, C.McK. Robinson, B.S. Thompson, L.D. Weddington, and E.C. Whitehead.
1927 Lts. A.F. Hegenberger and L.J. Maitland.
1928 1st Lt. H.A. Sutton.
1929 Capt. A.W. Stevens.
1930 Maj. R. Royce.
1931 Brig. Gen. B.D. Foulois.
1932 11th Bombardment Sq., March Field, Calif., 1st Lt. C.H. Howard.
1933 Capt. W.T. Larson.
1934 Brig. Gen. H.H. Arnold.
1935 Capts. O.A. Anderson and A.W. Stevens.
1936 Capt. R.E. Nugent; 1st Lts. J.A. Miller and E.G. Simenson; 2nd Lts. B.W. Armstrong, H. Morgan Jr., and W.P. Ragsdale Jr.; TSgt. G.W. Olson; SSgt. H.M. Miller; Cpl. Air Mechanic 2nd Class F.B. Connor.
1937 Capts. C.J. Crane and G.V. Holloman.
1938 2nd Bombardment Group, Lt. Col. R. Olds.
1939 Majs. C.V. Haynes and W.D. Old; Capt. J.A. Samford; 1st Lts. R.S. Freeman and T.G. Wold; MSgt. A. Cattarius; TSgts. W.J. Heldt, H.L. Hines, and D.L. Spicer; SSgts. R.E. Junior and J.E. Sands.
1940 No award.
1941 No award.
1942 No award.
1943 No award.
1944 No award.
1945 No award.
1946 No award.
1947 Capt. C.E. Yeager.
1948 Lt. Col. E. Beaudry.
1949 Capt. J.G. Gallagher and crew of *Lucky Lady II.*
1950 27th Fighter Wing.
1951 Col. F.J. Ascani.
1952 Majs. L.H. Carrington Jr. and F.W. Shook; Capt. W.D. Yancey.
1953 40th Air Division, SAC.
1954 308th Bombardment Wing (M) and 38th Air Div., SAC.
1955 Col. H.A. Hanes.
1956 Capt. I.C. Kincheloe Jr., Air Research and Development Command.
1957 93rd Bombardment Wing, SAC.
1958 TAC Air Strike Force, X-Ray Tango.
1959 US Air Force Thunderbirds.
1960 6593rd Test Sq., Hickam AFB, Hawaii.
1961 Lt. Col. W.R. Payne and Majs. W.L. Polthemus and R.R. Wagener, 43rd Bomb Wing, SAC.
1962 Maj. R.G. Sowers and Capts. R. MacDonald and J.T. Walton.
1963 Capts. D.R. Mack, J.R. Ordemann, and W.P. Tomsett; TSgt. E.P. Inlow; SSgts. F.C. Barrett and J.E. Morgan.
1964 464th Troop Carrier Wing, TAC.
1965 YF-12A Test Force (Col. R.L. Stephens; Lt. Col. D. Andre; Majs. W.F. Daniel and N.T. Warner; Capt. J.P. Cooney).

1966 Lt. Col. A.R. Howarth.
1967 Maj. J.H. Casteel; Capts. D.L. Hoar and R.L. Trail; MSgt. N.C. Campbell.
1968 Lt. Col. D.D. Cole.
1969 49th Tactical Fighter Wing, TAC.
1970 Capt. A.D. Milacek and AC-119K crew (Capts. R.E. Clancy, R.C. Jones, B.C. O'Brien, and J.A. Russell; TSgt. A.A. Nash; SSgts. A. Lopez Jr. and R.R. Wilson; Sgt. K.E. Firestone; A1C D.H. Cofer).
1971 Lt. Col. T.B. Estes and Maj. D.C. Vick.
1972 Capts. C.B. DeBellevue, J.S. Feinstein, and R.S. Ritchie.
1973 MAC aircrews.
1974 Majs. W.R. MacFarlane, D.W. Peterson, and R.J. Smith.
1975 Maj. R.W. Undorf.
1976 Capt. J.A. Yule.
1977 C-5 aircrew (Capt. D.M. Sprinkel and crew).
1978 C-5 aircrews (Lt. Col. R.F. Schultz and crew and Capt. T.H. Hohberger and crew, 436th Military Airlift Wing).
1979 Maj. J.E. McArdle Jr.
1980 Crews S-21 and S-31, 644th Bombardment Sq.
1981 Capt. J.J. Walters.
1982 B-52 Crew E-21, 19th Bombardment Wing.
1983 Capt. R.J. Goodman and his crew, 42nd Bombardment Wing, SAC.
1984 Lt. Col. J.L. Hobson Jr.
1985 Lt. Col. D.E. Faught.
1986 KC-10 crew (Capts. M.D. Felman and T.M. Ferguson; MSgts. C. Bridges Jr., P.S. Kennedy, and G.G. Treadwell; TSgts. L.G. Bouler and G.M. Lewis; SSgts. S.S. Flores, S.A. Helms, and G.L. Smith), 68th Air Refueling Group, SAC.
1987 Det. 15, USAF Plant Representative Office, and B-1B SPO.
1988 C-5 crew, 436th Military Airlift Wing.
1989 B-1B crew, 96th Bomb Wing.
1990 AC-130 crew, 16th Special Operations Sq.
1991 MH-53 crew, 20th Special Operations Sq.
1992 C-130 crew, 310th Airlift Sq., ACC, Howard AFB, Panama.
1993 B-52 crew, 668th Bomb Sq., ACC.
1994 HH-60G crew of Air Force Rescue 206 and 208, 56th Rescue Sq., ACC, NAS Keflavik, Iceland.
1995 Aircrew BAT 01, Dyess AFB, Tex.
1996 Aircrew Duke 01, 2nd Bomb Wing, Barksdale AFB, La.
1997 Crew of Whiskey 05, 7th Special Operations Sq., RAF Mildenhall, UK.
1998 Crew of Air Force Rescue 470, 210th Rescue Sq., Kulis ANGB, Alaska.
1999 Capt. J.G.J. Hwang, 173rd FW, Oregon ANG, Klamath Falls Airport, Ore.
2000 Crew of Airevac 10E1/10E2, 86th AES and 75th AS, Ramstein AB, Germany.
2001 Crew of Knife 04, 20th SOS, Hurlburt Field, Fla.
2002 Crew of Grim 31, 16th SOS, Hurlburt Field, Fla.
2003 Crew of Vijay 10, 62nd AW, McChord AFB, Wash.

Gen. Thomas Power (right), commander in chief of Strategic Air Command, greets the B-58 Hustler crew that set three speed records and was later awarded the 1962 Mackay Trophy. From left are Maj. Robert Sowers and Capts. Robert MacDonald and John Walton. For their record-setting flight, the crew flew round-trip between New York and Los Angeles in four hours, 42 minutes.

The Gen. Thomas D. White USAF Space Award

The Gen. Thomas D. White USAF Space Award is named for the fourth Air Force Chief of Staff, a longtime champion of USAF's role in space. The Air Force selects the recipients among USAF individuals or organizations that made the year's outstanding progress in the field of aerospace. It was established in 1961 and, until 1996, sponsored by the National Geographic Society. It is now an AFA national award sponsored by the Gen. B.A. Schriever Los Angeles Chapter.

1961 Capt. Virgil I. Grissom.
1962 Maj. Robert M. White.
1963 Maj. L. Gordon Cooper.
1964 Air Force Systems Command.
1965 Lt. Col. Edward H. White II.
1966 Alexander H. Flax.
1967 Gen. John P. McConnell.
1968 Col. Frank Borman, Capt. James A. Lovell Jr. (USN), Lt. Col. William A. Anders.
1969 Col. Edwin E. Aldrin Jr., Neil A. Armstrong, Col. Michael Collins.
1970 Brig. Gen. Robert A. Duffy.
1971 Lt. Gen. Samuel C. Phillips.
1972 Hon. Robert C. Seamans Jr.
1973 Lt. Col. Henry Hartsfield Jr.
1974 No award.
1975 Maj. Gen. Thomas P. Stafford.
1976 Gen. William J. Evans.
1977 Lt. Col. Charles G. Fullerton, Fred W. Haise Jr.
1978 No award.
1979 Maj. Gen. John E. Kulpa Jr.
1980 Gen. Lew Allen Jr.
1981 Col. Joe Engle, Capt. Richard H. Truly (USN).
1982 Lt. Gen. Richard C. Henry.
1983 Gen. James V. Hartinger.
1984 Lt. Gen. Forrest S. McCartney.
1985 Maj. Gen. Donald W. Henderson.
1986 Gen. Donald J. Kutyna.
1987 Col. Victor W. Whitehead.
1988 Robert R. Barthelemy.
1989 Launch Systems Directorate, Space Systems Division.
1990 Gen. John L. Piotrowski, USAF (Ret.), Lt. Gen. Donald L. Cromer.
1991 Lt. Gen. Thomas S. Moorman Jr.
1992 Maj. Gen. Nathan J. Lindsay, USAF (Ret.).
1993 Gen. Merrill A. McPeak.
1994 Gen. Charles A. Horner.
1995 Gen. Joseph W. Ashy.
1996 No award.
1997 Lt. Gen. Patrick P. Caruana.
1998 Gen. Howell M. Estes III.
1999 Lt. Gen. Lance W. Lord.
2000 Gen. Richard B. Myers.
2001 Gen. Ralph E. Eberhart.
2002 Lt. Gen. Roger G. DeKok, USAF (Ret.).
2003 Maj. Robert K. Sheehan.

The Raytheon Hughes Achievement Award

The Raytheon Hughes Achievement Award (formerly the Hughes Trophy) is presented annually to the top Air Force squadron with an air defense/air superiority mission.

Year	Unit, Base	Aircraft
1953	58th FIS, Otis AFB, Mass.	F-94C
1954	96th FIS, New Castle County Airport, Del.	F-94C
1955	496th FIS, Landstuhl AB, West Germany	F-86D
1956	317th FIS, McChord AFB, Wash.	F-86D/F-102A
1957	512th FIS, RAF Bentwaters, UK	F-86D
1958	31st FIS, Elmendorf AFB, Alaska	F-102A
1959	54th FIS, Ellsworth AFB, S.D.	F-89J
1960	460th FIS, Portland Arpt., Ore.	F-102A
1961	83rd FIS, Hamilton AFB, Calif.	F-101B
1962	444th FIS, Charleston AFB, S.C.	F-101B
1963	497th FIS, Torrejon AB, Spain	F-102A
1964	329th FIS, George AFB, Calif.	F-106A/B
1965	317th FIS, Elmendorf AFB, Alaska	F-102A
1966	32nd FIS, Soesterberg AB, Netherlands	F-102A
1967	317th FIS, Elmendorf AFB, Alaska	F-106A/B
1968	64th FIS, Clark AB, Philippines	F-102A
1969	71st FIS, Malmstrom AFB, Mont.	F-106A/B
1970	57th FIS, NAS Keflavik, Iceland	F-102A
1971	48th FIS, Langley AFB, Va.	F-106A/B
1972	43rd TFS, Elmendorf AFB, Alaska	F-4E
1973	555th TFS, Udorn RTAB, Thailand	F-4D
1974	119th FIG (ANG), Hector Field, N.D.	F-101B
1975	318th FIS, McChord AFB, Wash.	F-106A/B
1976	57th FIS, NAS Keflavik, Iceland	F-4C
1977	43rd TFS, Elmendorf AFB, Alaska	F-4E
1978	49th FIS, Griffiss AFB, N.Y.	F-106A/B
1979	32nd TFS, Soesterberg AB, Netherlands	F-15A/B
1980	32nd TFS, Soesterberg AB, Netherlands	F-15A/B
1981	12th TFS, Kadena AB, Japan	F-15C/D
1982	44th TFS, Kadena AB, Japan	F-15C/D
1983	67th TFS, Kadena AB, Japan	F-15C/D
1984	318th FIS, McChord AFB, Wash.	F-15A/B
1985	120th FIG (ANG), Great Falls Arpt., Mont.	F-106A/B
1986	67th TFS, Kadena AB, Japan	F-15C/D
1987	57th FIS, NAS Keflavik, Iceland	F-15C/D
1988	22nd TFS, Bitburg AB, West Germany	F-15C/D
1989	67th TFS, Kadena AB, Japan	F-15C/D
1990	58th TFS, Eglin AFB, Fla.	F-15C/D
1991	58th TFS, Eglin AFB, Fla.	F-15C/D
1992	59th FS, Eglin AFB, Fla.	F-15C/D
1993	71st FS, Langley AFB, Va.	F-15C
1994	178th FS (ANG), Hector Arpt., N.D.	F-16A/B
1995	27th FS, Langley AFB, Va.	F-15C/D
1996	60th FS, Eglin AFB, Fla.	F-15C/D
1997	493rd FS, RAF Lakenheath, UK	F-15C
1998	71st FS, Langley AFB, Va.	F-15C/D
1999	493rd FS, RAF Lakenheath, UK	F-15C
2000	19th FS, Elmendorf AFB, Alaska	F-15C/D
2001	71st FS, Langley AFB, Va.	F-15C/D
2002	27th FS, Langley AFB, Va.	F-15C/D
2003	67th FS, Kadena AB, Japan	F-15C

Gallery of USAF Weapons

2005 USAF Almanac

By Susan H.H. Young

Note: Inventory numbers are total active inventory figures as of Sept. 30, 2004.

***B-1B** Lancer* (SSgt. Suzanne M. Jenkins)

Bombers

B-1 Lancer

Brief: A long-range, air refuelable multirole bomber capable of flying missions over intercontinental range, then penetrating enemy defenses with a heavy load of ordnance.

Function: Long-range conventional bomber.

Operator: ACC, AFMC.

First Flight: Dec. 23, 1974 (B-1A); Oct. 18, 1984 (B-1B).

Delivered: June 1985-May 1988.

IOC: Oct. 1, 1986, Dyess AFB, Tex. (B-1B).

Production: 104.

Inventory: 67.

Unit Location: Dyess AFB, Tex., Ellsworth AFB, S.D., Edwards AFB, Calif.

Contractor: Boeing; AIL Systems; General Electric.

Power Plant: four General Electric F101-GE-102 turbofans, each 30,780 lb thrust.

Accommodation: four, pilot, copilot, and two systems officers (offensive and defensive), on zero/zero ejection seats.

Dimensions: span spread 137 ft, swept aft 79 ft, length 146 ft, height 34 ft.

Weights: empty equipped 192,000 lb, max operating weight 477,000 lb.

Ceiling: more than 30,000 ft.

Performance: max speed at low level high subsonic; 900+ mph (Mach 1.2 at S/L); range intercontinental.

Armament: three internal weapons bays capable of accommodating a wide range of weapons incl up to 84 Mk 82 (500-lb) bombs or Mk 62 naval mines; up to 30 CBU-87/103 Combined Effects Munitions (CEMs), 15 CBU-89/104 Gator munitions, and 15 CBU-97/105 Sensor Fuzed Weapons (SFWs) (CBU-103/104/105s are fitted with Wind-Corrected Munitions Dispenser (WCMD) kits), 12 AGM-154 Joint Standoff Weapons (JSOWs), up to 24 GBU-31 (2,000-lb) Joint Direct Attack Munitions (JDAMs), and AGM-158 Joint Air-to-Surface Standoff Missile (JASSM). GBU-38 (500-lb) JDAM integration under way.

COMMENTARY

Of blended wing/body configuration, the B-1's variable-geometry design and turbofan engines combine to provide greater range and high speed at low level, with enhanced survivability. Unswept wing settings provide for maximum range during high-altitude cruise. The fully swept position is used in supersonic flight and for high subsonic, low-altitude penetration.

The bomber's offensive avionics include synthetic aperture radar (SAR), ground moving target indicator (GMTI), ground moving target track (GMTT), and terrain-following radar (TFR), an extremely accurate Global Positioning System/inertial navigation system (GPS/INS), computer-driven avionics, and a strategic Doppler radar, enabling aircrews to navigate, update target coordinates in flight, and precision bomb.

The current defensive avionics package, built around the ALQ-161 electronic countermeasures (ECM) system, is supplemented by the ALE-50 towed decoy and chaff and flares to protect against radar-guided and heat-seeking missiles. Aircraft structure and radar-absorption materials reduce the aircraft's radar signature to approximately one percent that of a B-52. The ALE-50 provides greater protection against RF threats.

B-1A. USAF acquired four prototype flight-test models of this new strategic bomber in the 1970s, but the program was canceled in 1977. Flight-test of the four B-1A models continued through 1981.

B-1B. Initiated in 1981, the first production model of the improved variant B-1 flew in October 1984. USAF produced a total of 100. The active B-1B inventory was recently reduced to 67 aircraft (from the remaining 92) along with a consolidation to two main operating bases within Air Combat Command at Dyess AFB, Tex., and Ellsworth AFB, N.D. First used in combat against Iraq during Desert Fox in December 1998, the B-1B has since supported operations in Afghanistan in Enduring Freedom and in Iraqi Freedom.

B-1B's speed, superior handling qualities, and large payload make it a key element of any joint/composite strike force, with the flexibility to deliver a wide range of weapons or to carry additional fuel, as required.

The ongoing conventional mission upgrade program (CMUP) is significantly enhancing B-1B lethality and survivability. Completed Block D upgrades include GPS receivers, a MIL-STD-1760 weapon interface, secure interoperable radios, and improved computers to support precision weapons, initially the GBU-31 JDAM. Block E, now in production, includes follow-on computer and software upgrades permitting simultaneous carriage of mixed guided and unguided weapons and WCMD/JSOW/JASSM integration. Integration of the JDAM (GBU-38) is also under way. Officials are continuing to assess options for future improvements to the B-1B's defensive system. In addition, planning is under way for a network centric upgrade program aimed at improving B-1B avionics and sensors, with cockpit upgrades to enhance crew communications and situational awareness. An effort to provide a fully integrated data link capability, including Link 16 and Joint Range Extension along with upgraded displays at the rear crew stations, is slated for FY05.

B-2 Spirit

Brief: Stealthy, long-range multirole bomber that can deliver conventional and nuclear munitions anywhere on the globe by flying through previously impenetrable defenses.

Function: Long-range heavy bomber.

Operator: ACC.

First Flight: July 17, 1989.

Delivered: Dec. 11, 1993-2002.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 21.

Unit Location: Whiteman AFB, Mo.

Contractor: Northrop Grumman; Boeing; LTV.

Power Plant: four General Electric F118-GE-100 turbofans, each 17,300 lb thrust.

Accommodation: two, mission commander and pilot, on zero/zero ejection seats.

Dimensions: span 172 ft, length 69 ft, height 17 ft.

Weight: empty 125,000-153,700 lb, typical T-O weight 336,500 lb.

Ceiling: 50,000 ft.

Performance: minimum approach speed 140 mph, typical estimated unrefueled range for a hi-lo-hi mission with 16 B61 nuclear free-fall bombs 5,000 miles, with one aerial refueling more than 10,000 miles.

Armament: in a nuclear role up to 16 nuclear weapons (B61 Mod 7, B61 Mod II, B83) on rotary launchers. In a conventional role, 80 Mk 82 500-lb bombs, 36 750-lb M117s, 34 tactical munitions dispensers, 80 Mk 62 sea mines, or 80 GBU-38 (500-lb) JDAMs mounted on bomb rack assemblies, or up to 16 rotary launcher-mounted weapons: 16 GBU-31 (2,000-lb) JDAMs, or a penetration version of a BLU-109, or 16 Mk 84 2,000-lb bombs; 16 JSOWs, 16 JASSMs, or eight 4,700-lb GBU-37/EGBU-28 guided weapons. Wind-Corrected Munitions Dispenser (WCMD) to follow.

COMMENTARY

The B-2 bomber is a unique, highly advanced system, combining sophisticated technologies, notably low observable (LO) stealth design, with high aerodynamic efficiency, enabling it to attack heavily defended targets and neutralize enemy defenses.

Based on the flying wing concept, the B-2 has no vertical tail surfaces. The smoothly blended "fuselage" section accommodates two flight crew and two large weapons bays side by side in the lower centerbody. These bays contain rotary launchers or bomb rack assemblies capable of carrying up to 40,000 lb of weapons.

Four nonafterburning turbofan engines are mounted in pairs within the wing structure, with scalloped over-wing intake ducts and shielded over-wing trailing edge nozzles. The aircraft has a quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions. A landing gear track of 40 ft enables the B-2 to use any runway that can handle a Boeing 727 airliner.

B-2A. B-2 production represents three successive blocks of capability. Block 10 aircraft carried B83 nuclear bombs or 16 Mk 84 2,000-lb conventional munitions. Block 20 aircraft additionally carried B61/7 and B61/11

B-2 Spirit (MSgt. Val Gempis)

nuclear bombs, as well as GPS-aided munitions (GAMs), and GBU-36B, on two rotary launcher assemblies, providing an interim, near-precision strike capability. All Block 10 and 20 aircraft have been upgraded to Block 30. (The last original Block 20 B-2, used as a test aircraft at Edwards AFB, Calif., was refurbished as an operational bomber and entered operational service in September 2002.)

Block 30 configuration retains weapons capability introduced in Block 10 and 20 and adds significant new capability. Using the rotary launcher assembly, all B-2s are capable of employing 16 Mk 84 JDAMs, 16 JSOWs, 16 JASSMs, or eight GBU-37s or EGBU-28s. All B-2s are also capable of substituting bomb rack assemblies in place of the rotary launchers, providing the capability to employ 80 500-lb Mk 82s, 36 750-lb M117s, 34 tactical munitions dispensers, or 80 Mk 62 sea mines. Modifications to the bomb racks add carriage of 80 independently targeted Mk 82 (500-lb) JDAMs. Other Block 30 enhancements include fully operational defensive and offensive avionics, a more sophisticated mission planning system, and additional operating modes for the synthetic aperture radar (SAR). A new stealth coating introduced under the Alternative High Frequency Material (AHFM) program is intended to improve combat readiness times.

Beyond Block 30, USAF plans to add UHF/EHF satellite communications systems and Link 16 digital data sharing capability and to replace the current mechanically scanned phased-array antenna with an active electronically scanned array.

The first use of B-2s in combat took place March 24, 1999, against Serb targets in Allied Force, with two aircraft each dropping 16 JDAMs. In October 2001, B-2s flew the longest combat sorties during Enduring Freedom, flying 44-hour sorties from Whiteman AFB, Mo., striking targets in Afghanistan, then landing in Diego Garcia for an engine running crew change, the second crew flying a 29-hour sortie back to Whiteman. In March 2003 for Iraqi Freedom, B-2s were deployed for the first time to a forward operating location, Diego Garcia.

B-52 Stratofortress

Brief: A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or Air Launched Cruise Missiles (ALCMs), with worldwide precision navigation capability.

Function: Long-range heavy bomber.

Operator: ACC, AFMC, AFRC.

First Flight: April 15, 1952 (YB-52 prototype).

Delivered: November 1955-October 1962.

IOC: June 19, 1955.

Production: 744.

Inventory: 93.

Unit Location: Barksdale AFB, La. (ACC, AFRC), Edwards AFB, Calif. (AFMC), Minot AFB, N.D.

Contractor: Boeing.

Power Plant: eight Pratt & Whitney TF33-P-3 turbofans, each 17,000 lb thrust.

Accommodation: two pilots, side by side, plus navigator, radar navigator, and electronic warfare officer.

Dimensions: span 185 ft, length 159.3 ft, height 40.7 ft.

Weight: empty approx 188,000 lb, gross 488,000 lb.

Ceiling: 50,000 ft.

Performance (approx): max level speed 449 mph, range more than 10,000 miles.

Armament: 12 AGM-86B ALCMs or AGM-129A Advanced Cruise Missiles (ACMs) externally, with provision for eight more ALCMs or gravity weapons internally. Conventional weapons incl AGM-86C/D Conventional ALCMs (CALCMs), bombs up to 2,000 lb, CBU 87/89/97 unguided cluster munitions, CBU-103/104/105 Wind-Corrected Munitions Dispenser (WCMD)-guided cluster munitions, GBU-31 JDAMs, JSOWs, JASSMs, and on some aircraft eight AGM-84 Harpoons in under-wing clusters. Future weapons incl CBU-113/115 WCMD-Extended Range (WCMD-ER).

COMMENTARY

The B-52's still-expanding weapons capability reflects its continued ability to perform a wide range of missions, including show of force, maritime operations, long-range precision strikes, close air support (CAS), offensive counterair, air interdiction, and defense suppression. USAF plans include using B-52s as standoff electronic warfare platforms while retaining all weapons carriage capability.

Equipment includes GPS, ARC-210 radios, Have Quick II antijam radio, KY-100 secure radio, an electro-optical (EO) viewing system that uses forward-looking infrared (FLIR) and high-resolution low-light-level television (LLLTV) sensors to augment the targeting, battle assessment, flight safety, and terrain avoidance systems, improving combat and low-level flight capability. Pilots have night vision goggles (NVGs) to further enhance operation. Some B-52s are modified to carry weapons targeting pods. Future plans include modification of the entire fleet with an integrated self-targeting and battle damage assessment (BDA) capability. B-52s now support a MIL-STD-1760 interface resulting in an improved weapons capability, including naval mines, precision guided weapons, and advanced weapons such as JDAM, JSOW, JASSM, and WCMD. The B-52's ECM suite uses a combination of electronic detection, jamming, and infrared (IR) countermeasures to protect against hostile air defense systems. The aircraft can also detect and counter missile attack from the rear.

Several versions of the Stratofortress were produced, including:

B-52A. Initial production version, with J57-P-1W engines and provision for in-flight refueling. First flown Aug. 5, 1954, the three aircraft built were used by Boeing for technical development purposes. Delivered to SAC November 1957. Finally retired 1969.

B-52B. First operational version, 23 of which were built. Also, 27 RB-52B dual-role bomber/reconnaissance variants. First flown January 1955, with deliveries between June 1955-August 1956; powered by J57-P-1W, -19W, -29W, or -29WA engines. Retired in the mid-1960s.

B-52C. Multimission version with increased gross weight and larger under-wing tanks. Powered by J57-P-19W or -29WA engines. First flown March 1956; 35 were delivered June-December 1956. Majority retired 1971.

B-52D. Long-range bomber version, first flown June 1956. Total of 170 built, with deliveries beginning late 1956. Retired 1982-83.

B-52E. Version with improved bombing, navigation, and electronics systems. First flown October 1957. One hundred delivered October 1957-June 1958. Retired 1969-70.

B-52F. Version with uprated J57-P-43WA engines, first flown in May 1958. Eighty-nine delivered June 1958-February 1959. Retired 1978.

B-52G. Introduced important design changes, including a redesigned wing containing integral fuel tanks for increased range, fixed under-wing external tanks, a shorter tail fin of greater chord, and a remotely controlled tail gun turret that allowed the gunner to be repositioned with the rest of the crew. Initial flight August 1958, with the first of 193 aircraft entering service in February 1959. Retired 1994.

B-52H. The only version still in service, the H introduced TF33 turbofans, providing increased unrefueled range, and improved defensive armament. First flown July 1960, 102 were built, with deliveries between May 1961 and October 1962.

B-52H Stratofortress (SSgt. Jocelyn Rich)

Primary role of the B-52 is still that of cruise missile carrier with multiple cruise missile launches at high altitude, often followed by B-52 penetration to conduct close air support and attack additional targets using GPS/INS guided weapons.

Ongoing modernization of its conventional capabilities is extending the B-52's service life well into this century, with the ability to provide massive firepower in low- to mid-threat environments supplemented by a standoff attack capability. Iraqi Freedom saw B-52s delivering laser guided bombs for the first time using newly installed Litening targeting pods. Modification of heavy stores adapter beams will enable aircraft to carry all B-52-certified munitions. Avionics improvements include the avionics midlife improvement (AMI) program, which replaces the current system processors and data transfer cartridges. Electronic attack improvements include the ECM improvement upgrade to the ALQ-172 set. The Combat Network Communications Technology (CONECT) improvement will provide a modern cockpit information avionics architecture, in-flight beyond line of sight (BLOS) and LOS Link 16 intratheater data link connectivity and mission/weapon reprogramming capability. In the projected standoff jammer role, B-52Hs (dubbed **B-52 SOJ**) will carry new wingtip jamming pods, starting in 2009. Current plans call for 76 aircraft to be so equipped.

Fighter and Attack Aircraft

A-10 Thunderbolt II

Brief: A simple, effective, and survivable twin-engine aircraft specifically designed for close air support (CAS) of ground forces and which can be used against all ground targets, including tanks and other armored vehicles.

Function: Attack aircraft.

Operator: ACC, AFMC, PACAF, USAFE, ANG, AFRC.

First Flight: Feb. 15, 1975 (preproduction).

Delivered: November 1975-March 1984.

IOC: October 1977.
Production: 713.
Inventory: 357.
Unit Location: Active: Davis-Monthan AFB, Ariz., Eglin AFB, Fla.; Eielson AFB, Alaska, Nellis AFB, Nev., Osan AB, South Korea, Pope AFB, N.C., Spangdahlem AB, Germany. ANG: Barnes Arpt., Mass., Boise Air Terminal, Idaho, Bradley Arpt., Conn., Martin State Arpt., Md., W.K. Kellogg Arpt., Mich., Willow Grove ARS, Pa. AFRC: Barksdale AFB, La., NAS JRB New Orleans, La., Whiteman AFB, Mo.
Contractor: Fairchild Republic; now Lockheed Martin.
Power Plant: two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust.
Accommodation: pilot only, on zero-height/518 mph-zero-speed ejection seat.
Dimensions: span 57.5 ft, length 53.3 ft, height 14.7 ft.
Weight: empty 28,000 lb, max gross 51,000 lb.
Ceiling: 37,000 ft.
Performance: speed 518 mph, combat range with 9,500 lb of weapons and 1.7 hr loiter, 20 min reserve, 288 miles.
Armament: one 30 mm, seven-barrel, 1,174-rd capacity GAU-8 Gatling gun capable of carrying inert target practice (TP) rds, straight high-explosive incendiary (HEI), or anti-armor tailored HEI/API "combat mix"; 11 hardpoints for up to 16,000 lb of ordnance, incl various types of free-fall or guided bombs such as Mk 82, Mk 84, GBU-10/12, CBU-87 Combined Effects Munition (CEM), 2.75-in high-explosive, white phosphorous, and covert illumination rockets, SUU-25 overt/covert flare and "log" dispensers, up to six AGM-65B/D/G/H/K Maverick missiles, and up to four AIM-9 Sidewinder missiles. Up to 480 chaff and flares carried internally to counter radar or IR threats. Up to three 600-gallon fuel tanks can also be carried. Future weapons incl JDAM and Wind-Corrected Munitions Dispenser (WCMD).

COMMENTARY

Supporting the CAS, airborne forward air controller (FAC(A)), interdiction, and combat search and rescue (CSAR) ("Sandy") missions, the A-10 combines large diverse weapons payload, long loiter, austere airfield capability, maneuverability, and wide combat radius with the ability to operate under 1,000-ft ceilings, with 1.5-mile visibility, in darkness with NVGs and advanced targeting pods, and up to 20,000 ft. In a typical mission, the A-10, nicknamed Warthog, can fly 150 miles with a standard payload and remain on station (loiter) for two hours. The 30 mm GAU-8 gun provides a cost-effective weapon with which to defeat a wide array of ground targets, including tanks. The gun/rocket/Maverick medley provides a unique combination of "point-shoot," low-collateral damage, and mobile target capabilities demanded by the danger-close proximity to friendly forces. The cockpit is protected with titanium armor, capable of withstanding projectiles up to 23 mm. A-10s were used extensively in Desert Storm, Kosovo, Enduring Freedom, and Iraqi Freedom, the last operation seeing several A-10 combat firsts, including first use of Litening II targeting pod, first self-lased laser guided bomb (LGB) delivery, and first AGM-65H/K employment. The A-10 is projected to serve well into the 2020s.

A-10A equipment includes an enhanced GPS/INS (EGI), head-up display (HUD), NVGs, the Integrated Flight and Fire Control Computer (IFFCC) to enhance weapons delivery accuracy, cockpit presentations, targeting pod integration, and terrain avoidance. Other equipment includes Pave Penny laser target identification pod and self-protection/penetration aids to include ALQ 131/184 ECM pods, ALR-69 radar warning receiver and countermeasures system (CMS) to digitally integrate the ALE-40 chaff-flare dispenser.

A-10C, new designation for aircraft to be upgraded for precision engagement, with new cockpit displays, full targeting pod integration, hands-on throttle and stick (HOTAS), a digital stores management system, a Joint Tactical Radio System (JTRS) data link and JDAM/WCMD integration. Low-rate initial production (LRIP) of upgrade kits began in 2004, and debut flight occurred Jan. 20, 2005. Additionally, an upgraded automated chaff and flare system is planned for 2008.

OA-10A aircraft are primarily used for FAC(A) missions, combat escort, search and rescue, and visual reconnaissance. The OA-10 is identical to the A-10A. Mission configurations typically include large loads of white phosphorous marking rockets and covert/overt illumination rockets/flares/logs to mark and/or illuminate targets for strike aircraft or friendly ground forces. The first OA-10 unit reached initial operational capability (IOC) in October 1987.

AC-130 Gunship

Brief: Heavily armed aircraft using side-firing weapons integrated with sophisticated sensor, navigation, and fire-control systems to provide precise firepower or area saturation for long periods, at night and in adverse weather.
Function: Attack aircraft.
Operator: AFSOC.

***A-10A** Thunderbolt II* (TSgt. Bob Sommer)

First Flight: 1967.
Delivered: 1968-present.
IOC: 1972 (AC-130H); 1996 (AC-130U).
Production: 39; conversion of four additional C-130s to AC-130 standard contracted.
Inventory: 8 (AC-130H); 13 (AC-130U).
Unit Location: Hurlburt Field, Fla.
Contractor: Lockheed Martin (airframe); Boeing (AC-130H); Rockwell, now Boeing (AC-130U).
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: AC-130H crew of 14; AC-130U crew of 13.
Dimensions: span 132.6 ft, length 99 ft, height 38.5 ft.
Weight: gross 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 289 mph, range 1,500 miles, with air refueling unlimited.
Armament: two 20 mm Vulcan cannons with 3,000 rd (AC-130H); one 25 mm Gatling gun (AC-130U); one 40 mm Bofors cannon with 256 rd, and one 105 mm Howitzer with 100 rd.

COMMENTARY

The AC-130 is a C-130 modified with gun systems, electronic and EO sensors, fire-control systems, enhanced navigation systems, sophisticated communications, defensive systems, and in-flight refueling capability. These systems give the gunship crew the capability to acquire and identify targets day or night, coordinate with ground forces and command and control (C2) agencies, and deliver surgical firepower in support of both conventional and special operations missions. During operations in Afghanistan and Iraq, the AC-130 gunships worked in conjunction with the MQ-1 Predator, the latter providing live video and target referencing information.

AC-130A was the initial version, deployed in Vietnam 1968-69. Eighteen produced.

AC-130E, an improved version, of which eight were built. Converted to H standard after service in Vietnam.

AC-130H Spectres serve with the 16th SOW. The unit has eight, each equipped with a digital fire-control computer. They employ EO sensors and target-acquisition systems, including FLIR and LLLTV, and are capable of in-flight refueling. Fire-control computers, navigation, communications, and sensor suites have been upgraded; an infrared suppression system (IRSS) overhaul is under way. In addition, USAF is evaluating wingtip tanks as replacements for the existing underwing tanks as a means of improving performance.

AC-130U Spooky, gunship conversions by Rockwell, of which 13 were delivered to the 16th SOW's 4th SOS in 1994-95. Four additional aircraft have been contracted for conversion by Boeing to U standard. These AC-130Us have greater altitude capability and combine increased firepower, reliability, and superior accuracy with the latest methods of target location. All weapons can be subordinated to the APQ-180 digital fire-control radar, FLIR, or all-light-level television (ALLTV) for adverse weather attack operations.

Although the AC-130H Spectre and AC-130U Spooky gunships use dissimilar avionics and other systems, fire support to troops on the ground is generally comparable. The AC-130U will not be required for most fire support missions but provides benefits under certain circumstances (weather, dual target attack, and defensive avionics).

F-15 Eagle

Brief: A supersonic, all-weather, highly maneuverable tactical fighter designed to permit USAF to swiftly gain and maintain air superiority in aerial combat.
Function: Air superiority fighter.
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG.
First Flight: July 27, 1972.
Delivered: November 1974-85.
IOC: September 1975.
Production: 874.
Inventory: 511.
Unit Location: Active: Eglin AFB, Fla., Elmendorf AFB, Alaska, Kadena AB, Japan, Langley AFB, Va., Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Robins AFB, Ga., Tyndall AFB, Fla. ANG: Hickam AFB, Hawaii, Jacksonville Arpt., Fla., Klamath Falls Arpt., Ore., Lambert-St. Louis Arpt., Mo., NAS JRB New Orleans, La., Otis ANGB, Mass., Portland Arpt., Ore.
Contractor: McDonnell Douglas (now Boeing); Raytheon.
Power Plant: F-15C: two Pratt & Whitney F100-PW-220 turbofans, each 25,000 lb thrust, with max afterburner.

***AC-130** Gunship* (USAF photo)

Accommodation: pilot only in F-15A/C; two seats in F-15B/D.
Dimensions: span 42.8 ft, length 63.8 ft, height 18.7 ft.
Weight: empty 28,600 lb, gross 68,000 lb.
Ceiling: 65,000 ft.
Performance: F-15C: max speed Mach 2.5, T-O run 900 ft, landing run without braking parachute 3,500 ft, ferry range with external fuel tanks more than 2,878 miles.
Armament: one internally mounted M61A1 20 mm six-barrel cannon; up to four AIM-9L/M Sidewinder and up to four AIM-7 Sparrow air-to-air missiles, or up to eight AIM-120 Advanced Medium-Range Air-to-Air Missiles (AMRAAMs), carried externally. Deliveries of AIM-9X from November 2003.
COMMENTARY
Superior maneuverability and acceleration, range, weapons, and avionics enable the F-15 to penetrate hostile defenses and establish air superiority over enemy systems. F-15 fighters deployed to the Persian Gulf for Desert Storm accounted for 34 of the 37 USAF air-to-air victories, and in Iraqi Freedom F-15Cs led coalition aircraft in maintaining aerial dominance.
F-15A (single-seat) and **F-15B** (two-seat) fighters became USAF's front-line fighter immediately upon introduction in the mid-1970s. A multimission avionics system includes APG-63 pulse-Doppler radar for long-range detection and tracking of small high-speed objects down to treetop level and effective weapons delivery, a HUD for close-in combat, identification, friend or foe (IFF), and INS. F-15A/Bs now serve with ANG. In February 2004, Florida's 125th FW received the first of 19 F-15A/Bs retrofitted with E-kit upgrades providing additional thrust and improved combat capability. Other units are expected to follow.
F-15C (single-seat) and **F-15D** (two-seat) models followed in June 1979. Improvements included 2,000 lb of additional internal fuel and provision for carrying conformal fuel tanks (CFTs), reducing in-flight refueling requirements and increasing time in the combat zone. From 1983 through 1997, tactical capabilities were enhanced extensively through the multistaged improvement program (MSIP), a program of installation of new or modification of existing avionics equipment, which allows for the carriage of more advanced weapons, and increased self-protection. The last 43 aircraft included improved APG-70 radar, and F-15C/Ds are receiving an APG-63 upgrade, the APG-63(V)1. One squadron in Alaska received the later APG-63(V)2, featuring an active electronically scanned array (AESA), permitting the aircraft to track multiple targets and to guide air-to-air missiles against them. The Joint Helmet Mounted Cueing System (JHMCS), a "look and shoot" head-mounted system, will, along with the AIM-9X, significantly enhance lethality in close-range aerial combat. Other modifications include improved engines, GPS equipment, and the Link 16 fighter data link.

F-15E Strike Eagle
Brief: A heavily modified, two-seat, dual-role variant of the original F-15, with weapons systems totally integrated for all-weather deep interdiction missions as well as air-to-air combat.
Function: Dual-role fighter.
Operator: ACC, AFMC, PACAF, USAFE.
First Flight: Dec. 11, 1986.
Delivered: April 1988-2004.
IOC: May 1989.
Production: 236.
Inventory: 222.
Unit Location: Eglin AFB, Fla., Elmendorf AFB, Alaska, Mountain Home AFB, Idaho, Nellis AFB, Nev., RAF Lakenheath, UK, Robins AFB, Ga., Seymour Johnson AFB, N.C.
Contractor: McDonnell Douglas (now Boeing); Raytheon.
Power Plant: two Pratt & Whitney F100-PW-220, each 25,000 lb thrust; or F100-PW-229 turbofans, each 29,000 lb thrust with max afterburner.
Accommodation: crew of two, on zero/zero ejection seats.
Dimensions: span 42.8 ft, length 63.8 ft, height 18.5 ft.
Weight: empty 45,000 lb, gross 81,000 lb.
Ceiling: 50,000 ft.
Performance: max level speed at altitude Mach 2.5, ferry range with CFTs 3,000 miles.
Armament: one internally mounted M61A1 20 mm six-barrel cannon; up to four AIM-9 Sidewinder and up to four AIM-7 Sparrow air-to-air missiles, or up to eight AIM-120 AMRAAMs; up to six AGM-65 Maverick air-to-surface missiles; AGM-130; EGBU-15 and GBU 10/12/15/24/28 guided munitions; CBU 87/89/97 unguided cluster munitions; unguided munitions; JSOW, JDAM, CBU-103/104/105 Wind-Corrected Munitions Dispenser (WCMD)-guided cluster munitions, and nuclear weapons.
COMMENTARY
F-15E has a strengthened airframe for increased gross weight at takeoff and maneuver at nine Gs throughout the flight envelope. Cockpit controls and displays are improved, and a wide-field-of-view (WFOV) HUD is included.
For low-altitude, high-speed penetration and precision attack on tactical targets at night and in adverse weather, the F-15E carries a high-resolution APG-70 radar which provides a high-resolution synthetic aperture radar (SAR) map and LANTIRN (Low-Altitude Navigation and Targeting Infrared for Night) pods, with wide-field FLIR. The APG-70 gives the F-15E, with its AMRAAM, AIM-7, and AIM-9 load, a true multirole capability with the inherent air-to-air capability of the F-15C. The triple-redundant digital flight-control system, in combination with the LANTIRN navigation pod and the WFOV HUD, permits automatic terrain following. Other improvements include an EGI and Link 16 data link. JSOW, JDAM, and WCMD capabilities were added in 2003. In addition, USAF has equipped some F-15E aircraft with Litening ER targeting pods for improved precision attack capability. External CFTs are fitted to increase combat range while carrying ordnance.
During Desert Storm, 48 USAF F-15Es were deployed to the Persian Gulf where they operated mainly at night, hunting Scud missile launchers and artillery sites using the LANTIRN system; the ability to operate in conjunction with E-8 Joint STARS aircraft both then and in Iraqi Freedom proved critical to success.
Ten additional aircraft were authorized for delivery from FY02 through FY04. These new F-15Es include an upgrade to the programmable armament control set (PACS), software for delivery of JDAM, JSOW, and WCMD, and an enhanced night vision capability.

F-16 Fighting Falcon
Brief: A compact, versatile, and low-cost multirole fighter aircraft that is highly maneuverable and has repeatedly proved itself in air-to-air combat and air-to-surface attack.
Function: Multirole fighter.
Operator: ACC, AETC, AFMC, PACAF, USAFE, ANG, AFRC.
First Flight: Dec. 8, 1976 (full-scale development).
Delivered: August 1978-2007 (planned).
IOC: October 1980, Hill AFB, Utah.
Production: 2,206.

***F-15E** Strike Eagle* (MSgt. Shaun Withers)

Inventory: 1,346.
Unit Location: 13 active wings, 28 ANG, and five AFRC units (one associate).
Contractor: Lockheed Martin; Northrop Grumman.
Power Plant: one augmented turbofan. General Electric F110-GE-100 (27,600 lb thrust) and Pratt & Whitney F100-PW-220 (23,450 lb thrust) are alternative standard engines. Increased performance engines (IPEs) in aircraft delivered from late 1991: Block 50: F110-GE-129 (29,000 lb thrust); Block 52: F100-PW-229 (29,100 lb thrust).
Accommodation: pilot only, on zero/zero ejection seat.
Dimensions: wingspan with missiles 32.7 ft, length overall 49.4 ft, height 16.7 ft.
Weight: (F-16C) empty (F100-PW-229) 18,591 lb, (F110-GE-129) 18,917 lb; gross, with external load (Block 40/42) 42,000 lb.
Ceiling: 50,000 ft.
Performance: max speed Mach 2, radius of action: Block 40 with two 2,000-lb bombs, two AIM-9 missiles, and external fuel, hi-lo-lo-hi 852 miles; combat range 575 miles.
Armament: one M61A1 20 mm multibarrel cannon, with 511 rd, mounted in fuselage; wingtip-mounted missiles; seven other external stores stations for fuel tanks and a range of air-to-air and air-to-surface munitions.
COMMENTARY
The F-16 is the workhorse of the USAF fighter fleet, constituting more than 50 percent of its strength through at least 2010. The 200+ USAF F-16 multimission fighters deployed to the Persian Gulf Theater flew more sorties than any other type during Desert Storm, with 13,500 missions. In Iraqi Freedom, the F-16 flew hundreds of missions helping to destroy the unit cohesion of the Republican Guard.
F-16A (single-seat) and **F-16B** (two-seat) versions, which entered service with the 388th TFW, Hill AFB, Utah, incorporated advanced technologies from the start, making these aircraft two of the most maneuverable fighters built. Equipment includes a multimode radar with a clutter-free look-down capability, advanced radar warning receiver (RWR), HUD, internal chaff/flare dispensers, and a 500-rd 20 mm internal gun.
Production of the F-16A and B for USAF ended in 1985. Most now belong to ANG. A midlife update program, undertaken cooperatively by USAF and NATO

***F-16CJ** Fighting Falcon* (Ted Carlson)

F/A-22 Raptor (MSgt. Michael Ammons)

operators, includes improvement to the radar, fire-control computer, stores-management computer, and avionics software, giving F-16A/Bs the ability to use next generation air-to-air and air-to-surface weapons.

Reliability and maintainability improvements include a ring-laser gyro INS and installation of the upgraded F100-PW-220E turbofan engine.

The Multinational Staged Improvement Program, implemented in 1980, ensured the aircraft could accept systems under development, thereby minimizing retrofit costs. All F-16s delivered since November 1981 have had built-in structural and wiring provisions and systems architecture that expand the single-seater's multirole flexibility to perform precision strike, night attack, and beyond-visual-range intercept missions.

F-16C (single-seat) and **F-16D** (two-seat) aircraft were introduced at production Block 25 with MSIP II improvements in the cockpit, airframe, and core avionics and an increased-range APG-68 radar. Block 30 and 40 aircraft incorporate the General Electric F110-GE-100 engine. Deliveries began in 1984. With the exception of AFMC, all of the active and many of the Guard and Reserve units have since converted to F-16C/Ds.

ANG and AFRC Block 25/30/32 F-16s are receiving upgrades aimed at increasing throughput and memory for new weapon capabilities including the 500-lb JDAM, plus Advanced Identification Friend/Foe (AIFF) to reduce the risk of fratricide.

F-16CG Block 40/42 aircraft specialize in night attack operations with precision guided weapons. Follow-on improvements include ALE-47 improved defensive countermeasures, ALR-56M advanced RWR (Block 40 only), Very High Speed Integrated Circuit (VHSIC) technology in the APG-68(v5) fire-control radar, a ring-laser gyro INS, GPS, a LANTIRN nav/attack system, core avionics hardware, enhanced-envelope gunsight, digital flight controls, automatic terrain following, increased takeoff weight and maneuvering limits, an 8,000-hour airframe, IPEs, and expanded envelope nine-G capability.

F-16CJ designated Block 50/52 aircraft are equipped with the High-speed Anti-Radiation Missile (HARM) targeting system (HTS) for suppression of enemy air defenses (SEAD). Block 50/52 F-16CJs have MSIP Stage III improvements, which also show up in selected retrofits of earlier F-16 blocks. These aircraft incorporate the General Electric F110 and Pratt & Whitney F100 increased performance engines (IPEs), the latest cockpit control and display technology, including a wide-angle HUD. Weapons improvements include multi-shot AMRAAM compatibility, AGM-154 JSOW, and Wind-Corrected Munitions Dispenser (WCMD).

Block 50/52 aircraft, followed by Block 40/42 from 2006-10, are being retrofitted with a new modular mission computer being developed under an F-16 common configuration implementation program (CCIP), aimed at extending operational flexibility and maintenance commonality. This effort includes the participating European governments of the F-16 Multinational Fighter Program. CCIP also includes new color displays, Sniper XR targeting pod, JHMCS, AIM-9X, Link 16, and improved weapons capabilities. First delivery made January 2002. The Block 50/52 aircraft will have dual/alternate carriage of HARM targeting system (HTS) and Smart Targeting and Identification via Networked Geolocation (STING) and advanced targeting pods (ATP) in FY07. Planned future upgrades include enhanced GPS/INS (CG/CJ aircraft) and upgraded radar with SAR capability (CJ aircraft).

Under Falcon STAR (STructural Augmentation Roadmap), all blocks of F-16 aircraft are undergoing a structural modification program to remedy fatigue problems caused by increased usage rates and heavier than forecast gross weights. Delivery of modified aircraft started October 2004 and is scheduled to continue to 2014.

F/A-22 Raptor

Brief: High-technology follow-on for the F-15C. An all-weather, multirole fighter that combines an extremely maneuverable airframe with stealth technologies, supercruise, and integrated avionics to help it penetrate through advanced anti-air threats and achieve air dominance.

Function: Fighter.

Operator: ACC, AETC, AFMC.

First Flight: Sept. 7, 1997.

Delivery: 2001 (first production representative aircraft).

IOC: December 2005 (planned).

Production: stated requirement 381.

Inventory: 27.

Unit Location: Langley AFB, Va. (designated first operational location), Edwards AFB, Calif., Nellis AFB, Nev., Tyndall AFB, Fla. (fighter training unit).

Contractor: Lockheed Martin; Boeing.

Power Plant: two Pratt & Whitney F119-PW-100 turbofans, each in 35,000-lb thrust class.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: span 44.5 ft, length 62 ft, height 16.6 ft.

Weight: gross 50,000 lb.

Ceiling: 50,000 ft.

Performance (design target): max level speed at S/L 900+ mph, range more than 2,000 miles.

Armament: one internal M61A2 20 mm gun, two AIM-9 Sidewinders stored internally in the side weapons bays; six AIM-120 AMRAAMs in the main weapons bay; for ground attack two 1,000-lb JDAMs replace four AMRAAMs internally; up to eight Small Diameter Bombs (SDBs) can be carried in place of the two JDAMs (projected by 2009).

COMMENTARY

The F/A-22's unparalleled combination of stealth, supercruise (ability to cruise at supersonic speed without using its afterburners), maneuverability, and integrated avionics allows it to counter multiple anti-access threats. Integrated avionics and intraflight data link permit simultaneous engagement of multiple targets. The combination of flight controls, structural strength, and high-performance engines with thrust vectoring nozzles results in exceptional maneuverability. The F/A-22 will lead the USAF's "kick down the door" force, day and night, across the spectrum of missions.

The F/A-22 entered engineering and manufacturing development (EMD) in August 1991. During this period, nine aircraft were built, three without avionics to explore flight characteristics, flutter, loads, propulsion, envelope expansion, and weapons separation. The first aircraft is no longer flying and was used for live fire testing after completion of its flight characteristics work. The remaining six were built with avionics to complete integration work, refine the pilot vehicle interface, and fly guided weapons launch tests. In addition, one static and one fatigue test airframe were built.

Initial operational test and evaluation (IOT&E) examining the Raptor's air dominance mission concluded mid-September 2004. JDAM capability was demonstrated that same month. Follow-on OT&E (FOT&E) is expected to start July 2005. The F/A-22 is planned to have air-to-air and air-to-ground attack capability when it reaches IOC at the end of 2005.

The F/A-22 is in low-rate initial production (Lots 1-5) with full-rate production approved in the spring of 2005. Production aircraft have been delivered to Nellis AFB, Nev., and to Tyndall AFB, Fla., where they are used to train F/A-22 pilots. Langley received its first Raptors in January 2005.

F-35 Joint Strike Fighter

Brief: An affordable, highly common family of next generation strike aircraft.

Function: Multirole fighter.

Operator: ACC for USAF.

First Flight: Oct. 24, 2000 (concept demonstrator).

Delivery: 2009 (anticipated first production aircraft).

IOC: 2013 (USAF).

Production: planned: 1,763 total F-35A and F-35B (USAF), 680 total F-35B (USMC) and F-35C (USN), 150 (UK).

Inventory: TBD.

Unit Location: TBD.

Contractor: Lockheed Martin, with Northrop Grumman and BAE Systems; Pratt & Whitney is propulsion contractor; General Electric is second source engine contractor for the production phase.

Power Plant: one Pratt & Whitney F135 or General Electric F136 turbofan (production), in 35,000-lb thrust class.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: TBD.

Weight: TBD.

Ceiling: TBD.

Performance (design targets): mil power level speed at S/L, 600 miles knots calibrated airspeed (KCAS) for the F-35B short takeoff and vertical landing (STOVL) aircraft, 630 KCAS for the F-35 carrier variant (CV) and for the F-35A conventional takeoff and landing (CTOL) variant (Mach 1 max power for CTOL only), combat radius more than 590 miles for CTOL variant, 600 miles for CV, and 450 miles for STOVL.

Armament: (main weapons bay): CTOL: one internal gun, two AMRAAMs, and two 2,000-lb JDAMs. CV: two AMRAAMs and two 2,000-lb JDAMs. STOVL: two AMRAAMs and two 1,000-lb JDAMs. External carriage will also be available. (Note: Numerous other weapons capabilities will be added as system development continues.)

COMMENTARY: The F-35 Joint Strike Fighter is a multinational cooperative development program aimed at developing and fielding an affordable, highly common family of next generation strike fighters. For USAF, the F-35 will replace its current force of F-16 and A-10 aircraft with a stealthy multirole fighter that will comprise the bulk of USAF's fighter fleet for up to 50 years.

F-35 Joint Strike Fighter (Lockheed Martin photo/Tom Reynolds)

This advanced multimission fighter is designed to penetrate high-threat enemy airspace and engage all enemy targets in any conflict. In addition to its advanced stealth design, the F-35 incorporates maneuverability, long range, and highly advanced avionics to accomplish the bulk of USAF missions. Its fully integrated avionics and weapons systems will permit simultaneous engagement of multiple targets in enemy airspace. USAF has stated intent to buy approximately 250 **F-35B** STOVL variants.

The concept demonstration phase (CDP) of the program commenced November 1996, with competitive contract awards to Lockheed Martin (X-35A) and Boeing (X-32A). CDP concluded in fall 2001 with Lockheed Martin declared the winner. The system development and demonstration (SDD) phase, begun in October 2001, focuses on system development, test and evaluation, logistics support, and LRIP planning. Flight testing is projected to begin in 2006. The F-35 is powered by a derivative of the Pratt & Whitney F119 engine, called the F135. General Electric is developing a physically and functionally interchangeable power plant, the F136, for competition in production.

F-117 Nighthawk

Brief: World's first operational aircraft designed to exploit low observable (LO) stealth technology to expand the range of heavily defended critical targets that can be attacked.

Function: Attack aircraft.

Operator: ACC, AFMC.

First Flight: June 18, 1981.

Delivered: 1982-summer 1990.

IOC: October 1983.

Production: 59.

Inventory: 55 (52 F-117A; 3 YF-117).

Unit Location: Eglin AFB, Fla., Holloman AFB, N.M.

Contractor: Lockheed Martin; Raytheon.

Power Plant: two General Electric F404-GE-F1D2 nonafterburning turbojets, each 9,040 lb thrust.

Accommodation: pilot only, on zero/zero ejection seat.

Dimensions: span 43.3 ft, length 65.9 ft, height 12.4 ft.

Weight: empty (estimated) 29,500 lb, max gross 52,500 lb.

Ceiling: 35,000 ft.

Performance: high subsonic, top speed 646 mph (0.9 Mach), mission radius, unrefueled (5,000-lb weapons load) 656 miles.

Armament: full internal carriage of a variety of tactical weapons, incl laser- and GPS-guided 2,000-lb munitions, unguided general-purpose bombs, and cluster munitions. JDAM capability being introduced.

COMMENTARY

F-117 is the Air Force's primary attack aircraft for penetrating high-threat target areas with precision weapons. Its small radar signature, LO technologies, and advanced targeting system allow the aircraft to penetrate dense threat environments and to deliver precision weapons against heavily defended, high-value targets with pinpoint accuracy. Primary missions include precision attack, air interdiction, SEAD, and special operations.

Acknowledged publicly in November 1988, the F-117's first operational deployment was to Panama in 1989 for Just Cause.

F-117A development and manufacture began simultaneously in November 1978 within a highly classified environment, using many parts either transferred or modified from existing aircraft. The F-117As were deployed with the 4450th Tactical Group (redesignated 37th TFW in 1989) at Tonopah Test Range Airfield, Nev., where operations were restricted mainly to night flying to maintain secrecy. In 1992, they were transferred to the 49th FW at Holloman AFB, N.M.

To achieve the aircraft's minimal radar signature, the skin panels of the arrowhead-shaped airframe are divided into many small, perfectly flat surfaces (facets), which deflect at a variety of angles all signals from probing hostile ground or airborne radars. In addition, much of the aircraft's external surface is made of composites and radar-absorbent materials. The F-117A's dull black finish reflects little light, and the engine air intakes and exhaust nozzles are above the wings and rear fuselage, respectively, to shield them from IR seekers below. The two nonafterburning turbofans give the aircraft low noise signature and high subsonic performance.

Key features include a state-of-the-art digital avionics suite integrating sophisticated navigation and attack systems, complemented by a specially developed automated mission-planning system. A high-precision INS coupled to GPS is installed. An upgraded dual-turret IR targeting system, combined with boresight laser designators and autotracker, ensures precision attack.

Other improvements since 1989 have included upgraded cockpit display and instrumentation and adverse weather capability via advanced weapons. Current and ongoing modifications provide a single, fleet-wide, optimum LO configuration, upgraded avionics to Block 2 configuration, integration of new weapons including JDAM for all-weather strike capability, and replacement of obsolete components to sustain the fleet through its service life. The F-117 is expected to remain in USAF service into the 2020s.

J-UCAS

Brief: A joint DARPA/USAF/Navy program to develop the technical feasibility, military usefulness, and operational value of a networked system of affordable, sophisticated stealthy weaponized unmanned combat air vehicles (UCAVs) capable of performing SEAD, strike, and electronic attack for the Air Force (X-45) and intelligence-surveillance-reconnaissance (ISR) missions for the Navy (X-47).

Function: Concept demonstrator UCAVs for SEAD/strike/electronic attack/reconnaissance missions.

First Flight: May 22, 2002.

Delivered: TBD.

Contractor: X-45: Boeing; X-47: Northrop Grumman.

Production: TBD.

Inventory: TBD.

Unit Location: TBD.

Power Plant: X-45A Honeywell F124-GA-100 turbofan.

Dimensions: X-45A: span 33.8 ft, height 3.7 ft, length 26.5 ft. X-45C: span approx 48 ft; length 36 ft.

Weight: X-45C: approx 35,000 lb.

COMMENTARY

Under the Joint Unmanned Combat Air System (J-UCAS) program, the Defense Advanced Research Projects Agency (DARPA) is developing carrier-capable UCAV technology for the Navy (X-47) and a USAF system (X-45) for the SEAD, strike, and electronic attack mission. Key to the program is the use of a common operating system to facilitate the integration of subsystems such as sensors, weapons, and communications, allowing USAF and Navy UCAVs to work together seamlessly. Additionally, the system architecture will ensure interoperability with manned aircraft, command and control centers, and space assets. The UCAV may be made air refuelable for self-deployment.

USAF will become lead service in October 2005.

X-45A. The initial version, this Y-shaped vehicle bears little resemblance to the operational version USAF plans to field.

X-45B. Canceled.

X-45C more closely resembles the objective UCAV system. This flying-wing-design variant will feature a new, larger airframe with dual internal weapons bays capable of carrying two 2,000-lb JDAMs or eight-plus Small Diameter Bombs and will demonstrate stealth characteristics. Block 2 flight testing includes multivehicle flights and release of an internally carried guided weapon. First prototype flight is expected in 2006.

YAL-1A Attack Airborne Laser

Brief: The prototype YAL-1A, using a modified 747-400F platform, will be the world's first operational airborne high-energy laser weapon system.

Function: Airborne laser.

Operator: ACC.

First Flight: July 18, 2002 (Block 04 test bed).

Delivered: First aircraft undergoing testing of beam control system; separate testing of COIL system, installation of laser system.

IOC: FY12 (planned).

Production: TBD.

Inventory: TBD.

Unit Location: TBD.

Contractor: Boeing (ABL platform; battle management (BM) system); TRW (now Northrop Grumman) (COIL and subsystems); Lockheed Martin (beam control system).

Power Plant: four GE CF6-80 turbofans, each 61,500 lb thrust.

Accommodation: flight crew of two, plus four mission specialists.

Dimensions: span 211.4 ft, length 228.8 ft, height 63.7 ft.

Weight: empty 423,882 lb, gross 800,000 lb.

Ceiling: 45,000 ft.

Performance: max operating speed Mach 0.83, max laser weapon range hundreds of miles, unrefueled endurance at 40,000 ft with operational laser weapon load approx six hr. Chemical fuel carried on board will enable more than 20 shots.

COMMENTARY

The Airborne Laser (ABL) will become the first directed energy weapon in the US arsenal. The Missile Defense Agency (MDA) assumed overall direction and budget authority for the program in summer 2001. USAF continues to man and develop the program through its Airborne

F-117 Nighthawk (SSgt. Derrick C. Goode)

J-UCAS: X-45A *UCAV concept demonstrator* (DARPA photo)

Laser System Program Office at Kirtland AFB, N.M.

Air Combat Command will have operational responsibility and currently plans to base the attack laser in CONUS but could deploy the ABL with minimal airlift support to any region of the world. It will arrive in theater with its crew, laser fuel, and initial spares ready to fight. Operational concepts call for ABLs to fly continuous patrols over deployed US forces, at an altitude of 40,000 ft. The aircraft will detect and shoot down any ballistic missiles launched at US forces or nearby allied nations. The ABL will also have the capability of determining hostile launch locations and passing that information to other US assets. As US forces achieve air superiority, ABL will be able to move closer to enemy territory. Once the decision is made to proceed with full production, USAF's acquisition community will assume responsibility for procurement; fleet size has not been determined.

It will employ a Chemical-Oxygen Iodine Laser (COIL) system, running down the interior of the aircraft. Laser fire will emerge through a large ball turret in the nose. Intended targets are ballistic missiles in their boost, or very earliest, phase of flight. ABLs represent the only near-term boost-phase missile defense. The system will track ballistic missiles and maintain laser focus on their skin, which, when sufficiently heated, will cause the pressurized fuel within to explode. The ABL can target ballistic missiles hundreds of miles away and thus can remain over friendly territory to kill ballistic missiles as they are launched.

The lightweight, megawatt-class COIL technology can deliver high energy over a great distance largely because of its IR wavelength. In addition to the COIL, the ABL houses three other lasers: the active ranger system, which provides preliminary tracking data; the track illuminator laser, which produces more refined data; and the beacon illuminator laser, which measures atmospheric disturbance.

Following a two-year structural modification, the ABL platform's first flight took place July 18, 2002, from Boeing's Wichita, Kan., facility. A 10-month laser module test was completed in 2002, and, in late 2002, the platform was flown to Edwards AFB, Calif. While YAL-1A is in the hangar, tests are being conducted independently on the ABL optical system and the six laser modules that make up the complete COIL system. All six modules were successfully tested on Nov. 10, 2004. Tests will continue for several months. Once proved effective, they will be installed on the aircraft in preparation for a rigorous series of ground and air tests of the entire ABL configuration. Initial tests are expected to culminate in a test destruction of a boosting ballistic missile over the Pacific.

Reconnaissance and Surveillance Aircraft

E-3 Sentry

Brief: Modified Boeing 707, fitted with a rotating radar dome 30 ft wide and 6 ft thick, which provides all-weather air surveillance and command, control, and communications for tactical and air defense forces.

Function: Airborne early warning, BM, C3 aircraft.

Operator: ACC, PACAF, AFRC (assoc.).

First Flight: Oct. 31, 1975 (full avionics).

Delivered: March 1977-84.

IOC: 1977.

Production: 34.

Inventory: 32.

Unit Location: Elmendorf AFB, Alaska, Kadena AB, Japan, Tinker AFB, Okla. AFRC: (assoc.) Tinker AFB, Okla.

Contractor: Boeing; Northrop Grumman (radar); Lockheed Martin (computer).

Power Plant: four Pratt & Whitney TF33-PW-100/100A turbofans, each 21,000 lb thrust.

Accommodation: flight crew of four; 13-19 mission specialists.

Dimensions: span 145.8 ft, length 152.9 ft, height 41.5 ft.

Weight: gross 347,000 lb.

Ceiling: 38,000 ft.

Performance: optimum cruise Mach 0.78, endurance eight hr unrefueled.

COMMENTARY

A critical component of the USAF inventory, the E-3 Airborne Warning and Control System (AWACS) aircraft is capable of surveillance from Earth's surface up to the stratosphere, over land or water, at more than 200 miles. During conflict it will coordinate the actions of hundreds of strike, support, and cargo aircraft.

E-3A. Of the 24 built for USAF in standard production configuration, 22 were later upgraded.

An improved US/NATO Standard E-3A configuration was initiated with the 25th USAF Sentry, delivered in December 1981, with a larger-memory computer and a maritime detection capability. Nine were built new for USAF, and one of the original E-3As was upgraded.

E-3B is the upgraded earliest version E-3A. Twenty-two production models and two prototypes were produced. Improvements include much-enhanced computer capabilities, jam-resistant communications, austere maritime surveillance capability, additional radio communications, and five additional display consoles.

E-3C is an upgrade to the original 10 US/NATO Standard E-3A aircraft, with additional radio, console, and radar capabilities. Redelivered 1984.

A series of major sustainability, reliability, and availability upgrades for USAF E-3s has been undertaken to support the continuing demands on the system. Upgrades include new passive detection systems, known as electronic support measures (ESM), that complement the active beaming radar, enabling the aircraft to detect signals emitted by both hostile and friendly targets, improved Joint Tactical Information Distribution System (JTIDS), jam-resistant communications, increased computer capacity, and GPS capability. Radar system improvements permit AWACS aircraft operating in the pulse-Doppler mode to detect smaller, stealthier targets. A single, long-term contract awarded in 2001 provides for further improvement and management support.

***E-3C** Sentry* (SSgt. Matthew Hannen)

E-8 Joint STARS

Brief: A modified Boeing 707 equipped with a large, canoe-shaped radome mounted under the forward part of the fuselage, housing long-range, air-to-ground radar capable of locating, classifying, and tracking vehicles moving on Earth's surface out to distances in excess of 124 miles. Such data are then transmitted via data link to ground stations or other aircraft.

Function: Ground surveillance, battle management (BM), C2 aircraft.

Operator: ACC and ANG, as the blended 116th Air Control Wing.

First Flight: December 1988.

Delivered: May 1996-present

IOC: Dec. 18, 1997.

Production: 17.

Inventory: 17.

Unit Location: Robins AFB, Ga.

Contractor: Northrop Grumman; Motorola; Cubic; Raytheon.

Power Plant: four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.

Accommodation: mission crew of 21 Air Force/Army operators (can be augmented to 34).

Dimensions: span 145.8 ft, length 152.9 ft, height 42.5 ft.

Weight: gross 336,000 lb.

Ceiling: 42,000 ft.

Performance: max operating speed Mach 0.84, endurance with one in-flight refueling 20 hr.

COMMENTARY

Joint STARS (Surveillance Target Attack Radar System) is a battle management (BM) platform capable of providing commanders with transformational C2 and near-real time wide area surveillance ultimately passing targeting information to air and ground commanders. Joint STARS battle managers use the sensor and robust communications suite to engage enemy forces in day, night, and adverse weather conditions. The radar subsystem features a multimode, side-looking, phased-array radar that provides interleaved moving target indicator (MTI) information, synthetic aperture radar (SAR) imagery, and fixed target indicator imagery. Joint STARS downlinks via a secure, jam-resistant digital data link and beyond line of sight satellite radio communications. Multiple receivers are in use, predominantly the US Army's Common Ground Station and Joint Services Work Station.

As part of their operational test and evaluation, Joint STARS aircraft flew more than 150 operational missions during Desert Storm (with two E-8A development aircraft) and Joint Endeavor (with one E-8A and one test bed E-8C). During Iraqi Freedom, EC-8C Joint STARS aircraft were airborne 24 hours a day to help coalition forces maintain battlefield awareness. The E-8C's unique, long-dwell MTI capability is being used in increasingly creative ways, keeping it relevant to the joint force commander for the foreseeable future.

E-8A. Prototype version, with specialized equipment installed aboard two specially modified 707-300 airframes. One was converted to an in-flight pilot trainer in 1997, and the second was scrapped.

E-8C. Production version, based on former commercial 707-300 airframes. Equipped with 18 operations and control consoles, two of which double as communications stations, all the aircraft are now the more

***E-8C** Joint STARS* (TSgt. Mary Smith)

capable Block 20 aircraft, equipped with more powerful computers and an Internet protocol local area network. The first E-8C became operational in 1996, and the airframes are expected to remain airworthy until at least 2034. System improvements under way include Link 16 upgrade for data transmission to attack aircraft; enhanced radar modes; new satellite communications radios; upgrades to allow Joint STARS to assume the Airborne Battlefield Command and Control Center (ABCCC) mission of attack support to ground force commanders; and communications navigation surveillance air traffic management upgrades to permit use of optimum altitudes and flight routes in increasingly congested commercial airspace in response to new stringent international navigation standards.

E-10

Brief: A multisensor command and control aircraft (MC2A) that will provide ground surveillance and cruise missile defense as well as battlefield management command and control (BMC2).

Function: Ground surveillance, cruise missile defense, and BMC2 aircraft.

Production: five planned.

Inventory: TBD.

Unit Location: TBD.

Contractor: Boeing (airframe).

Power Plant: four Pratt & Whitney PW4062 turbofans or four General Electric CF6-80C2B8F turbofans.

Accommodation: mission crew of between 30 and 50, depending on mission.

Dimensions: span 170.3 ft, length 201.3 ft, tail height 55.3 ft.

Weight:TBD.

Ceiling: TBD.

Performance: TBD.

COMMENTARY

The **E-10A** is intended to be the central platform in USAF's new Command and Control Constellation, initially supplementing the E-8 Joint STARS aircraft and, possibly, assuming missions currently performed by other aircraft such as the RC-135 Rivet Joint and E-3 AWACS aircraft. The Command and Control Constellation is to be a fully connected system of sensors (land, air, and space) that will relay information automatically, using common standards and communications protocols.

USAF has ordered the first of five planned E-10As, which are based on the Boeing 767-400ER airframe, to serve as the program flying test bed. In May 2003, a team comprising Northrop Grumman, Boeing, and Raytheon was awarded a presystem development and demonstration contract for weapons system integration on the initial E-10A. Development of the demonstration radar system was awarded to Northrop Grumman in April 2004.

E-10B is slated to provide cruise missile defense and advanced airborne ground surveillance and targeting capability via Northrop Grumman/Raytheon's new AESA, developed under the Multiplatform Radar Technology Insertion Program (MP-RTIP), and an advanced BMC2 subsystem.

The shape of **E-10C,** which includes provision of an airborne moving target indicator with a 360-degree scan, will depend on the decision whether to co-host the airborne early warning and control (AEW&C) system on the same platform or to create a dedicated AEW&C platform.

MQ-1 Predator

Brief: A medium-altitude, long-endurance unmanned aerial vehicle (UAV), flown remotely. Joint force commander multimission asset, combining imagery sensors with strike capability.

Function: Unmanned reconnaissance and strike aircraft.

Operator: ACC.

First Flight: July 1994.

Delivered: July 1994 (USAF from 1996)-present.

IOC: 2003.

Production: 100 air vehicles—ongoing.

Inventory: six (one MQ-1, five RQ-1).

Unit Location: Eglin AFB, Fla.; Indian Springs AFAF, Nev.; Nellis AFB, Nev.

Contractor: General Atomics Aeronautical Systems.

Power Plant: one Rotax 914 turbocharged engine.

Accommodation: unmanned system.

Dimensions: length 27 ft, height 7.2 ft, span 48.7 ft.

Weight: empty 950 lb, gross 2,250 lb.

Ceiling: 25,000 ft.

Performance: cruise speed 80 mph, up to 138 mph, endurance 24 hr (460 miles with 16 hr on station).

Armament: Two Hellfire missiles on multispectral targeting system (MTS)-equipped vehicles.

COMMENTARY

Operated by the 11th, 15th, and 17th RSs, the Predator UAV has evolved into a trusted component in USAF's warfighting inventory. A Predator system includes four air vehicles, a ground control station, satellite link, and about 55 personnel for 24-hour operations. The Predator crew comprises a pilot and two sensor operators.

MQ-1 Predator (SSgt. Suzanne M. Jenkins)

DOD first used the advanced concept technology demonstration (ACTD) Predator in 1995 to support Provide Promise. In 1997, USAF took over the Predator program, and in 1999, while the UAV was still in development, the service deployed the system operationally for surveillance missions over Bosnia and Iraq. In July 2001, USAF successfully experimented with Predators armed with Hellfire missiles, and the system has since been used to attack targets in Afghanistan, Yemen, and Iraq. USAF changed the designation for Predator A to MQ-1 to denote its multimission capability for both reconnaissance and strike.

MQ-1 designates the weaponized Predator A. It carries an MTS sensor ball supplied by Raytheon in place of the Wescam sensor ball. The MTS provides a laser target designator with EO/IR sensors in a single package, where, previously, one video camera had to be removed to house a laser designator. The SAR is removed to make room for some of the laser designator equipment.

RQ-1A. The ACTD version of Predator A.

RQ-1B. The reconnaissance-only version of Predator A, with an internal 450-lb surveillance payload that includes two EO and one IR video cameras carried in a ball-shaped turret under the nose and produced by Wescam. The internal sensor payload also includes a SAR still imagery camera for a day/night, all-weather reconnaissance capability. USAF is retrofitting most RQ-1Bs to MQ-1 configuration.

MQ-9

Brief: A high-altitude, long-endurance UAV, flown remotely. Joint force commander multimission asset combining imagery sensors with expanded strike capability.

Function: Unmanned reconnaissance and strike aircraft.

Operator: ACC.

First Flight: February 2001.

Delivered: November 2003.

IOC: TBD.

Production: nine (planned).

Inventory: one.

Unit Location: Eglin AFB, Fla.; Indian Springs AFAF, Nev.

Contractor: General Atomics Aeronautical Systems.

Power Plant: one Honeywell TPE-331-10T turboprop engine or Williams FJ44-2A turbojet engine.

Accommodation: unmanned system.

Dimensions: length 36.2 ft, span 64 ft.

Weight: empty 6,000 lb, gross 10,000 lb.

Ceiling: 50,000+ ft.

Performance: cruise speed 172 mph, up to 230 mph, endurance 30+ hours.

Armament: various air-to-surface and, possibly, air-to-air weapons.

COMMENTARY

Developed initially under an internal company research and development effort, USAF acquired two 7,500-lb gross UAV prototypes (known by General Atomics as Predator B) in October 2001 to evaluate their capability as a weapons platform and to carry an enhanced sensor payload. In June 2002, USAF issued a contract for a 10,000-lb prototype, based on the earlier prototypes. USAF has additionally ordered three more 10,000-lb UAVs, with the designation **MQ-9.** First preproduction version flew Oct. 17, 2003.

The MQ-9 hunter-killer UAV flies higher, faster, and has significantly greater payload capacity than the MQ-1. With its 750-lb internal payload capacity, the MQ-9 will be able to carry simultaneously numerous payloads such as a larger, more capable camera system, SAR, MTS, and other detection systems. Its 3,000-lb external payload capacity will enable it to carry a combination of munitions. USAF is exploring various weapons mixes and a possible air-to-air role.

OC-135 Open Skies

Brief: A modified C-135 aircraft that flies unarmed observation and verification flights over nations that are parties to the 1992 Open Skies Treaty.

Function: Reconnaissance aircraft.

Operator: ACC.

First Flight: June 1993.

Delivered: October 1993-96.

IOC: October 1993.

Production: three.

Inventory: two.

Unit Location: Offutt AFB, Neb.

Contractor: Boeing.

Power Plant: four Pratt & Whitney TF33-P-5 turbofans, each 16,050 lb thrust.

Accommodation: seating for 38.

Dimensions: span 131 ft, length 135 ft, height 42 ft.

Weight: gross 297,000 lb.

Ceiling: 50,000 ft (basic C-135).

Performance: speed: 500+ mph, unrefueled range 3,900 miles.

COMMENTARY

A modified version of the WC-135, used for specialized arms control treaty observation and imagery collection missions with vertical-looking and panoramic optical cameras installed in the rear of the aircraft.

OC-135B modifications include one vertical and two oblique KS-87E framing cameras, used for photography approximately 5,000 ft above the ground, and one KA-91C panoramic camera, which pans from side to side to provide a wide sweep for each picture, used for high-altitude photography up to approximately 35,000 ft. Data is processed and recorded by a recording and annotation system.

RC-135

Brief: Specially configured variant of the Boeing C-135 Stratolifter, having an elongated nose and cheeks containing highly advanced electronic signal collection systems. Used to acquire real-time electronic intelligence (Elint) data for theater and tactical commanders.

Function: Electronic reconnaissance aircraft.

Operator: ACC.

First Flight: not available.

Delivered: circa 1973-99.

IOC: circa 1973 (Rivet Joint).

Production: (converted).

Inventory: 21.

Unit Location: Offutt AFB, Neb.

Contractor: Boeing (airframe); Raytheon; Textron.

Power Plant: four Pratt & Whitney TF33-P-5/9 turbofans, each 18,000 lb thrust. (Replaced with CFM International CFM-56s in one W version.)

Accommodation: flight crew of four; 25-35 mission crew.

Dimensions: (Cobra Ball) span 131 ft, length 140 ft, height 42 ft; (Cobra Sent) span 135 ft, length 136 ft; (Rivet Joint) height 38 ft.

Weight: max gross 299,000 lb.

Ceiling: 35,000 ft.

Performance: speed 500+ mph, range, with air refueling, unlimited.

COMMENTARY

The 55th Wing at Offutt AFB, Neb., operates a highly specialized fleet for worldwide reconnaissance mis-

sions. All will be re-engined and are subject to ongoing modernization, with upgrade of avionics and primary mission equipment to expand capability and maintain effectiveness.

RC-135S Cobra Ball (CB). Three aircraft. Cobra Ball collects measurement and signature intelligence (Masint) data, providing the capability to monitor missile-associated signal activity and to track missiles during boost and re-entry phases of flight. Cobra Ball can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance for treaty verification and theater ballistic missile proliferation. Equipment includes wide-area IR sensors, long-range optical cameras, and an advanced communications suite.

RC-135U Combat Sent (CS). Two aircraft. Each Combat Sent aircraft has a specifically designed signals intelligence (Sigint) suite used primarily to collect scientific and technical (S&T) electronic intelligence (Elint) data against air-, land-, and sea-based emitter systems. The accuracy of CS data is critical to the effective design, programming, and reprogramming of radar warning receivers as well as jammers, decoys, and anti-radiation missiles and to the development of effective threat simulators.

***U-2** Dragon Lady* (TSgt. Erik Gudmundson)

***RQ-4** Global Hawk* (USAF photo/Mike Charlie)

RC-135V/W Rivet Joint (RJ). Sixteen aircraft. Rivet Joint is a self-contained standoff airborne signals intelligence (Sigint) collection system. Its primary role is to exploit the "electronic" battlefield and deliver near-real time (NRT) intelligence-surveillance-reconnaissance (ISR) information to tactical forces, unified commanders, and national command authorities across the full spectrum of conflict. Onboard collection capabilities encompass rapid search, detection, measurement, identification, demodulation, geolocation, and fusion of data from potentially thousands of electronic emitters.

TC-135S/W. Used for training purposes.

RQ-4 Global Hawk

Brief: A high-altitude, long-range, long-endurance UAV.
Function: Unmanned reconnaissance aircraft.
Operator: ACC.
First Flight: Feb. 28, 1998.
Delivered: seven advanced concept technology demonstrators; two production vehicles.
IOC: Used operationally in Afghanistan and Iraq while still in development phase. Operational status achieved October 2004.
Production: LRIP. (Plans call for nine production RQ-4As before switching to the larger, more capable RQ-4B version.)
Inventory: six.
Unit Location: Beale AFB, Calif.; Eglin AFB, Fla.
Contractor: Northrop Grumman (prime); Raytheon.
Power Plant: one Rolls Royce-Allison AE 3007H turbofan, 7,600 lb thrust.
Accommodation: unmanned system.
Dimensions: length 44 ft, height 15.2 ft, span 116 ft.
Weight: empty 9,200 lb, gross 25,600 lb.
Ceiling: 65,000+ ft.
Performance: objective endurance up to 40 hr at a cruise speed of 400 mph and at an altitude of 65,000 ft allowing loiter on station 1,380 miles from base for 24 hr. Combat range 15,525 miles.
Armament: none.
COMMENTARY
The **RQ-4A** is a high-altitude endurance UAV carrying a 1,960-lb payload, incorporating EO/IR and SAR sensors that permit switching among radar, IR, and visible wavelengths as required. The objective of the **RQ-4B** system is to increase available payload up to 3,000 lb for future sensors/capabilities. Navigation is by GPS/INS. Global Hawk flies autonomously from takeoff to landing, providing near-real time imagery products for tactical and theater commanders. Vehicle ground track and mission plan can be updated in real time to respond to changing air traffic control needs and/or mission collection needs.

Global Hawk began as an advanced concept technology demonstrator in 1995. Engineering and manufacturing development (EMD) was approved in March 2001. While still a development system, Global Hawk deployed operationally to support Enduring Freedom in Afghanistan in November 2001, flying more than 50 missions and 1,000 combat hours.

Global Hawk provides continuous, all-weather, day/night, wide area surveillance. It will operate in low-to-moderate air defense threat environments with the ability to fly above or stand off from enemy defenses. The Navy is purchasing two Global Hawks for a maritime demonstration.

U-2 Dragon Lady

Brief: Single-seat, single-engine, high-altitude endurance reconnaissance aircraft carrying a wide variety of sensors and cameras, providing continuous day or night, high-altitude, all-weather area surveillance in direct support of US forces.
Function: High-altitude reconnaissance.
Operator: ACC.
First Flight: August 1955 (U-2); 1967 (U-2R); October 1994 (U-2S).
Delivered: 1955-October 1989.
IOC: circa 1956.
Production: 35 (U-2S/ST).
Inventory: 34.
Unit Location: Beale AFB, Calif.
Contractor: Lockheed Martin.
Power Plant: F118-GE-101 turbojet.
Accommodation: one (two for trainer).
Dimensions: span 103 ft, length 63 ft, height 16 ft.
Weight: gross 40,000 lb.
Ceiling: above 70,000 ft.
Performance: speed 475 mph; range more than 4,500 miles; max endurance 10+ hr.
COMMENTARY
The U-2 is the Air Force's premier high-altitude reconnaissance platform, capable of carrying multi-int sensors simultaneously, making it USAF's only truly operational multi-intelligence platform and a key performer in combat operations.

Although the U-2 was designed initially in the 1950s, current aircraft were produced primarily in the 1980s, when the production line was reopened to produce the TR-1, a significantly larger and more capable version than the earlier aircraft. Deliveries ended in October 1989.

U-2R (single-seat) and **U-2RT** (two-seat) aircraft. In 1992, all existing U-2s and tactical TR-1s were consolidated under the designation U-2R.

U-2S (single-seat) and **U-2ST** (two-seat). The current designations of all 34 aircraft (29 U-2S mission aircraft, five U-2ST trainers) in the inventory. Conversion to S model configuration began in October 1994. Included in the on-going $1.5 billion improvement program are new F118-GE-101 engines, a complete electrical system replacement, a new glass cockpit using multifunction displays (MFDs), a digital autopilot, an electro-optical view sight, and a new electronic warfare system. Sensor upgrades include the ASARS-2A radar sensor, which provides enhanced imaging modes and improves geo-location accuracy; the SYERS-2 EO imagery system, which provides multispectral and IR capability; enhanced RF-intelligence capability; and new data links enabling the U-2 to connect in near real time with network-centric hubs as well as line of sight ground stations, airborne data relays, and beyond line of sight satellite data relays.

NASA has two ER-2 versions of the U-2 used for high-altitude scientific experiments and atmospheric research, including investigation of global ozone depletion.

WC-130 Hercules

Brief: A high-wing, medium-range aircraft flown by AFRC for weather reconnaissance missions. It flies into the eye of tropical cyclones or hurricanes, collecting weather data from within the storm's environment.
Function: Weather reconnaissance aircraft.
Operator: AFRC.
First Flight: circa 1959.
Delivered: October 1999-2002.
IOC: 1959.
Production: no new-build WC-130H; 10 WC-130J.
Inventory: 20 (10 H, 10 J).
Unit Location: AFRC: Keesler AFB, Miss.
Contractor: Lockheed Martin.
Power Plant: WC-130J: four Rolls Royce AE2100D3 turboprops, each 4,500 shp.
Accommodation: six.
Dimensions: WC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.
Weight: WC-130J: gross 175,000 lb.
Ceiling: WC-130J: 30,500 ft.
Performance: speed 374 mph at 20,000 ft.
COMMENTARY
The WC-130 is flown by AFRC organizations known as the Hurricane Hunters. The hurricane reconnaissance area includes the Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and central Pacific Ocean areas.

WC-130B/E. Earlier version C-130 modifications used for weather reconnaissance. Now retired.

WC-130H. Improved version, operated by the 53rd WRS for weather reconnaissance duties, including penetration of tropical storms, to obtain data for forecasting storm movements. Equipment includes two external 1,400-gallon fuel tanks, an internal 1,800-gallon fuel tank, and uprated Allison T56-A-15 turboprops, each 4,910 shp. WC-130H aircraft are being converted to HC-130Ps.

WC-130J. Weather-reconnaissance version of the latest C-130 model, featuring improved radar, four Rolls Royce AE2100D3 turboprops, and Dowty 391 six-bladed composite propellers. First of 10 aircraft replacing the WC-130H was delivered Oct. 12, 1999.

An average weather reconnaissance mission might

last 11 hours and cover almost 3,500 miles while the crew collects and reports weather data every minute. Results are transmitted via satellite to the National Hurricane Center, Miami.

Special Duty Aircraft

E-4B National Airborne Operations Center
Brief: A four-engine, swept-wing, long-range, high-altitude airplane providing a highly survivable C3 center allowing national/defense leaders to direct US forces, execute emergency war orders, and coordinate actions by civil authorities.
Function: Airborne operations center.
Operator: ACC.
First Flight: June 13, 1973 (E-4A); June 10, 1978 (E-4B).
Delivered: December 1974-85.
IOC: December 1974 (E-4A); January 1980 (E-4B).
Production: four.
Inventory: four.
Unit Location: Offutt AFB, Neb.
Contractor: Boeing; Rockwell; Raytheon E-Systems.
Power Plant: four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.
Accommodation: up to 114 (63 crew/battle staff; 51 passengers.
Dimensions: span 195.7 ft, length 231.3 ft, height 63.4 ft.
Weight: gross 800,000 lb.
Ceiling: above 40,000 ft.
Performance: 6,900+ miles; unrefueled endurance in excess of 12 hr; with aerial refueling up to 72 hr.
COMMENTARY
A militarized version of the Boeing 747-200, E-4B aircraft perform the National Airborne Operations Center (NAOC) mission. The E-4B fleet provides a survivable C3 platform throughout the full threat spectrum, including sustained operations in a nuclear environment. First operational mission was flown in March 1980.

E-4Bs are hardened against the effects of nuclear explosions, including electromagnetic pulse, and have in-flight refueling capability. A 1,200-kVA electrical system supports advanced system electronics as well as state-of-the-art communications and data processing equipment such as EHF Milstar satellite terminals and six-channel International Maritime Satellite (Inmarsat). A triband radome also houses the E-4B's superhigh frequency (SHF) frequency division multiple access (FDMA) communications antenna, the only such system on an airborne platform.

The E-4B system is capable of linking with commercial telephone and radio networks and could be used for radio broadcasts to the general population. E-4Bs also support the Federal Emergency Management Agency (FEMA).

In early 2000, the E-4B entered the SDD phase of a modernization program aimed at updating the electronic infrastructure supporting the aircraft's primary mission equipment and increasing the bandwidth of external communications and onboard data transfer. These updates, along with changes to the aircraft's interior configuration, internal noise reduction modifications, BM improvements, and Global Air Traffic Management (GATM) avionics modifications, ensure the E-4B aircraft will effectively execute its NAOC mission, providing C3 in the homeland security environment and beyond for the foreseeable future.

EC-130E/J
Brief: A heavily modified C-130 with variants used for battlefield command, EW, and electronic combat.
Function: C2; psychological warfare.
Operator: ANG.
First Flight: January 1990.
Delivered: March 1990.
IOC: December 1990.
Production: (no USAF new-build EC-130Es); five (J).
Inventory: seven (two E, five J).
Unit Location: ANG: Harrisburg Arpt., Pa.
Contractor: Lockheed Martin; Raytheon; General Dynamics.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp; (EC-130E) T-56-A-1S turboprops, each 4,200 shp; (EC-130J) four Rolls Royce-Allison AE2100D turboprops, each 4,591 shp.
Accommodation: five flight crew, six mission.
Dimensions: EC-130J: span 132.6 ft, length 97.8 ft, height 38.9 ft.
Weight: EC-130J: gross 175,000 lb.
Ceiling: EC-130J: 30,500 ft.
Performance: speed 299 mph, range in excess of 2,100 miles; (C-130J) 393 mph, range 4,140 miles.
COMMENTARY
EC-130E ABCCC Airborne Battlefield Command and Control Center. Seven aircraft were updated by Unisys to ABCCC III standard. The advanced JTIDS received data transmitted by AWACS aircraft and other systems, enabling the crew to see a real-time picture of air operations over a combat area. Now retired.
EC-130E Commando Solo. Version used by the ANG as a broadcasting station for psychological warfare operations. Specialized modifications include enhanced navigation systems, self-protection equipment, and worldwide color television configuration.
EC-130J Commando Solo II. Five specialized versions of the latest-model C-130 aircraft, ordered to replace now-retired Es, with current mission equipment transferred from the older aircraft. Entered service mid-2003 with the 193rd SOW (ANG).

Commando Solo aircraft have been used in numerous military operations, including Iraqi Freedom. They also have a role in civil emergencies. Secondary mission is electronic attack in the military frequency spectrum.

EC-130H Compass Call
Brief: A heavily modified C-130 for electronic combat.
Function: Electronic warfare.
Operator: ACC.
First Flight: 1981.
Delivered: 1982.
IOC: 1983; (Block 30) February 1999.
Production: (converted).
Inventory: 14.
Unit Location: Davis-Monthan AFB, Ariz.
Contractor: Lockheed Martin.
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: standard crew 13.
Dimensions: span 132.6 ft, length 99 ft, height 38 ft.
Weight: 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 374 mph at 20,000 ft.
COMMENTARY
A variant used as an airborne communications jamming and information warfare platform. Modifications include ECM system and air refueling capability. Further upgrades, including an updated receiver subsystem, will improve reliability and expand the EC-130H's offensive counterinformation (OCI) capability against modern C2 systems. Completion expected FY10.

Tanker Aircraft

HC-130N/P
Brief: An extended-range, combat search and rescue (CSAR)-configured C-130 that extends the range of rescue helicopters through in-flight refueling and performs tactical delivery of pararescue jumper (PJ) specialists and/or equipment in hostile environments.
Function: Aerial refueling/transport.
Operator: AETC, AFSOC, ANG, AFRC.
First Flight: Dec. 8, 1964 (as HC-130H).
Delivered: from 1965.
IOC: 1986.
Production: (converted).
Inventory: 32.
Unit Location: Active: Davis-Monthan AFB, Ariz., Kirtland AFB, N.M., Moody AFB, Ga. ANG: Francis S. Gabreski Arpt., N.Y., Kulis ANGB, Alaska. AFRC: Patrick AFB, Fla.
Contractor: Lockheed (now Lockheed Martin).
Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.
Accommodation: four flight crew, plus mission crew.
Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.
Weight: gross 155,000 lb.
Ceiling: 33,000 ft.
Performance: speed 289 mph, range more than 4,000 miles.
COMMENTARY
The HC-130 can perform extended visual/electronic searches over land or water and operate from unimproved airfields. A three-man PJ team, trained in emergency trauma medicine, harsh environment survival, and assisted evasion, is part of the normal mission crew complement.

Combat air forces' HC-130 aircraft are equipped with

***EC-130J** Commando Solo II* (SrA. Matt Schwartz)

***KC-135R** Stratotanker* (MSgt. Mark Bucher)

***MC-130P** Combat Shadow* (MSgt. Michael Farris)

an integrated GPS/INS navigation package, radar/missile warning receivers, and chaff/flare countermeasures dispensers. Some aircraft have FLIR systems and personnel locating systems (PLS) compatible with aircrew survival radios. Additional modifications include an improved digital low-power color radar, integrated satellite communications radio, NVG-compatible interior/exterior lighting, and cockpit armor. The C-130 avionics modernization program (AMP) provides for complete update of the HC-130 avionics. Four retired EC-130E ABCCC and 10 WC-130H aircraft are converting to HC-130 standard.

KC-10 Extender

Brief: A modified McDonnell Douglas DC-10 that combines in a single aircraft the operations of aerial refueling and long-range cargo transport.

Function: Aerial refueling/transport.

Operator: AMC, AFRC (assoc.).

First Flight: April 1980.

Delivered: March 1981-April 1990.

IOC: August 1982.

Production: 60.

Inventory: 59.

Unit Location: McGuire AFB, N.J., Travis AFB, Calif. AFRC: (assoc.) Travis AFB, Calif., McGuire AFB, N.J.

Contractor: McDonnell Douglas (now Boeing).

Power Plant: three General Electric CF6-50C2 turbofans, each 52,500 lb thrust.

Accommodation: crew of four; additional seating possible for up to 75 persons with 17 pallets; max 27 pallets; max cargo payload 169,409 lb.

Dimensions: span 165.4 ft, length 181.6 ft, height 58.1 ft.

Weight: gross 593,000 lb.

Ceiling: 42,000 ft.

Performance: cruising speed Mach 0.825, range with max cargo 4,400 miles.

COMMENTARY

The KC-10 combines the tasks of tanker and cargo aircraft in a single unit, enabling it to support worldwide fighter deployments, strategic airlift, strategic reconnaissance, and conventional operations.

The KC-10 can be air refueled by a KC-135 or another KC-10, increasing its range and diminishing the need for forward bases, leaving vital fuel supplies in the theater of operations untouched.

KC-10A is a DC-10 Series 30CF, modified to include fuselage fuel cells, an air refueling operator's station, aerial refueling boom and integral hose reel/drogue unit, a receiver refueling receptacle, and military avionics. Wing-mounted pods enhance the aircraft's capabilities. Other modifications include the addition of communications, navigation, and surveillance equipment to meet civil air traffic control requirements.

Because it has both types of tanker refueling equipment installed, the KC-10A can service USAF, USN, USMC, and allied aircraft on the same mission. Special lighting permits night operations.

KC-135 Stratotanker

Brief: A short- to medium-range tanker aircraft, meeting the air refueling needs of USAF bomber, fighter, cargo, and reconnaissance forces. It also supports USN, USMC, and allied aircraft.

Function: Aerial refueling/airlift.

Operator: AETC, AFMC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1956.

Delivered: January 1957-66.

IOC: June 1957, Castle AFB, Calif.

Production: 732.

Inventory: 534.

Unit Location: Altus AFB, Okla., Fairchild AFB, Wash., Grand Forks AFB, N.D., Kadena AB, Japan, MacDill AFB, Fla., McConnell AFB, Kan., RAF Mildenhall, UK, Robins AFB, Ga. ANG: 21 units. AFRC: nine units.

Contractor: Boeing.

Power Plant: KC-135R/T: four CFM International F108-CF-100 turbofans, each 22,224 lb thrust; KC-135E: four Pratt & Whitney TF33-PW-102 turbofans, each 18,000 lb thrust.

Accommodation: crew of four; up to 80 passengers.

Dimensions: span 130.8 ft, length 136.2 ft, height 38.3 ft.

Weight: empty 119,231 lb, gross 322,500 lb (KC-135E 301,600 lb).

Ceiling: 50,000 ft.

Performance: max speed at 30,000 ft 610 mph, range with max fuel 11,015 miles.

COMMENTARY

Mainstay of the USAF tanker fleet, the long-serving KC-135 is similar in size and appearance to commercial 707 aircraft but was designed to military specifications, incorporating different structural details and materials. The KC-135 fuel tanks are located in the "wet wings" and in fuel tanks below the floor in the fuselage.

KC-135A. Original version with J57 turbojets. USAF built 732, since modified to other standards.

KC-135E/D. The JT3D re-engining program upgraded USAF, AFRC and ANG KC-135As to KC-135E standard with JT3D turbofans and related components removed from surplus commercial 707s; fuel carrying capacity increased by 20 percent. One hundred and fifteen KC-135Es remain in service with the ANG and AFRC, representing some of the oldest aircraft in the USAF inventory. Four KC-135Ds are similar but have minor configuration differences as they were converted from RC-135A aircraft.

KC-135R/T. Designation of re-engined KC-135A/Es with F108 turbofans. They embody modifications to 25 major systems and subsystems and not only carry more fuel farther but have reduced maintenance costs, are able to use shorter runways, and meet Stage III requirements. The first KC-135R flight was in October 1982, and redeliveries began in July 1984. KC-135T aircraft (formerly KC-135Q) were capable of refueling the now-retired SR-71s and retain the capability to carry different fuels in the wing and body tanks. Eight KC-135Rs are air refuelable. Twenty KC-135Rs have wing-mounted refueling pods for enhanced refueling of USN and NATO aircraft.

Ongoing modifications are extending the capability and operational utility of the KC-135. The Pacer CRAG avionics modernization program installed a new compass, radar, and GPS navigation systems, a traffic alert and collision avoidance system (TCAS), and new digital multifunctional cockpit displays. The Global Air Traffic Management (GATM) modification further improves the avionics, ensuring future access into premium airspace. Forty KC-135R/T aircraft are outfitted with the capability to relay Link 16 tactical information beyond other aircrafts' line of sight. USAF began a full assessment of the entire KC-135 fleet in late 2004.

MC-130P Combat Shadow

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for special operations forces (SOF) helicopters or to air-drop small special operations teams, small bundles, and zodiac and combat rubber raiding craft.

Function: Air refueling for SOF helicopters/airdrop.

Operator: AETC, AFSOC, ANG, AFRC.

First Flight: Dec. 8, 1964 (as HC-130H).

Delivered: from 1965.

IOC: 1986.

Production: (converted).

Inventory: 27.

Unit Location: Active: Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK. ANG: Kulis ANGB, Alaska, Moffett Federal Airfield, Calif. AFRC: Duke Field, Fla.

Contractor: Lockheed Martin (airframe); Boeing.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: four flight crew, plus four mission crew.

Dimensions: span 132.6 ft, length 98.8 ft, height 38.5 ft.

Weight: gross 155,000 lb.

Ceiling: 33,000 ft.

Performance: speed 289 mph, range more than 4,000 miles.

COMMENTARY

MC-130P Combat Shadow aircraft are currently tasked with clandestine formation or single-ship intrusion of hostile territory to provide aerial refueling of special operations helicopters and the infiltration, exfiltration, and resupply of SOF by airdrop or air-land operations. To perform these missions, depending upon the enemy threat, crews navigate using both visual and electronic means or visual means only. Primary emphasis is on NVG operations.

Modifications include improved secure communications, advanced integrated navigation equipment, including digital scan radar, ring-laser gyro INS, FLIR, GPS, and dual nav stations, and missile warning systems and countermeasures for refueling missions in hostile environments. Some aircraft have been modified with an in-flight refueling system allowing them to be air refuelable.

Strategic Transports

C-5 Galaxy

Brief: A heavy-lift, air refuelable cargo transport for

***C-5** Galaxy* (MSgt. Val Gempis)

massive strategic airlift over long ranges, including outsize cargo. Supports special operations missions.

Function: Cargo and troop transport.
Operator: AETC, AFMC, AMC, ANG, AFRC.
First Flight: June 30, 1968.
Delivered: October 1969-April 1989.
IOC: September 1970.
Production: 131.
Inventory: 118.
Unit Location: Active: Altus AFB, Okla., Dover AFB, Del., Travis AFB, Calif. ANG: Stewart Arpt., N.Y. AFRC: Dover AFB, Del., Lackland AFB, Tex., Travis AFB, Calif., Westover ARB, Mass.
Contractor: Lockheed.
Power Plant: four General Electric TF39-GE-1C turbofans, each 41,000 lb thrust.
Accommodation: normal crew of six (two pilots, two engineers, and two loadmasters), plus rest area for 15 (relief crew, etc.) and seating for 73. There is no piece of Army combat equipment the C-5 can't carry. Possible loads: six Apache helicopters, two M1 main battle tanks (each weighing 135,400 lb), six Bradley vehicles, three CH-47 helicopters, the 74-ton mobile bridge, a quarter-million pounds of relief supplies, or a maximum of 340 passengers in an airbus configuration. Airdrop capability for single platforms weighing up to 42,000 lb.
Dimensions: span 222.8 ft, length 247.9 ft, height 65.1 ft.
Weight: empty 374,000 lb, gross 769,000 (wartime 840,000) lb.
Ceiling: 45,000 ft.
Performance: max speed at 25,000 ft 571 mph, 35,750 ft, T-O run at S/L 8,300 ft, landing run, max landing weight at S/L 2,380 ft, range with max payload 3,434 miles, range with max fuel 7,245 miles. Normal cruising speed at altitude 518 mph (Mach 0.77), unlimited range with in-flight air refueling.

***C-17** Globemaster III* (TSgt. Scott F. Reed)

COMMENTARY
One of the world's largest aircraft, the C-5 is able to carry unusually large and heavy cargo for intercontinental ranges at jet speeds. It can take off and land in relatively short distances and taxi on substandard surfaces during emergency operations. Front and rear cargo openings permit simultaneous drive-through loading and off-loading.

C-5A. USAF took delivery of 81 of these basic models between December 1969 and May 1973. A major wing modification was subsequently undertaken, extending the aircraft's service life by 30,000 flight hours. Additionally, the avionics subsystems developed for the C-5B have been incorporated into the C-5A fleet. One ANG and two AFRC squadrons are C-5A-equipped. The reliability and maintainability of the C-5A version is under assessment. A total of 14 C-5As, including the 11 oldest, are to be retired by end of 2005.

C-5B. Generally similar to the C-5A but embodies all the improvements introduced since completion of C-5A production, including the strengthened wings, improved turbofans, and updated avionics, with color weather radar and triple INS. The first C-5B flew for the first time in September 1985 and was delivered to Altus AFB, Okla., in January 1986.

C-5C. Two C-5As assigned to Travis AFB, Calif., were modified to carry outsize space cargo for NASA by extending the cargo bay and modifying the aft doors.

All USAF Galaxys are undergoing a complete avionics modernization program (AMP) that will install a state-of-the-art cockpit and ensure global access navigation safety compliance by the end of 2006; first upgraded aircraft flew December 2002. Additionally, the Air Force has established a **C-5M** reliability enhancement and re-engining program (RERP) and contracted an SDD for a 112 C-5A/B/C aircraft to take advantage of an estimated service life through 2040. Three production representative C-5Ms will be completed in 2006, flight test will continue through FY07, with OT&E completing in FY08. Program completion with all 112 aircraft is expected 2018. To enhance force protection, a number of C-5Bs have been equipped with a missile defense system.

C-17 Globemaster III
Brief: A heavy-lift, air refuelable cargo transport for intertheater (strategic) and intratheater (tactical) direct delivery airlift of all classes of military cargo, including outsize items.
Function: Cargo and troop transport.
Operator: AETC, AFMC, AMC, ANG, AFRC.
First Flight: Sept. 15, 1991.
Delivered: June 1993-July 2008 (contractual).
IOC: Jan. 17, 1995.
Production: 180 (contractual).
Inventory: 126.
Unit Location: Active: Altus AFB, Okla., Charleston AFB, S.C., Edwards AFB, Calif., McChord AFB, Wash., McGuire AFB, N.J. AFRC (assoc.): Charleston AFB, S.C., McChord AFB, Wash., McGuire AFB, N.J. ANG: Jackson, Miss. Planned: Active/AFRC-assoc.: Dover AFB, Del., Elmendorf AFB, Alaska, Travis AFB, Calif. Active/ANG- assoc.: Hickam AFB, Hawaii. AFRC: March ARB, Calif.
Contractor: Boeing.
Power Plant: four Pratt & Whitney F117-PW-100 turbofans, each 40,440 lb thrust.
Accommodation: normal flight crew of three (two pilots plus loadmaster); additional pilot may be carried. Provisions for full range of military airlift missions, incl capacity for up to 189 passengers, 102 paratroops, or 36 litters; range of military cargo incl tanks and up to three AH-64A helicopters; three Bradley vehicles; one M1A2 main battle tank with other equipment; airdrop capability for single platforms weighing up to 60,000 lb; palletized passenger seats.
Dimensions: span over winglet tips 169.8 ft, length 173.9 ft, height 55.1 ft.
Weight: empty 277,000 lb, max payload 170,900 lb, gross 585,000 lb (extended range).
Ceiling: 45,000 ft.
Performance: normal cruising speed 484 mph at 35,000 ft or 518 mph (Mach .77) at 28,000 ft, unrefueled range with 160,000-lb payload 2,760 miles, additional 690 miles with extended-range fuel containment system (ERFCS), unlimited with refueling.
COMMENTARY
Developed to meet US force projection requirements, the C-17 is able to operate routinely into small, austere airfields (3,000 ft x 90 ft) previously restricted to C-130s and provides the first capability to air-land or air-drop outsize cargo directly to the tactical environment.

C-17A is the first military transport to feature a full digital fly-by-wire control system and two-person cockpit, with two full-time, all-function HUDs and four multifunction electronic displays. Block 12 aircraft, delivered from 2001, have the ERFCS upgrade. Other C-17 improvements include a terrain awareness warning system (TAWS) and video integrated processor (VIP). Defensive systems include laser for IR missile jamming and flare systems. Ongoing retrofit/modernizations include adding TAWS and upgrades to GATM to previously delivered aircraft. In October 2002, the C-17 assumed the special operations low level (SOLL) mission previously supported by the C-141. Enhancements include SOLL II communications suites and carry-on radio suites. C-17s have flown numerous operational and humanitarian missions since entering operational service, including peacekeeping operations in Bosnia. The C-17 was the only aircraft capable of delivering outsize cargo into austere operations in Afghanistan and Iraq. C-17s performed their first operational strategic brigade airdrop in March 2003, when a formation of 15 aircraft delivered a US Army brigade, complete with equipment, directly into northern Iraq. Block 15 aircraft were delivered in 2004, Block 16 are scheduled in 2005, and Block 17 in 2006, which marks the last block upgrade for the 180-aircraft fleet. Full retrofit up to Block 17 of previously delivered aircraft is scheduled to begin in 2007 and will take approximately 10 years.

C-141 Starlifter
Brief: Workhorse of the US airlift force for 40 years, the Starlifter can project combat forces over long distances, inject those forces and their equipment either by air-land or airdrop, resupply these employed forces, and extract the sick and wounded from the hostile area to advanced medical facilities. Primary strategic special operations and airdrop platform.
Function: Long-range, air refuelable troop and cargo airlift.
Operator: AFRC.
First Flight: Dec. 17, 1963.
Delivered: October 1964-June 1982.
IOC: May 1965.
Production: 285.
Inventory: 20.
Unit Location: March ARB, Calif., McGuire AFB, N.J., Wright-Patterson AFB, Ohio.
Contractor: Lockheed Martin.
Power Plant: four Pratt & Whitney TF33-P-7 turbofans, each 21,000 lb thrust.
Accommodation: crew of five; cargo on 13 standard 463L pallets. Alternative freight or vehicle payloads, 200 fully equipped troops, 155 paratroops, or 103 litter patients plus attendants.
Dimensions: span 159.9 ft, length 168.3 ft, height 39.2 ft.
Weight: operating payload 38,000 lb; max payload 68,725 lb normal, 89,000 lb emergency war planning; gross 325,000 lb normal, 344,000 lb emergency war planning.
Ceiling: 45,000 ft.
Performance: max cruising speed 466 mph, range 5,290 miles without air refueling.
COMMENTARY
Longtime mainstay of USAF's airlift fleet, the C-141 was the first jet aircraft designed to meet military standards as a troop and cargo carrier. The last active duty C-141 retired in September 2004, and with the continuing deployment of C-17 aircraft, all will be retired by 2006.

C-141A entered service with MAC in April 1965; 285 were built, some of which were structurally modified to accommodate the Minuteman ICBM.

C-141B is a stretched C-141A with in-flight refueling capability. All C-141As (except four AFMC aircraft used for test purposes) were lengthened by 23 ft 4 in to expand lift capacity. First C-141B flew March 1977 and redeliveries took place between December 1979 and June 1982. The modification gave USAF the equivalent of 90 additional C-141A aircraft. Subsequent improvements include structural upgrades, a state-of-the-art autopilot and all-weather landing system, and improved airdrop systems. Modification of 13 C-141Bs increased their SOLL capability and survivability.

C-141C is a C-141B modified with computerized glass-cockpit instrumentation and digital flight-management system, with integrated GPS data for navigation and modern navigation safety equipment. The first version, which rolled out at Warner Robins ALC, Ga., Oct. 1, 1997, was assigned to AFRC's 452nd AMW.

Theater and Special Use Transports

C-9 Nightingale
Brief: A twin-engine, medium-range, swept-wing jet aircraft used for DV duties.
Function: DV duties.
Operator: AMC, USAFE, AFRC.
First Flight: August 1968.
Delivered: August 1968-February 1975.
IOC: circa 1968.
Production: 24.
Inventory: eight.

Unit Location: Andrews AFB, Md., Ramstein AB, Germany. AFRC: (assoc.) Scott AFB, Ill.
Contractor: Boeing (McDonnell Douglas).
Power Plant: two Pratt & Whitney JT8D-9A turbofans, each 14,500 lb thrust.
Accommodation: crew of three.
Dimensions: span 93.2 ft, length 119.2 ft, height 27.4 ft.
Weight: gross 108,000 lb.
Ceiling: 35,000 ft.
Performance: max cruising speed at 25,000 ft 565 mph, range 2,500 miles.
COMMENTARY
C-9A. A derivative of the DC-9 Series 30 commercial airliner, the C-9A was the only USAF aircraft modified specifically for the aeromedical evacuation mission, a role now undertaken by C-130, C-141, and C-17 aircraft. The one remaining C-9A provides distinguished visitor (DV) airlift in Europe. Because of the critical nature of its mission, the aircraft carries a flight mechanic and a small supply of spares.
C-9C. Three specially configured C-9s were delivered to Andrews AFB, Md., in 1975 for the special air mission (SAM) supporting the President and other US government officials. Upgrades include improvements to the passenger communications equipment, GATM, TAWS, and vertical separation equipment.

C-12 Huron
Brief: Aircraft to provide airlift support for attache and military advisory groups worldwide.
Function: Special airlift.
Operator: AFMC, PACAF.
First Flight: Oct. 27, 1972 (Super King Air 200).
Delivered: 1974-late 1980s.
IOC: circa 1974.
Production: 88.
Inventory: 28.
Unit Location: Eimendorf AFB, Alaska, Osan AB, South Korea, various overseas embassies.
Contractor: Beech.
Power Plant: (C-12J) two Pratt & Whitney Canada PT6A-65B turboprops, each 1,100 shp.
Accommodation: crew of two; C-12C: up to eight passengers; C-12J: up to 19 passengers.
Dimensions: (C-12J) span 54.5 ft, length 43.8 ft, height 15 ft.
Weight: (C-12J) empty 9,850 lb, gross 16,600 lb.
Ceiling: (C-12J) 25,000 ft.
Performance: (C-12J) max cruising speed at 16,000 ft 307 mph, range with 10 passengers 1,806 miles.
COMMENTARY
C-12C. Re-engined C-12As, with PT6A-41 turboprops, deployed to overseas embassies.
C-12D. Similar to C model and also deployed to overseas embassies.
C-12F. With uprated PT6A-42 engines, can support medical airlift.
C-12J. A military version of the larger Beechcraft Model 1900, operated by PACAF.

C-20 Gulfstream
Brief: A twin-engine turbofan aircraft acquired to provide airlift for high-ranking government and DOD officials.
Function: Operational support airlift; special air missions.
Operator: AMC, USAFE.
First Flight: December 1979.
Delivered: September 1983-89.
IOC: circa 1983.
Production: not available.
Inventory: 10.
Unit Location: Andrews AFB, Md., Ramstein AB, Germany.
Contractor: Gulfstream.
Power Plant: C-20A/B: two Rolls Royce-Spey MK511-8 turbofans, each 11,400 lb thrust; C-20H: two Rolls Royce-Tay MK611-8 turbofans, each 13,850 lb thrust.
Accommodation: crew of five; 12 passengers.
Dimensions: span 77.8 ft; length (C-20A/B) 83.1 ft, (C-20H) 88.3 ft; height 24.3 ft.
Weight: C-20A/B gross 69,700 lb; C-20H gross 74,600 lb.
Ceiling: 45,000 ft.
Performance: max cruising speed 576 mph, range 4,800 miles.
COMMENTARY
C-20A. Three Gulfstream III transports were acquired to replace aging C-140B aircraft. They provided USAFE's operational support airlift fleet with intercontinental range and ability to operate from short runways. Retired in September 2002.
C-20B. Seven C-20B versions, with advanced mission communications equipment and revised interior, were acquired in the late 1980s. Two C-20B aircraft have been retired.
C-20H. Two Gulfstream IV SP aircraft, with advanced-technology flight-management systems and upgraded Rolls Royce engines, were acquired by USAF to meet expanding SAM requirements. The two C-20H aircraft were reassigned to USAFE to replace retired C-20As.
Upgrade for C-20B/H aircraft includes GPS, vertical separation equipment, GATM, and TCAS.

C-21
Brief: Aircraft designed to provide cargo and passenger airlift and transport litters during medical evacuations.
Function: Pilot seasoning, passenger and cargo airlift.
Operator: AETC, AMC, PACAF, USAFE, ANG.
First Flight: January 1973.
Delivered: April 1984-October 1985.
IOC: April 1984.
Production: 84.
Inventory: 77.
Unit Location: Andrews AFB, Md., Keesler AFB, Miss., Langley AFB, Va., Maxwell AFB, Ala., Offutt AFB, Neb., Peterson AFB, Colo., Ramstein AB, Germany, Randolph AFB, Tex., Scott AFB, Ill., Stuttgart, Germany, Wright-Patterson AFB, Ohio, Yokota AB, Japan.
Contractor: Gates Learjet.
Power Plant: two AlliedSignal TFE731-2 turbofans, each 3,500 lb thrust.
Accommodation: crew of two and up to eight passengers or 3,153 lb cargo. Convertible to aeromedical evacuation configuration.
Dimensions: span 39.5 ft, length 48.6 ft, height 12.2 ft.
Weight: empty, equipped 10,119 lb, gross 18,300 lb.
Ceiling: 51,000 ft.
Performance: max level speed at 25,000 ft 542 mph, range with max passenger load 2,306 miles, with max cargo load 1,653 miles.
COMMENTARY
C-21A aircraft provide operational support airlift for time-sensitive movement of people and cargo throughout the US and the Pacific and European Theaters, including aeromedical missions if required. Upgrades include GATM and TCAS.

C-32
Brief: A modified Boeing 757-200 used to provide transportation for the vice president, Cabinet, Congressional members, and other high-ranking US and foreign officials.
Function: VIP air transport.
Operator: AMC.
First Flight: Feb. 19, 1982 (USAF Feb. 11, 1998).
Delivery: June-December 1998.
IOC: 1998.
Production: six.
Inventory: four.
Unit Location: Andrews AFB, Md.
Contractor: Boeing.
Power Plant: two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.
Accommodation: 16 crew and 45 passengers.
Dimensions: span 124.8 ft, length 155.2 ft, height 44.5 ft.
Weight: empty 127,800 lb, gross 255,000 lb.
Ceiling: 41,000 ft.
Performance: cruise speed Mach 0.8-0.86 (530 mph), range 5,750 miles.
COMMENTARY
A military version of the commercial Boeing 757-200, four new **C-32As** were purchased as replacements for C-137B/C aircraft. The commercial DV interior includes a crew rest area, DV stateroom, conference area, and general passenger area. The passenger communications system provides worldwide clear and secure voice and data communications. Modern flight deck avionics allow operations to any suitable airfield in the world and provide an upgrade path as new capabilities become available. Upgrades include installation of a digital communications management system and broadband data transmit and receive, providing an office-in-the-sky capability.

C-37A
Brief: A modified Gulfstream V utilized as part of the executive fleet, providing transportation for the vice president, Cabinet, Congressional members, Secretary of Defense, service Secretaries, and other prominent US and foreign officials.
Function: VIP air transport.
Operator: AMC, PACAF.
First Flight: USAF October 1998.
Delivery: October 1998-present.
IOC: Dec. 9, 1998.
Production: 10.
Inventory: nine.
Unit Location: Andrews AFB, Md., Chievres, Belgium, Hickam AFB, Hawaii, MacDill AFB, Fla.
Contractor: Gulfstream.
Power Plant: two BMW-Rolls Royce BR710A1-10 turbofans, each 14,750 lb thrust.
Accommodation: five crew and 12 passengers.
Dimensions: span 93.5 ft, length 96.4 ft, height 25.8 ft.
Weight: empty 47,601 lb, gross 90,500 lb.
Ceiling: 51,000 ft.
Performance: cruise speed Mach 0.8 (530 mph), range 6,095 miles.
COMMENTARY
The **C-37A** is a military version of the Gulfstream V. Two C-37As, along with the C-32s, were purchased as replacements for the VC-137B/C aircraft. The interior includes separate DV and passenger areas and a communications system capable of worldwide clear and secure voice and data. Aircraft are capable of operations at any suitable civilian or military airfield worldwide. A third C-37A was purchased for combatant commander support airlift and was based at Chievres, Belgium. It has since been reassigned to Andrews AFB, Md. Two more C-37s were purchased for crisis response support. Five C-37As are being leased from Gulfstream Aerospace as combatant commander support aircraft; three are assigned to MacDill AFB, Fla.; one to Chievres; and one to Hickam AFB, Hawaii. Upgrades include GATM and continuing passenger communications system upgrades to the Andrews-based aircraft.

C-38A
Brief: A twin-engine transcontinental aircraft used to provide transportation for DVs such as Congressional or high-ranking military members. It can also be configured for medevac and a wide range of special missions including C3 in time of war.
Function: VIP air transport and operational support.
Operator: ANG.
First Flight: 1998.
Delivered: April-May 1998.
IOC: 1998.
Production: two.
Inventory: two.
Unit Location: Andrews AFB, Md.
Contractor: Tracor (Israel Aircraft Industries Ltd).
Power Plant: two AlliedSignal TFE731-40R-200G, each 4,250 lb thrust.
Accommodation: typically two crew and eight passengers. In medevac role: two Spectrum 500 Life Support Units and two medical attendants. All seats removable for cargo.
Dimensions: span 54.6 ft, length 55.6 ft, height 18.2 ft.
Weight: gross 24,800 lb.
Ceiling: cruise, 33,000 ft.
Performance: cruise speed Mach 0.87.
COMMENTARY
The **C-38A** is a military version of the Astra SPX produced by IAI and supported worldwide by Galaxy Aerospace. Two aircraft are operated by ANG's 201st AS replacing Learjet C-21As. Equipment includes the most up-to-date navigation, communication, vertical separation, and safety equipment as well as state-of-the-art avionics. The contract includes an option for two additional aircraft.

C-40
Brief: A Boeing 727-700 used by ANG as its primary medium-range aircraft for airlift of personnel.
Function: Passenger transportation.
Operator: ANG.
First Flight: USN C-40A: April 14, 1999.
Delivered: 2002.
Production: seven.
Inventory: five.
Unit Location: Andrews AFB, Md., Hickam AFB, Hawaii.
Contractor: Boeing.
Power Plant: two General Electric CFM56-7 turbofans, each 24,000 lb thrust.
Accommodation: flight crew of four, plus three or four cabin crew; up to 89 passengers.
Dimensions: span 112 ft 7 in, length 110 ft 4 in, height 41 ft 2 in.
Weight: gross 171,000 lb.
Ceiling: 41,000 ft.
Performance: cruise speed 0.78-0.82 Mach, range 3,450 miles.
COMMENTARY
The C-40 is the military version of the commercial Boeing 737-700 increased gross weight aircraft. C-40s are used for SAM and support of combatant commanders.
C-40B. The B model is equipped with a DV suite, staff work area, conference area, and worldwide secure communications and data capability. USAF purchased two C-40Bs for delivery to Andrews AFB, Md., and Hickam AFB, Hawaii, in FY03 to support combatant commanders. One additional C-40B has been purchased and one leased for SAM missions and are assigned to Andrews.
C-40C. The C model has a DV seating area, general passenger seating area, and secure communications capability. Three leased C-40Cs operate from Andrews.

C-130 Hercules
Brief: A rugged aircraft capable of operating from

***C-130** Hercules* (SSgt. Suzanne M. Jenkins)

rough dirt strips to provide theater airlift and paradropping of troops and equipment into hostile areas.

Function: Inter- and intratheater airlift.

Operator: AETC, AMC, PACAF, USAFE, ANG, AFRC.

First Flight: August 1954 (C-130A).

Delivered: December 1956-present (C-130J).

IOC: circa 1958.

Production: more than 2,200; (C/CC-130J) 168 planned, though possible cap after end of 2005.

Inventory: 507: 193 (E), 293 (H), 21 (J).

Unit Location: Active: Dyess AFB, Tex., Elmendorf AFB, Alaska, Little Rock AFB, Ark., Pope AFB, N.C., Ramstein AB, Germany, Yokota AB, Japan. ANG: 23 units. AFRC: 10 units.

Contractor: Lockheed Martin.

Power Plant: (C-130H) four Rolls Royce-Allison T56-A-15 turboprops, each 4,300 shp. (C-130J) four Rolls Royce-Allison AE2100D3 turboprops, each 4,591 shp.

Accommodation: (C-130H) crew of five; up to 92 ground troops, 64 paratroops, 74 litter patients plus attendants, 54 passengers on palletized seating, or up to five 463L standard freight pallets, etc.; max load, 45,000 lb.

Dimensions: span 132.6 ft, length 97.8 ft, height 38.1 ft.

Weight: C-130H: empty 81,000 lb, fuel/cargo max gross 155,000 lb; C-130J: gross 175,000 lb.

Ceiling: 33,000 ft at 100,000 lb T-O weight.

Performance: (C-130H) max cruising speed 430 mph, T-O run 3,585 ft, landing run (at 130,000 lb) 1,700 ft, range with 40,000-lb payload 2,240 miles; range 3,450 miles.

COMMENTARY

First flown 48 years ago, the C-130 Hercules transport continues in production and has been delivered to more than 60 countries. Basic and specialized versions operate throughout USAF, performing diverse roles in both peace and war situations, including airlift support, Arctic ice cap resupply, aeromedical missions, aerial spray missions (AFRC), fire-fighting duties (AFRC and ANG) for the US Forest Service, and natural disaster and humanitarian relief missions.

C-130A, B, and D. Early versions, now retired. The initial production C-130A had four Allison T56-A-11 or -9 turboprop engines. USAF ordered a total of 219. The C-130B had improved range and higher weights and introduced Allison T56-A-7 turboprops; 134 were produced, with delivery from April 1959. Twelve were modified beginning 1961 as **JC-130Bs** for air-snatch satellite recovery together with three early H models. Twelve C-130Ds were modified As for Arctic operations.

C-130E is an extended-range development of the C-130B, with large under-wing fuel tanks; 389 were ordered, with deliveries beginning in April 1962. A wing modification to correct fatigue and corrosion extended the life of the aircraft well into this century. Other modifications include a self-contained navigation system, with an integrated communications/navigation management suite, GPS capability, and a state-of-the-art autopilot that incorporates a ground collision avoidance system.

C-130H is generally similar to the E model but has updated turboprops, a redesigned outer wing, and improved pneumatic systems; delivery began in July 1974. Subsequent improvements include updated avionics, improved low-power color radar, and other minor modifications. Night vision instrumentation system was introduced from 1993, TCAS II in new aircraft from 1994. ANG **LC-130H** aircraft are modified with wheel-ski gear to support Arctic and Antarctic operations. Two **DC-130Hs** were modified for UAV control duties.

A major AMP scheduled for the C-130E/H includes digital displays, flight-management systems, multifunction radar, new communications systems, and a single air data computer. Planned completion is for 2016. The AMP upgrade includes all C-130 models (LC/EC/MC/AC/HC) except the C-130J-30.

C-130J. This newest model features a three-crew flight operation system, 6,000 shp Rolls Royce-Allison AE2100D engines, all composite six-blade Dowty Aerospace R391 propeller system, digital avionics, and mission computers. Compared to earlier production C-130Es, its speed is up 21 percent, cruising altitude is 40 percent higher, and range 40 percent longer. The J also features improved reliability and maintainability. ANG and AFRC units began receiving J models in 1999. First active duty unit, the 48th AS at Little Rock AFB, Ark., received its first C-130J aircraft in March 2004. First wartime deployment occured December 2004. The future of C-130J acquisition is subject to the current budget review.

C-130J-30. USAF is acquiring a stretched version of the C-130J, with an additional 15 ft to the fuselage, capable of carrying up to 128 ground troops or 92 paratroops, to replace its oldest 1960s-vintage C-130Es. ANG received three in 2001 and two in 2002. Of the five on contract for 2004 delivery, one was slated for active duty; ANG, three; AFRC, one. USAF awarded a multiyear contract in 2002 with deliveries from 2005-09.

CV-22

Brief: A tilt-rotor, multimission transport aircraft designed to have the maneuverability and lift capability of a helicopter and the speed of a fixed-wing aircraft.

Function: Multimission airlift.

Operator: AFSOC.

First Flight: March 19, 1989 (V-22).

Delivery: 2006 (planned).

IOC: 2009 (planned).

Production: 50 (planned).

Inventory: 50 (planned).

Unit Location: Hurlburt Field, Fla., Kirtland AFB, N.M.

Contractor: Bell Boeing; Raytheon.

Power Plant: two Rolls Royce-Allison AE1107C turboshafts, each 6,200 shp.

Accommodation: four (two pilots, two flight engineers); additional pilot for extended duration missions; up to 18 troops or 8,000 lb internal cargo.

Dimensions: proprotor diameter 38 ft, width, rotors turning 84.6 ft, fuselage length 57.3 ft, height 22 ft.

Weight: gross weight 34,900 lb, max VTO 52,870 lb; STO 57,000 lb, self-deploy T-O 60,500 lb.

Ceiling: 26,000 ft.

Performance: typically will carry troops or cargo over a 500-mile combat radius at 265 mph. Self-deployment range with one air refueling 2,417 miles.

COMMENTARY

CV-22 is the designation for the US Special Operations Command variant of the V-22 Osprey. The CV-22 is a multi-engine, dual-piloted, self-deployable, medium-lift vertical takeoff and landing (VTOL) tilt-rotor aircraft for the conduct of special operations, including nuclear, biological, and chemical (NBC) warfare conditions. It will operate from land bases and austere forward operating locations, as well as air capable ships without reconfiguration or modification. An in-flight refueling capability extends combat mission range when required, and the aircraft will be self-supporting to the maximum practical extent. The CV-22's mission is long-range clandestine penetration of denied areas in adverse weather and low visibility to infiltrate, exfiltrate, and resupply SOF.

CV-22 avionics include a fully integrated precision navigation suite, with GPS and INS; a digital cockpit management system oriented around four multifunction displays (MFDs); FLIR; an integrated NVG HUD; terrain-following/terrain-avoidance (TF/TA) radar; and digital map system. Additionally, it is equipped with robust self-defensive avionics and secure antijam, redundant communications compatible with current and planned systems used by command and control agencies and ground forces. The CV-22 unrefueled combat range satisfies current and emergent major theater war (MTW) requirements, as well as national mission tasking. The aircraft is capable of completing most assigned missions during one period of darkness.

A third aircraft joined the two test aircraft based at Edwards AFB, Calif., in February 2005. Initial operational test and evaluation is planned to begin in summer 2006. Initial training capability is scheduled for early 2007 at Kirtland AFB, N.M., and IOC for early 2009 at Hurlburt Field, Fla. USAF may place detachments of CV-22s in US European Command and US Pacific Command theaters.

CV-22 (USAF photo/Jim Haseltine)

MC-130E/H Combat Talon

Brief: A modified C-130 able to provide global, day, night, and adverse weather capability to air-drop personnel and to deliver personnel and equipment to support US and allied SOF.

Function: SOF infiltration, exfiltration, and resupply.

Operator: AETC, AFSOC, AFRC.

First Flight: circa 1965 (E); January 1990 (H).

Delivered: initially 1966.

IOC: 1966 (E); June 1991 (H).

Production: 22 new-build Hs.

Inventory: 14 (E); 22 (H).

Unit Location: Active (assoc.) and AFRC MC-130Es at Duke Field, Fla. Active: MC-130H at Hurlburt Field, Fla., Kadena AB, Japan, Kirtland AFB, N.M., RAF Mildenhall, UK.

Contractor: Lockheed Martin (airframe); Boeing integrated weapons system support.

Power Plant: four Allison T56-A-15 turboprops, each 4,910 shp.

Accommodation: E: crew of nine; 53 troops or 26 paratroops; H: crew of seven; 77 troops, 52 paratroops, or 57 litters.

Dimensions: span 132.7 ft, height 38.6 ft, length 100.8 ft (E), 99.8 ft (H).

Weight: empty 72,892 lb, gross 155,000 lb.
Ceiling: 30,000 ft.
Performance: max speed 289 mph, range 3,110 miles, unlimited with refueling.
COMMENTARY
MC-130 Combat Talon aircraft are equipped with terrain following radars, precision navigation systems using INS/GPS, and electronic and infrared countermeasures for self-protection. Both aircraft are capable of in-flight refueling, are NVG-compatible and have a high-speed aerial delivery system. The primary mission of the aircraft is to conduct infiltration, resupply, and exfiltration of special operations forces (SOF). They are also capable of supporting psychological operations. Combat Talons are able to air-drop or to land on austere unmarked landing or drop zones.
MC-130E Combat Talon I. Fourteen modified C-130E aircraft are additionally equipped with a pod-based system to air refuel SOF helicopters. Two units are MC-130E-equipped, the 8th and the 711th SOS.
MC-130H Combat Talon II. Twenty-four new-build MC-130Hs modified with an integrated glass cockpit were acquired in the early 1990s to supplement the Combat Talon Is. All are currently being modified with a state-of-the-art pod-based aerial refueling system to augment the MC-130E and MC-130P aerial refueling fleet. The 1st, 7th, and 15th SOSs provide support to SOF in Europe, the Pacific, and CONUS, respectively. The 58th SOS at Kirtland AFB, N.M., is responsible for MC-130H mission qualification training.

VC-25 Air Force One
Brief: A specially configured Boeing 747-200B used for air transport of the President and his entourage. When the President is aboard, it has the radio call sign "Air Force One."
Function: Air transport of the President.
Operator: AMC.
First Flight: first flown as Air Force One Sept. 6, 1990.
Delivered: August-December 1990.
IOC: circa 1990.
Production: two.
Inventory: two.
Unit Location: Andrews AFB, Md.
Contractor: Boeing.
Power Plant: four General Electric CF6 turbofans, each 56,700 lb thrust.
Accommodation: crew of 26; up to 76 passengers.
Dimensions: span 195.7 ft, length 231.8 ft, height 63.4 ft.
Weight: long-range mission T-O weight 803,700 lb., gross 833,000 lb.
Ceiling: 45,000 ft.
Performance: speed 630 mph (Mach 0.92), normal cruising speed Mach 0.84, unrefueled range 7,820 miles.
COMMENTARY
Based on the Boeing 747-200B airframe, two **VC-25As** assigned to Andrews AFB, Md., support the President. Aircraft are equipped with staff work areas, a conference room, a general seating area, and an executive office. Communications capability includes worldwide secure and clear communications equipment. Upgrades include GATM and installation of a broadband data transmit and receive capability to provide video teleconferencing and office-in-the-sky capability.

Trainer Aircraft

T-1A Jayhawk
Brief: A medium-range, twin-engine jet trainer version of the Beechcraft 400A. It is used by the Air Force to train student pilots to fly airlift and tanker aircraft.
Function: Advanced pilot training.
Operator: AETC, AFRC.
First Flight: Sept. 22, 1989 (Beechcraft 400A).
Delivered: Jan. 17, 1992-July 1997.
IOC: January 1993.
Production: 180.
Inventory: 179.
Unit Location: Active: Columbus AFB, Miss., Laughlin and Randolph AFBs, Tex., Vance AFB, Okla., NAS, Pensacola, Fla. (forward operating station). AFRC: (assoc.) Randolph AFB, Tex.
Contractor: Raytheon.
Power Plant: two Pratt & Whitney Canada JT15D-5B turbofans, each 2,900 lb thrust.
Accommodation: two, side by side, and one to the rear; rails are fitted to accommodate an extra four seats to permit transport of maintenance teams.
Dimensions: span 43.5 ft, length 48.4 ft, height 13.9 ft.
Weight: empty 5,200 lb, gross 16,100 lb.
Ceiling: 41,000 ft.
Performance: max speed at 27,000 ft 538 mph, range 2,400 miles.
COMMENTARY
The swept-wing **T-1A** Jayhawk is a military version of the Beech 400A used in the advanced phase of joint specialized undergraduate pilot training (JSUPT) for students selected to go on to fly transports such as the C-5 and C-17 or tankers such as the KC-10 and KC-135. It has cockpit seating for an instructor and two students. Special mission equipment includes GPS, an electronic flight instrument system (EFIS) avionics system, a single-point refueling system, an additional fuselage fuel tank, and increased bird-strike protection in the windshield and leading edges for sustained low-level operation. T-1As typically log 100,000 flying hours a year, supporting all-weather training operations at high and low altitudes.

***MC-130H** Combat Talon II* (A1C Kimberly Gilligan)

T-6A Texan II
Brief: A single-engine turboprop aircraft used for training student pilots, navigators, and naval flight officers in fundamentals of aircraft handling and instrument, formation, and night flying.
Function: Primary trainer.
Operator: AETC, AFRC, USN.
First Flight: July 15, 1998.
Delivery: May 2000-present (operational aircraft).
IOC: November 2001.
Production: USAF 372 (ordered), USN 328 (planned).
Inventory: 159 (USAF).
Unit Location: USAF: Active: Laughlin and Randolph AFBs, Tex., Moody AFB, Ga. Planned: Columbus AFB, Miss., Sheppard AFB, Tex., Vance AFB, Okla. Navy: NAS Corpus Christi, Tex., NASs Pensacola and Whiting, Fla.
Contractor: Raytheon.
Power Plant: one Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.
Accommodation: two, in tandem, on zero/zero ejection seats.
Dimensions: span 33.5 ft, length 33.4 ft, height 10.7 ft.
Weight: empty (approx) 4,707 lb; gross 6,500 lb.
Ceiling: 31,000 ft.
Performance: max speed 368 mph, range 920 miles.
COMMENTARY
The Joint Primary Aircraft Training System (JPATS) **T-6A** Texan II is based on the Swiss Pilatus PC-9 aircraft, modified to include a strengthened fuselage, zero/zero ejection seats, increased aircrew accommodation, upgraded engine, increased fuel capacity, pressurized cockpit, larger, bird-resistant canopy, and new digital avionics. The JPATS replaces USAF's T-37Bs and USN's T-34Cs in primary pilot training, as well as supporting undergraduate naval flight officer and USAF navigator training.

T-37 Tweet
Brief: A twin-engine jet used for training undergraduate pilots and undergraduate navigator and tactical navigator students in fundamentals of aircraft handling and instrument, navigation, formation, and night flying.
Function: Primary trainer.
Operator: AETC, AFRC.
First Flight: September 1955.
Delivered: December 1956-68.
IOC: 1957.
Production: 985.
Inventory: 283.
Unit Location: Active: Columbus AFB, Miss., Randolph, and Sheppard AFBs, Tex., Vance AFB, Okla. AFRC: (assoc.) Randolph AFB, Tex.
Contractor: Cessna.
Power Plant: two Continental J69-T-25 turbojets, each 1,025 lb thrust.
Accommodation: two, side by side, on ejection seats.
Dimensions: span 33.7 ft, length 29.2 ft, height 9.1 ft.
Weight: empty 3,870 lb, gross 6,625 lb.
Ceiling: 35,000 ft.
Performance: max speed at S/L 315 mph, range 460 miles.
COMMENTARY
USAF's first purpose-built jet trainer, the T-37 has been AETC's standard two-seat primary trainer for several decades. Its distinctive blue-and-white finish is intended to help formation training and ease maintenance.
T-37A, with J69-T-9 turbojets; all have been modified to T-37B standards.
T-37B. The original T-37A was superseded in November 1959 by the T-37B, with improved radio navigational equipment, UHF radio, and upgraded instruments. Kits were subsequently produced to extend the capability of the T-37 by modifying or replacing critical structural components. AETC began replacing the T-37B with the T-6A Texan II in 2000.

***T-6A** Texan II* (MSgt. David Richards)

T-38 Talon
Brief: A twin-engine, high-altitude, supersonic jet trainer used in a variety of roles, primarily for undergraduate pilot and pilot instructor training.
Function: Trainer.
Operator: ACC, AETC, AFMC, AFRC.
First Flight: April 1959.
Delivered: 1961-72.
IOC: March 1961.
Production: more than 1,100.
Inventory: T-38: 453, AT-38: 31.
Unit Location: Active: Beale and Edwards AFBs, Calif., Columbus AFB, Miss., Holloman AFB, N.M., Laughlin, Randolph, and Sheppard AFBs, Tex., Moody AFB, Ga., Vance AFB, Okla., Whiteman AFB, Mo. AFRC: (assoc.) Randolph AFB, Tex.
Contractor: Northrop Grumman.
Power Plant: two General Electric J85-GE-5A turbojets, each 2,680 lb thrust dry, 2,900 lb thrust with afterburning.
Accommodation: two, in tandem, on ejection seats.
Dimensions: span 25.3 ft, length 46.3 ft, height 12.8 ft.
Weight: empty 7,164 lb, gross 12,500 lb.
Ceiling: above 55,000 ft.
Performance: max level speed 812 mph, range 1,000 miles.
COMMENTARY
Most of the T-38s in service are used by AETC for advanced bomber-fighter training track in JSUPT. Capabilities are being enhanced through an ongoing program of modifications and structural renewal, including a full avionics upgrade with a HUD and integrated GPS/INS, and a propulsion modernization. As a result of the reduction in the T-38's workload through introduction of the T-1A and JSUPT, the service life of the T-38s should extend well beyond 2020.
T-38A. Close in structure to the F-5A export tactical fighter, the T-38A was the world's first supersonic trainer aircraft. It is used to teach supersonic techniques, aerobatics, formation, night and instrument flying, and cross-country and low-level navigation. The aircraft is also used by AFMC to train test pilots and flight-test engineers at Edwards AFB, Calif., in experimental techniques, and by ACC to maintain pilot proficiency.
AT-38B. A slightly different version, with a gunsight and practice bomb dispenser, the AT-38B is used by AETC for Introduction to Fighter Fundamentals.
T-38C. All T-38A and AT-38B airframes will be redesignated as C models upon modification of the avionics systems begun in 2000. The first T-38C was received late summer 2002; planned program completion is 2008. The propulsion system is also being upgraded to improve performance and reliability. In addition, an Escape System Upgrade program is under way to further improve safety and sustainability of the aircraft and increase aircrew accommodation. Installations are scheduled to begin in FY06.

T-41 Mescalero
Brief: Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.
Function: Training, support.
Operator: US Air Force Academy.
Delivered: 1969.
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Continental IO-360-DB piston engine, 210 hp thrust.
Accommodation: two, side by side.
Dimensions: span 36.1 ft, length 26.5 ft, height 8.9 ft.
Weight: gross 2,550 lb.
Ceiling: 16,000 ft.
Performance: speed 182 mph, range 690 miles.
COMMENTARY
The **T-41D,** a military version of the Cessna 172, is an all-metal, strut-braced high-wing monoplane. The aircraft is equipped with modern avionics, GPS, and other equipment appropriate to its mission. It is used for Aero 456 flight testing, USAFA flying team support, and orientation flights.

T-43
Brief: A medium-range, swept-wing jet aircraft equipped with navigation and communications equipment to train navigators for strategic and tactical aircraft.
Function: Navigation trainer.
Operator: AETC.
First Flight: April 1973.
Delivered: September 1973-July 1974.
IOC: 1974.
Production: 19.
Inventory: nine.
Unit Location: Randolph AFB, Tex.
Contractor: Boeing.
Power Plant: two Pratt & Whitney JT8D-9 turbofans, each 14,500 lb thrust.
Accommodation: crew of two; 12 students and six instructors.
Dimensions: span 93 ft, length 100 ft, height 37 ft.
Weight: gross 115,500 lb.
Ceiling: 37,000 ft.
Performance: econ cruising speed 535 mph (Mach 0.7), operational range 2,995 miles.
COMMENTARY
T-43A. The T-43A was derived from the commercial Boeing Model 737-200 and was equipped with the same onboard avionics as most USAF operational aircraft, including mapping radar, VHF omnidirectional radio and Tacan radio systems, INS, radar altimeter, all required communications equipment, and celestial navigation capability. A number of T-43s are configured for passengers and provide operational support to assigned commands.

T-38 Talon (SrA. Matthew C. Simpson)

TG-10B Merlin
Brief: Two-seat medium-performance sailplane used for introductory glider training, instructor upgrade training, spin training, and basic cross-country soaring training.
Function: Trainer.
Operator: USAFA.
Delivered: May 2002.
IOC: December 2002.
Production: 12.
Inventory: 12.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 55.4 ft, length 27.9 ft, height 6.2 ft.
Weight: 1,168 lb.
Performance: speed 142.6 mph, glide ratio 28:1.
COMMENTARY
The **TG-10B** is an L-23 Super Blanik dual sailplane, produced in the Czech Republic and used by USAFA to introduce cadets to flight through the Basic Soaring program.

TG-10C Kestrel
Brief: Two-seat medium-performance sailplane used for spin and aerobatic training.
Function: Trainer.
Operator: USAFA.
Delivered: May 2002.
IOC: December 2002.
Production: five.
Inventory: five.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: two.
Dimensions: span 46.6 ft, length 27.6 ft, height 6.9 ft.
Weight: 1,100 lb.
Performance: speed 146.1 mph, glide ratio 26:1.
COMMENTARY
The **TG-10C** is an L-13AC Blanik dual sailplane, produced in the Czech Republic and used primarily for spin and aerobatic training.

TG-10D Peregrine
Brief: Single-seat medium-performance sailplane used for cross-country soaring training and high-altitude wave flight.
Function: Trainer.
Operator: USAFA.
Delivered: May 2002.
IOC: December 2002.
Production: four.
Inventory: four.
Unit Location: USAFA, Colo.
Contractor: Blanik.
Accommodation: single.
Dimensions: span 46.3 ft, length 21.7 ft, height 4.7 ft.
Weight: 750 lb.
Performance: speed 149.5 mph, glide ratio 33:1.
COMMENTARY
The **TG-10D** is an L-33 Solo Blanik sailplane produced in the Czech Republic. It is a medium performance sailplane that allows students to master basic flight maneuvers while solo, before progressing to a more advanced sailplane. It is primarily used for cross-country training and high-altitude wave flight.

TG-14A
Brief: A two-place, side-by-side motorized glider for use by USAFA in its Introductory Flight Training Program (IFTP) flight screening/primary training program.
Function: Trainer.
Operator: USAFA.
Delivered: September 2002.
IOC: December 2002.
Production: 14.
Inventory: 14.
Unit Location: USAFA, Colo.
Contractor: Grupo Aeromot, Brazil.
Power Plant: one Rotax 912A, 81 hp engine.

TG-14A (USAF photo)

Accommodation: two, side by side.
Dimensions: span 57.3 ft, length 26.4 ft, height 6.3 ft.
Weight: gross 1,874 lb.
Performance: cruise speed 110 mph, glide ratio 31:1, range 690 miles at high-speed cruise, max endurance seven hr.
COMMENTARY
The **TG-14A** is a version of the Ximango AMT-200S Sport Grupo Aeromot selected for use at USAFA in IFTP, replacing the Enhanced Flight Screening Program performed by civilian flying schools since the grounding of the T-3A Firefly in 1997. Cockpit and avionics are arranged for military use. Students use it to practice multiple pattern, aerial maneuvers, and landing procedures, reducing by half the number of sorties needed to achieve a solo flight.

TG-15A
Brief: A two-seat high-performance advanced training/cross-country sailplane for use by USAFA cadets in support of glider competition events nationwide.
Function: Trainer/cross-country competition sailplane.
Operator: USAFA.
Unit Location: USAFA, Colo.
Inventory: two.
Contractor: Schempp-Hirth, Germany.
Accommodation: two-seat.
Dimensions: span 65.6 ft, length 28.3 ft.
Weight: gross 1,543 lb.
Performance: max permitted speed 155 mph, aspect ratio 24:4.
COMMENTARY
The **TG15A** is a high-performance advanced training/cross-country sailplane manufactured by Schempp-Hirth of Germany under the civilian designation Duo Discus. This world-class competition glider is dual seated and will be used nationwide by USAFA cadets for glider competition events.

TG-15B
Brief: A single-seat high-performance advanced training/cross-country sailplane for use by USAFA cadets for glider competition events nationwide.
Function: Trainer/cross-country competition sailplane.
Operator: USAFA.
Unit Location: USAFA, Colo.
Inventory: three.
Contractor: Schempp-Hirth, Germany.
Accommodation: single seat.
Dimensions: span 49.2 ft, length 32.3 ft.
Weight: gross 1,157 lb.
Performance: max permitted speed 155 mph, aspect ratio 22:2.
COMMENTARY
The **TG15B** is a high-performance advanced training/cross-country sailplane manufactured by Schempp-Hirth of Germany under the civilian designation Discus 2b. This world-class competition glider is single seated and will be used nationwide by USAFA cadets for glider competition events.

UV-18 Twin Otter
Brief: Modified utility transport used for parachute jump training.
Function: Paradrop.
Operator: USAFA.
First Flight: May 1965 (commercial version).
Delivered: 1977.
IOC: 1977.
Production: three.
Inventory: three.
Unit Location: USAFA, Colo.
Contractor: de Havilland Aircraft of Canada.
Power Plant: two Pratt & Whitney Canada PT6A-27 turboprops, each 620 ehp.
Accommodation: crew of two and up to 20 passengers.
Dimensions: span 65 ft, length 51.8 ft, height 19.5 ft.
Weight: gross 12,500 lb.
Ceiling: 26,700 ft.
Performance: max cruising speed 210 mph, range with 2,500 lb payload 806 miles.
COMMENTARY
The UV-18B is a military version of the DHC-6 Twin Otter STOL utility transport used for parachute jump training at USAFA.

Helicopters

HH-60G Pave Hawk
Brief: Specially modified helicopters used for SAR and support missions.
Function: SOF heavy-lift helicopter.
Operator: ACC, AETC, AFMC, AFSOC, PACAF, USAFE, ANG, AFRC.
First Flight: October 1974.
Delivered: from 1982.
IOC: circa 1982.

***HH-60G** Pave Hawk* with MC-130P Combat Shadow (TSgt. Justin D. Pyle)

Production: 105.
Inventory: 104.
Unit Location: Davis-Monthan AFB, Ariz., Eglin AFB, Fla., Kadena AB, Japan, Kirtland AFB, N.M., Moody AFB, Ga., NAS Keflavik, Iceland, Nellis AFB, Nev., Robins AFB, Ga. ANG: Francis S. Gabreski Arpt., N.Y., Kulis ANGB, Alaska, Moffett Federal Airfield, Calif. AFRC: Davis-Monthan AFB, Ariz., Patrick AFB, Fla.
Contractor: Sikorsky.
Power Plant: two General Electric T700-GE-700/701C turboshafts, each 1,620 (continuous) shp.
Accommodation: crew of three or four; 11-14 troops, up to six litters, or internal or external cargo.
Dimensions: rotor diameter 53.6 ft, length of fuselage 64.7 ft, height 16.7 ft.
Weight: empty 12,330 lb, max gross 22,000 lb.
Ceiling: 14,200 ft.
Performance: max speed 173 mph, max range 373 miles (internal fuel), 500 miles (auxiliary tank).
Armament: two 7.62 mm miniguns, with provision for two .50-caliber machine guns in cabin doors.
COMMENTARY
Black Hawk helicopters were modified to **HH-60G** Pave Hawk configuration for use by active duty, ANG, and AFRC air rescue units for CSAR and mission activities worldwide. The Pave Hawk is a highly modified version of the Army Black Hawk helicopter, featuring an upgraded communications/navigation suite that includes INS/GPS/Doppler navigation systems, satellite communications (SATCOM), secure/antijam communications, and a PLS that provides range/steering data to compatible survivor radios.
Further modifications include an automatic flight-control system, NVG lighting, FLIR, color weather radar, engine/rotor blade anti-ice system, retractable in-flight refueling probe, internal auxiliary fuel tanks, and an integral rescue hoist. Combat enhancements include RWR, IR jammer, flare and chaff countermeasures dispensing system, and two 7.62 mm or .50-caliber machine guns.

MH-53 Pave Low
Brief: Specially outfitted heavy-lift helicopters used by Air Force special operations forces for infiltration/exfiltration as well as CSAR missions.
Function: SOF heavy-lift helicopter.
Operator: AETC, AFSOC.
First Flight: March 1967.
Delivered: from July 1987 (MH-53J).
IOC: 1988 (MH-53J).
Production: not available.
Inventory: 33.
Unit Location: AETC: Kirtland AFB, N.M. AFSOC: Hurlburt Field, Fla., RAF Mildenhall, UK.
Contractor: Sikorsky; Texas Instruments.
Power Plant: two General Electric T64-GE-100 turboshafts, each 4,330 shp.
Accommodation: crew of six; up to 38 troops.
Dimensions: rotor diameter 72.2 ft, length of fuselage (without refueling probe) 67.2 ft, height 25 ft.
Weight: gross 50,000 lb.
Ceiling: 16,000 ft.
Performance: speed 164 mph, max range 630 miles, unlimited with air refueling.
Armament: mounts for any combination of three 7.62 miniguns and .50-caliber machine guns.
COMMENTARY
MH-53H. Older version of the helicopter, all of which, together with all HH/CH-53B/Cs, were upgraded to MH-53J Pave Low III "Enhanced" standard from 1986.
MH-53J. A long-range deep penetration helicopter, adverse weather capable and equipped for extended operations when air refueled. Equipped with a nose-mounted FLIR, an integrated digital avionics suite that includes TF/TA radar, Kalman filtered navigation suite (GPS, INS, Doppler), projected map display, secure UHF, VHF, FM, HF communications, PLS, SATCOM, hover coupler, rescue hoist, mission commander's C2 panel, armor plating, and an ECM suite with radar and IR missile jammers, flare/chaff dispensers, RWR, and missile launch detectors.
A service life extension program (SLEP) upgraded the aircraft's hydraulics, wiring, and basic airframe structure for increased gross weight, and an automated blade/pylon fold system optimized for shipboard compatibility. All aircraft modified to support aircrew eye/respiratory protection system.
MH-53M. MH-53J helicopters upgraded to Pave Low IV standard, delivered from 1999. Upgrades include the interactive defensive avionics suite/multimission advanced tactical terminal capability which integrates onboard EW systems with off-board, over-the-horizon, near-real-time intelligence, and mission software improvements. Cockpit modifications include three MFDs,

***MH-53J** Pave Low III* (TSgt. Scott Reed)

integrated digital map, and mission commander situation awareness panel in the cabin area.

UH-1 Iroquois

Brief: Modified Bell helicopter used to support Air Force ICBM facilities and for administrative airlift.

Function: Utility helicopter.

Operator: AETC, AFMC, AFSOC, AFSPC, AMC, PACAF.

First Flight: circa 1956.

Delivered: from September 1970.

IOC: circa 1970.

Production: 79 (USAF).

Inventory: 89.

Unit Location: Andrews AFB, Md., Fairchild AFB, Wash., F.E. Warren AFB, Wyo., Hurlburt Field, Fla., Kirtland AFB, N.M., Malmstrom AFB, Mont., Minot AFB, N.D., Robins AFB, Ga., Vandenberg AFB, Calif., Yokota AB, Japan.

Contractor: Bell.

Power Plant: Pratt & Whitney Canada T400-CP-400 Turbo "Twin-Pac," 1,290 shp.

Accommodation: two pilots and 14 passengers or cargo, or external load of 4,000 lb.

Dimensions: rotor diameter (with tracking tips) 48.1 ft, fuselage length 42.3 ft, height 14.3 ft.

Weight: gross and mission weight 11,200 lb.

Ceiling: 13,000 ft.

Performance: max cruising speed at S/L 115 mph, max range, no reserves, 261 miles.

Armament: (optional) two General Electric 7.62 mm miniguns or two 40 mm grenade launchers; two seven-tube 2.75-in rocket launchers.

COMMENTARY

UH-1N is a twin-engine version of the UH-1 utility helicopter (Bell Model 212), most of which are allocated for AFSPC missile site support and for administrative/DV airlift. The UH-1N is also used by AETC's 58th SOW, Kirtland AFB, N.M., for training purposes and by the 336th TG, Fairchild AFB, Wash., for aircrew survival training. Two UH-1N helicopters are maintained by AFSOC for aviation advisory aircrew flight proficiency.

Strategic Missiles

AGM-86 Air Launched Cruise Missile

Brief: A small, subsonic, winged air vehicle, deployed on B-52H aircraft, which can be equipped with either a nuclear or conventional warhead and can be used to help dilute air defenses and complicate an enemy's air defense task.

Function: Strategic air-to-surface cruise missile.

Operator: ACC.

First Flight: June 1979 (full-scale development).

Delivered: from 1981.

IOC: December 1982, Griffiss AFB, N.Y.

Production: 1,700+.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: Boeing.

Power Plant: Williams/Teledyne CAE F107-WR-10 turbofan, 600 lb thrust.

Guidance: AGM-86B: inertial plus Terrain Contour Matching (TERCOM); AGM-86C: inertial plus GPS.

Warhead: AGM-86B: W80-1 nuclear; AGM-86C: blast/fragmentation conventional; AGM-86D: hard target penetrating warhead.

Dimensions: length 20.8 ft, body diameter 2 ft, wingspan 12 ft.

Weight: 3,150 lb (B), 3,277 lb (C).

Performance (approx): speed 550 mph (Mach 0.6), range 1,500+ miles (AGM-86B).

COMMENTARY

AGM-86A. A prototype cruise missile, developed in the mid-1970s. Slightly smaller than the later versions, it never entered production.

AGM-86B. First production version, the B is programmed for strategic attack on surface targets. Small radar signature and low-level flight capability enhance the missile's effectiveness. The last of 1,715 production models was delivered in October 1986. Undergoing SLEP to extend life to FY30.

AGM-86C. A conventional warhead version, developed from June 1986, the Conventional Air Launched Cruise Missile (CALCM) was first used operationally during Gulf War I and has since been used widely in combat operations. CALCM provides the warfighter with an adverse weather, day/night, air-to-surface, accurate, standoff outside theater defenses strike capability, with a range greater than 500 miles and a 3,000-lb class warhead. CALCM is equally effective for stand-alone, clandestine/punitive strikes and fully integrated theater warfare. From 1986, Boeing converted 622 Bs to the conventional configuration, the first of which was delivered in December 1987. The remaining CALCMs have Block 1A enhancements with improved accuracy and increased immunity to electronic jamming. Since Iraqi Freedom, few CALCMs remain.

AGM-86D. CALCM penetrator version with a Lockheed Martin AUP-3(M) warhead. The CALCM penetrator provides the warfighter with a cost-effective, standoff outside theater defenses capability against a wide range of hardened, deeply buried targets. The CALCM penetrator was used with success in Iraqi Freedom.

AGM-129 Advanced Cruise Missile

Brief: A stealthy, long-range, winged air vehicle equipped with a nuclear warhead and designed to evade enemy air and ground-based defenses in order to strike hard, heavily defended targets at standoff distances.

Function: Strategic air-to-surface cruise missile.

Operator: ACC.

First Flight: July 1985.

Delivered: June 1990-August 1993.

IOC: circa 1991.

Production: 461.

Unit Location: Barksdale AFB, La., Minot AFB, N.D.

Contractor: General Dynamics (now Raytheon); McDonnell Douglas (now Boeing).

Power Plant: Williams International F112-WR-100 turbofan.

Guidance: inertial, with TERCOM update.

Warhead: W80-1 nuclear.

Dimensions: length 20.8 ft, body width 2.2 ft, wingspan 10.2 ft.

Weight: 3,700 lb.

Performance (approx): range 2,300+ miles, speed 550 mph.

COMMENTARY

AGM-129A. Embodying stealth technology, the AGM-129A is an air-launched strategic cruise missile with significant improvements over the AGM-86B in range, accuracy, and survivability. Armed with a W-80 warhead, it is designed to evade air- and ground-based defense systems in order to strike heavily defended, hardened targets at any location within an enemy's territory. Developed by General Dynamics, McDonnell Douglas was certified as second source for this advanced system, which is carried externally on B-52H aircraft. The ACM is undergoing modification to extend its service life to 2030.

***LGM-30** Minuteman* (USAF photo)

LG-118 Peacekeeper

Brief: A solid-fuel ICBM capable of delivering a thermonuclear payload of 10 warheads with high accuracy over great distances.

Function: Strategic surface-to-surface ballistic missile.

Operator: AFSPC.

First Flight: June 17, 1983.

Delivered: June 1986-December 1988.

IOC: December 1986, F.E. Warren AFB, Wyo.

Production: 50.

Unit Location: F.E. Warren AFB, Wyo.

Contractor: Lockheed Martin.

Power Plant: first three stages: solid propellant; fourth stage: storable liquid; by Thiokol, Aerojet, Hercules, and Rocketdyne, respectively.

Guidance: inertial guidance system.

Warheads: 10 Avco Mk 21 multiple independently targetable re-entry vehicles (MIRVs).

Dimensions: length 71 ft, diameter 7.7 ft.

Weight: approx 195,000 lb.

COMMENTARY

LG-118A. Developed initially in response to an increased Soviet strategic threat, deployment was capped at 50 in FY90 in response to the changing international political climate.

Housed in converted Minuteman III silos, Peacekeeper is a four-stage ICBM that carries up to 10 independently targetable re-entry vehicles. It is more accurate and has a greater payload and range than the Minuteman III. Its greater resistance to nuclear effects and its more capable guidance system provide a greatly improved ability to destroy very hard targets. These attributes, combined with its prompt response, provide a decisive deterrent.

On Oct. 3, 2002, USAF began deactivation of Peacekeeper ICBMs, scheduled for retirement under nuclear force structure reductions. Final decommissioning is expected September 2005.

LGM-30 Minuteman

Brief: A solid-fuel ICBM capable of being fired from silo launchers and delivering a thermonuclear payload of one to three warheads with high accuracy over great distances.

Function: Strategic surface-to-surface ballistic missile.

Operator: AFSPC.

First Flight: February 1961.

Delivered: 1962-December 1978.

IOC: December 1962, Malmstrom AFB, Mont.

Production: 1,800.

Unit Location: F.E. Warren AFB, Wyo., Malmstrom AFB, Mont., Minot AFB, N.D.

Contractor: Boeing.

Power Plant: stage 1: Thiokol M-55 solid-propellant motor, 210,000 lb thrust; stage 2: Aerojet General SR19-AJ-1 solid-propellant motor, 60,300 lb thrust; stage 3: Thiokol SR73-AJ-1 solid-propellant motor, 34,400 lb thrust.

Guidance: inertial guidance system.

Warheads: one-three Mk 12/12A MIRVs (downloaded to one).

Dimensions: length 59.8 ft, diameter of first stage 5.5 ft.

Weight: launch weight (approx) 78,000 lb.

Performance: speed at burnout more than 15,000 mph, highest point of trajectory approx 700 miles, range with max operational load more than 6,000 miles.

COMMENTARY

A key element in the US strategic deterrent posture, Minuteman is a three-stage, solid-propellant ICBM, housed in an underground silo.

LGM-30A/B. Minuteman I version deployed in the early 1960s. The last Minuteman I missile was removed from its silo at Malmstrom AFB, Mont., in February 1969. USAF had deployed 150 A and 650 B models in 16 squadrons.

LGM-30F. Minuteman II version incorporated a larger second stage, an improved guidance package, greater range and payload capability, and hardening against the effects of nuclear blast. IOC was reached in October 1965 at Grand Forks AFB, N.D. USAF deployed 450 in nine squadrons.

LGM-30G. The Minuteman III became operational in June 1970, providing improved range, rapid retargeting, and the capability to place three MIRVs on three targets with a high degree of accuracy. USAF initially deployed 550 in 11 squadrons.

A single re-entry vehicle configuration for some missiles has been demonstrated, planned for, and is being worked in accordance with strategic arms control negotiations. Currently a total of 500 Minuteman IIIs are based at Minot AFB, N.D.; F.E. Warren AFB, Wyo.; and Malmstrom.

An extensive life extension program is ensuring Minuteman's viability to 2020. Major upgrades include refurbishment of liquid propulsion post-boost rocket engine, remanufacture of the solid-propellant rocket motors, replacement of the environmental control system, repair of launch facilities, installation of updated, survivable communications equipment, and a C2 sustainment program.

Tactical Missiles and Weapons

AGM-65 Maverick

Brief: A tactical, TV- or imaging infrared (IIR)-guided air-to-surface missile carried by fighters and designed for use in CAS, interdiction, and defense suppression missions, having standoff capability and high probabil-

AGM-88 HARM (MSgt. Michael Ammons)

ity of strike against a wide range of targets.

Function: Air-to-surface guided missile.
First Flight: August 1969.
Delivered: from August 1972.
IOC: February 1973.
Production: sustainment phase.
Contractor: Raytheon.
Power Plant: Thiokol TX-481 solid-propellant rocket motor.
Guidance: self-homing, EO guidance system (IIR on D and G models).
Warhead: AGM-65A/B/D/H 125-lb high-explosive, shaped charge; AGM-65G/K 298-lb blast fragmentation.
Dimensions: length 8.2 ft, body diameter 1 ft, wingspan 2.3 ft.
Weight: launch weight (AGM-65A) 462 lb, (AGM-65G) 670 lb.
Performance: range about 9.2 miles.
COMMENTARY

Maverick missiles have a long and distinguished combat record. They were first employed by USAF in Vietnam and were used extensively during Gulf War I and II. They currently equip A-10, F-15E, and F-16 aircraft for use against tanks and columns of vehicles and in the SEAD role.

AGM-65A. The basic Maverick is a launch-and-leave, TV-guided air-to-surface missile that enables the pilot of the launch aircraft to seek other targets or leave the target area once the missile has been launched. Production was initiated in 1971, following successful test launches over distances ranging from a few thousand feet to many miles and from high altitudes to treetop level.

AGM-65B. A version with a "scene magnification" TV seeker that enables the pilot to identify and lock on to smaller or more distant targets.

AGM-65D. System developed to overcome limitations of the TV Maverick, which can be used only in daylight and clear-weather conditions. This version has an IIR seeker as well as a lower-smoke motor. IIR Maverick became operational in February 1986 on A-10 aircraft.

AGM-65G. Uses the IIF seeker with an alternate 298-lb blast fragmentation warhead for use against hardened targets. Software is modified to include options for targeting ships and large land targets as well as mobile armor. This version also has a digital autopilot and a pneumatic, rather than hydraulic, actuation system. USAF received its first G model in 1989.

AGM-65H. AGM-65B modified with an upgraded TV seeker providing significant reliability, maintainability, and performance improvements over the AGM-65B seeker and double the standoff range.

AGM-65K. AGM-65G modified with the same upgraded TV seeker as in the AGM-65H to provide a TV-guided version of the Maverick with the 298-lb blast fragmentation warhead.

AGM-84 Harpoon
Brief: An adverse weather capable, sea-skimming, active radar-guided, antiship cruise missile system capable of being fired from B-52H aircraft, ships, and submarines.
Function: Air-to-surface antiship missile.
First Flight: March 1974 (for USN).
Delivered: from 1977 (USN).
IOC: circa 1985 (USAF).
Production: sustainment phase.
Contractor: Boeing (McDonnell Douglas).
Power Plant: Teledyne CAE J402-CA-400 turbojet, 660 lb thrust.
Guidance: sea-skimming cruise monitored by radar altimeter, active radar terminal homing.
Warhead: penetration high-explosive blast type, weighing 500 lb.
Dimensions: length 12.6 ft, body diameter 1.1 ft, wingspan 3 ft.
Weight: 1,172 lb.
Performance: speed high subsonic, range more than 57 miles.
COMMENTARY

Harpoon and its launch control equipment provide USAF the capability to interdict ships at ranges well beyond those of other aircraft. Originally acquired to equip two squadrons of now-retired B-52G aircraft for maritime antisurface operations, the Harpoon all-weather antiship missile currently arms conventional-mission B-52Hs.

AGM-84D is a variant of the USN Harpoon that has been adapted for use on B-52 bombers which can carry eight missiles.

AGM-88 HARM
Brief: An air-to-surface tactical missile designed to seek and destroy enemy radar-equipped air defense systems, using an advanced guidance system that senses and homes in on enemy radar emissions.
Function: Air-to-surface antiradiation missile.
First Flight: April 1979.
Delivered: 1982-98.
IOC: circa 1984.
Production: sustainment phase.
Contractor: Raytheon.
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 fragmentation, weighing 145 lb.
Dimensions: length 13.7 ft, body diameter 10 in, wingspan 3.7 ft.
Weight: 795 lb.
Performance: cruising speed supersonic, altitude limits S/L to 40,000 ft, range more than 10 miles.
COMMENTARY

The High-speed Anti-Radiation Missile (HARM) exhibits great velocity along with an ability to cover a wide range of frequency spectrums through the use of programmable digital processors in both the carrier aircraft's avionics equipment and in the missile. The combination gives this second generation anti-radiation missile (ARM) greatly improved capability over first-generation Shrikes and Standard ARMs. The AGM-88 proved highly effective against enemy ground radar in Gulf War I and in subsequent operations. HARMs equip F-16 Block 50/52s (F-16CJ) dedicated to the SEAD mission.

AGM-88A. A factory-programmed version used to equip the now-retired F-4G Wild Weasel to increase its lethality in electronic combat. No longer operational.

AGM-88B. Incorporated erasable electronically programmable read-only memory, permitting changes to missile memory in the field. Older versions of the AGM-88B have software upgrades to satisfy current-standard capability requirements.

AGM-88C. This current production version has a more lethal warhead, containing tungsten alloy cubes, rather than steel, and the enhanced-capability AGM-88C-1 guidance head.

Upgrade initiatives are aimed at increasing capability of both B and C versions against target shutdown, blanking, and blinking and at reducing potential damage to friendly radars in the target area. Further upgrades being evaluated include GPS precision navigation capability through a modification of the control section known as the HARM Destruction of Enemy Air Defenses (DEAD) Attack Module, or HDAM.

AGM-130
Brief: A powered TV- or IIR-guided air-to-surface missile, carried by the F-15E and designed for high- and low-altitude strikes at standoff ranges against heavily defended targets.
Function: Air-to-surface guided and powered bomb.
First Flight: 1984.
Delivered: November 1992-FY00.
IOC: 1994.
Production: sustainment phase.
Contractor: Boeing.
Guidance: TV or IIR seeker, or distance measuring equipment (DME) transponder.
Warhead: Mk 84 bomb (2,000-lb unitary) or BLU-109.
Dimensions: length 12.8 ft, body diameter 1.5 ft, wingspan 4.9 ft.
Weight: launch weight 2,917 lb.
Performance: cruising speed subsonic, ceiling in excess of 30,000 ft, range greater than 34.5 miles, circular error probable (CEP) about 10 ft.
COMMENTARY

AGM-130 is a product improvement to the GBU-15 glide bomb, with a guidance system designed to give pinpoint accuracy from low or medium altitudes. The AGM-130 adds a rocket motor, radar altimeter, and digital control system, providing it with double the standoff range of the GBU-15.

Upgrades include a new solid-state TV seeker, an improved IR seeker, and INS/GPS guidance that permit operation in adverse weather and improve target acquisition.

AGM-130s have been used extensively in recent operations.

AGM-130A, with the Mk 84 warhead.
AGM-130C, with the BLU-109/B penetrating warhead.

AGM-154 Joint Standoff Weapon
Brief: First in a joint USAF and Navy family of low-cost, highly lethal glide weapons with a standoff capability, usable against heavily defended targets.
Function: Air-to-surface guided missile.
First Flight: December 1994.
Delivered: 2000-present.

AGM-130 (Jim Haseltine)

IOC: 2000 (USAF).
Production: 6,114 (originally planned).
Contractor: Raytheon.
Guidance: INS/GPS.
Dimensions: length 13.3 ft.
Weight: 1,065-1,500 lb.
Performance: range: low-altitude launch 17 miles, high-altitude launch 40+ miles.
COMMENTARY
A medium-range, INS/GPS-guided, standoff air-to-ground weapon designed to attack a variety of soft and armored area targets (fixed, relocatable, and mobile) during day/night/adverse weather conditions. JSOW enhances aircraft survivability by providing the capability for launch aircraft to stand off outside the range of enemy point defenses. JSOW accuracy and launch-and-leave capability allows several target kills per aircraft sortie. JSOW arms B-1, B-2, B-52, F-15E, and F-16 aircraft. Last planned USAF buy was in FY04.

AGM-154A. The baseline BLU-97 variant for use against area targets; in full-rate production.

AGM-154B. The BLU-108 variant providing anti-armor capability; development complete, production deferred.

AGM-154C. The third variant (used by Navy only), JSOW/Unitary integrates an IIR terminal seeker and a 500-lb unitary warhead.

AGM-158A Joint Air-to-Surface Standoff Missile
Brief: An advanced weapon designed to attack heavily defended targets with high precision at great standoff range.
Function: Air-to-surface guided weapon.
First Flight: April 8, 1999.
Delivered: through FY17 (planned).
IOC: September 2003.
Production: 2,853, plus 1,426 JASSM-ER (planned).
Contractor: Lockheed Martin; Raytheon; Honeywell.
Guidance: INS, GPS, and IIR terminal seeker.
Power Plant: Teledyne Continental Motors.
Dimensions: length 14 ft.
Weight: 2,250 lb.
Performance: 1,000-lb class penetrator and blast-fragmentation warheads; standoff range greater than 200 miles.
COMMENTARY
JASSM is a next generation missile that enables Air Force and Navy fighters and bombers to destroy the enemy's war-sustaining capabilities from outside the ranges of enemy air defenses. This autonomous precision strike weapon has a range greater than 200 miles and can attack both fixed and relocatable targets, ranging from nonhardened above ground to moderately hardened buried targets. JASSM is equipped with INS/GPS guidance, an IIR terminal seeker, and a stealthy LO airframe. The system also offers low operational support costs. Testing has been accomplished for B-52H and F-16 threshold aircraft as well as B-1B and B-2 objective aircraft. The B-1B is the only aircraft capable of redirecting JASSM in flight. Integration planning for the F/A-18E/F is ongoing. Other potential JASSM integration efforts include the F-15E, F-117, and P-3C aircraft. An extended-range version **(JASSM-ER),** with a range of more than 500 miles, began development in FY03 and is scheduled to enter production in 2006.

AIM-7 Sparrow
Brief: A supersonic, medium-range, semiactive radar-guided air-to-air missile with all-weather, all-altitude, and all-aspect offensive capability and a high-explosive warhead, carried by fighter aircraft.
Function: Air-to-air guided missile.
First Flight: December 1983 (AIM-7M).
Delivered: from 1956.
IOC: April 1976 (AIM-7F).
Production: sustainment phase.
Contractor: Hughes and General Dynamics (now Raytheon).
Power Plant: Hercules Mk 58 Mod 0 4.5 sec boost-11 sec sustain rocket motor.
Guidance: AIM-7M: monopulse semiactive radar.
Warhead: high-explosive, blast fragmentation, weighing 86 lb.
Dimensions: length 12 ft, body diameter 8 in, wingspan 3.3 ft.
Weight: launch weight 504 lb.
Performance (estimated): max speed more than 2,660 mph (Mach 3.5), range more than 34 miles.
COMMENTARY
Early versions. Production of Sparrow has been under way for more than 40 years. Approximately 34,000 early models (AIM-7A/B/C/D/E) were produced. Compared to the earlier versions, the advanced solid-state AIM-7F, introduced into USAF service in 1976, had a larger motor, Doppler guidance, improved ECM, and better capability over both medium and "dogfight" ranges. USAF produced approximately 5,000, but none are now in USAF service.
AIM-7M. A joint Navy-USAF project aimed at producing a monopulse version of Sparrow at reduced cost and with improved performance in the ECM and look-down clutter regions. It began operational service in FY83. This version provides all-weather, all-altitude, all-aspect capability and equips USAF F-15s and F-16s (ADF) and Navy F-14s and F-18s.
AIM-7P. Block 1 retrofit to AIM-7M guidance and control sections (GCSs), providing low-altitude guidance and fuzing capability. Block 2 provides new-build for AIM-7P GCSs.

AIM-9 Sidewinder (SMSgt. David H. Lipp)

AIM-9 Sidewinder
Brief: A supersonic, short-range, IR-guided air-to-air missile carried by fighter aircraft, having a high-explosive warhead.
Function: Air-to-air missile.
First Flight: September 1953.
Delivered: 1957-present. First production AIM-9X delivered May 1, 2002.
IOC: circa 1983 (AIM-9M).
Production: sustainment phase (AIM-9M); LRIP from November 2000 (AIM-9X).
Contractor: Raytheon; Loral.
Power Plant: Thiokol Mk 36 Mod 11 solid-propellant rocket motor.
Guidance: solid-state IR homing guidance.
Warhead: high-explosive, weighing 20.8 lb.
Dimensions: length 9.4 ft, body diameter 5 in, fin-span 2.1 ft.
Weight: launch weight 190 lb.
Performance: max speed Mach 2+, range 10+ miles.
COMMENTARY
Early versions. AIM-9A was the prototype version. The AIM-9B, initial production version, entered the inventory in 1957 and was effective only at close range during day. These shortcomings were eliminated on subsequent AIM-9E/H/J/P versions. The third generation Sidewinder, AIM-9L, added a more powerful solid-propellant rocket motor as well as tracking maneuvering ability. Production and delivery began in 1976; production ended in 1981.
AIM-9M. A joint Navy-USAF project aimed at producing an improved version of AIM-9L with all-altitude, all-aspect, launch-and-leave intercept capability. Can equip: A-10, F-14, F-15, F-16, F-16 ADF, and F-18 aircraft. This version has increased infrared counter-countermeasures (IRCCM) capability, improved background discrimination, and a reduced-smoke rocket motor. First flight of prototype was in February 1978. Full production began in FY81.
AIM-9M-9. A modification to improve IRCCM capability of early missiles. Complete.
AIM-9X. Deriving from a jointly funded Navy-USAF project, the AIM-9X entered LRIP in November 2000. USAF's F-15-equipped 12th and 19th FS, part of the 3rd Wing at Elmendorf AFB, Alaska, became the first operational units to receive AIM-9Xs in November 2003. The first full-rate production contract was signed in November 2004. USAF plans to buy 5,097 missiles.
The AIM-9X incorporates advanced technologies such as a focal plane array imaging seeker, high off-boresight sensor (HOBS), and a highly maneuverable jet-vane control system. The missile utilizes the existing AIM-9M rocket motor, warhead, and fuze. It will be integrated with the JHMCS to maximize its HOBS capability. Intended carrier aircraft include the F-15, F-16, F-35, F/A-18, and F/A-22.

AIM-120 AMRAAM (SMSgt. Chris Drudge)

AIM-120 AMRAAM
Brief: A new generation supersonic, medium-range, active radar-guided air-to-air missile with a high-explosive warhead.
Function: Air-to-air guided missile.
First Flight: December 1984.
Delivered: 1988-July 2010 (planned).
IOC: September 1991.
Production: 10,917+ planned for USAF/USN.
Contractor: Raytheon.
Power Plant: Alliant boost-sustain solid-propellant rocket motor.
Guidance: inertial/command, inertial with active radar terminal homing.
Warhead: high-explosive directed fragmentation weighing 48 lb.
Dimensions: (A/B models) length 12 ft, body diameter 7 in, span of tail control fins 2.1 ft.
Weight: 335 lb.
Performance: cruising speed approx Mach 4, range more than 23 miles.
COMMENTARY
A joint project between the Navy and USAF, the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) is a replacement for the AIM-7 Sparrow. The AIM-120 equips F-15, F-16, F/A-18, F/A-22, and F-35 fighters. Inertial and command inertial guidance and active radar terminal homing provide launch-and-

maneuver capability. Significant improvements in operational effectiveness over the AIM-7 include increased average velocity, reduced miss distance, improved fuzing, increased warhead lethality, multiple target engagement capability, improved clutter rejection in low-altitude environments, enhanced electronic protection capability, increased maximum launch range, a reduced-smoke motor, and improved maintenance and handling.

AIM-120A was the first production version, delivered by Hughes in 1988 to the 33rd TFW at Eglin AFB, Fla.

AIM-120B/C/D are upgraded, reprogrammable variants of the AIM-120. The AIM-120C currently in production has smaller, clipped control surfaces to provide for internal carriage capability in the F/A-22 and F-35, with HOBS launch capability. The latest development effort (AMRAAM Phase 4) adds GPS to improve navigational accuracy and enhanced data link capabilities in the AIM-120D version, due to enter production in 2006.

CBU-87/103/113 Combined Effects Munition

Brief: The CBU-87 CEM is an area cluster munition effective against light armor, materiel, and personnel and used by USAF and Navy fighters and bombers for interdiction.

Function: Area cluster munition.

Production: sustainment phase.

Contractor: Aerojet General; Honeywell; Alliant Tech.

Guidance: none (CBU-87).

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 949 lb.

Performance: dispenses 202 BLU-97 combined effects bomblets over an area roughly 800 ft by 400 ft.

COMMENTARY

The CBU-87 Combined Effects Munition dispenses 202 BLU-97 shaped charge antipersonnel/antimateriel fragmentary/incendiary bomblets over the target in a rectangular pattern. It is currently delivered by USAF and Navy aircraft as an unguided gravity weapon. Density and size of the area covered depends on release parameters and spin rates.

CBU-103. USAF is retrofitting a portion of its inventory of unguided CBU-87 CEMs with the Wind-Corrected Munitions Dispenser (WCMD) tail kit. The WCMD improves the munitions delivery accuracy when released from medium to high altitude.

CBU-113. USAF plans to retrofit a portion of its inventory of unguided CBU-87 CEMs with a WCMD-ER wing and tail kit. The WCMD-ER provides increased accuracy and standoff capability from outside point defense ranges.

CBU-89/104 Gator

Brief: The CBU-89 Gator is an anti-armor/antipersonnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.

Function: Scatterable mines.

Production: sustainment phase.

Contractor: Honeywell; Aerojet General; Olan; Alliant Tech.

Guidance: none (CBU-89).

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 705 lb.

Performance: dispenses 72 BLU-91 anti-armor and 22 BLU-92 antipersonnel mines.

COMMENTARY

The CBU-89 Gator dispenser holds 94 mines, of which 72 are antitank and 22 are antipersonnel. The mines are dispersed over the target in a circular pattern. The antitank mines, which can be fuzed for three different time delay settings, have a magnetic influence fuze to sense armor.

CBU-104. USAF is retrofitting a portion of its inventory of Gators with the Wind-Corrected Munitions Dispenser (WCMD) tail kit, which improves the munitions delivery accuracy when released from medium to high altitude.

CBU-97/105/115 Sensor Fuzed Weapon

Brief: The CBU-97 SFW is an anti-armor cluster munition used by fighters and bombers for multiple kills per pass against moving and stationary land combat vehicles.

Function: Wide-area cluster munition.

First Flight: circa 1990.

Delivered: 1994-2007 (planned).

IOC: 1997.

Production: 3,937 (planned).

Contractor: Textron Systems.

Guidance: IR sensors in each warhead search for targets, then detonate over them.

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 920 lb.

Performance: delivers 40 lethal projectiles over an area of about 500 ft by 1,200 ft.

COMMENTARY

The **CBU-97** Sensor Fuzed Weapon (SFW) comprises an SUU-66/B tactical munitions dispenser with an FZU-39 fuze and a payload of 10 BLU-108 submunitions. Each tactical munitions dispenser contains 10 BLU-108 submunitions, and each submunition contains four "skeet" projectiles that, upon being thrown out, seek out their target and deliver an explosively formed penetrator. Each SFW can deliver a total of 40 lethal projectiles. The skeet IR sensors can detect a vehicle's IR signature; if no target is detected, the warhead detonates after a preset time. The SFW's primary targets are massed tanks, armored personnel carriers, and self-propelled targets. It also provides direct attack capability and interdiction against C2 centers.

The CBU-97 SFW is delivered as an unguided gravity weapon from the A-10, B-1, B-2, B-52H, F-15E, and F-16. The initial baseline SFW systems contained the BLU-108/B and BLU-108A/B submunition. A preplanned product improvement SFW variant P31 submunition, the BLU-108B/B, is in full-scale production, incorporating improvements such as an active laser sensor, multimission warhead, and increased footprint.

CBU-105. Designation of an unguided CBU-97 equipped with a Wind-Corrected Munitions Dispenser (WCMD) tail kit. The CBU-105 can be accurately delivered from high altitude and in adverse weather from the B-1, B-52H, F-15E, and F-16. Combat debut for the CBU-105 occurred April 2003, during Iraqi Freedom, from a B-52H.

CBU-115. USAF plans to install WCMD-ER wing and tail kits on SFW P31 weapons beginning FY06. The WCMD-ER provides increased accuracy and standoff capability from outside point defense ranges.

CBU-107 Passive Attack Weapon

Brief: The CBU-107 Passive Attack Weapon (PAW) provides the capability to attack non-hardened surface targets, with a minimum of collateral and environmental damage.

Function: Wide-area cluster munition.

First Flight: 2002.

Delivered: 2002-03.

IOC: December 2002.

Production: not available, but completed March 2003.

Contractor: General Dynamics (kinetic energy penetrator payload and cannister); Lockheed Martin (WCMD); Textron (tactical munition dispenser kit).

Guidance: via WCMD.

Dimensions: length 7.7 ft; diameter 1.3 ft.

Weight: 1,000 lb.

Performance: delivers a high-speed volley of 3,000+ metal "arrows" projected from a single canister; three types of projectiles: 350 x 15 in-long rods, 1,000 x 7 in-long rods, and 2,400 small-nail size.

COMMENTARY

The CBU-107 Passive Attack Weapon (PAW) was developed from September 2002 to provide USAF aircraft with a new weapon that destroys targets with kinetic energy rods rather than explosives, thereby minimizing collateral and environmental damage. Following release from an aircraft, the WCMD-equipped weapon glides toward its target. Before impact, the inner chamber containing the rods begins to rotate and the "arrows" are ejected in rapid succession by centrifugal force, penetrating a target within a 200-ft radius. Two CBU-107s were used during Iraqi Freedom. CBU-107s are intended for use on F-16, F-15E, and B-52 aircraft.

GBU-10 Paveway II

Brief: An unpowered laser guided bomb (LGB) used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.

First Flight: early 1970s.

Delivered: from 1976.

IOC: 1976.

Production: 10,000; continuing.

Contractor: Lockheed Martin; Raytheon.

Guidance: semiactive laser.

Warhead: GBU-10C/D/E/F: Mk 84 bomb (2,000-lb unitary); GBU-10G/H/J: BLU-109.

Dimensions: length GBU-10C/D/E/F: 14.1 ft; GBU-10G/H/J: 14 ft, body diameter GBU-10C/D/E/F: 1.5 ft; GBU-10G/H/J: 1.2 ft, wingspan 5.5 ft.

Weight: 1,985 lb.

Performance: circular error probable (CEP) 29.7 ft; range 9.2 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-10 is used primarily for precision bombing against nonhardened targets but is capable of greater penetration than previous version. It can operate in cloud ceilings down to 2,500 ft. GBU-10 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-12 Paveway II

Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.

First Flight: early 1970s.

IOC: 1976.

Production: about 30,000; continuing.

Contractor: Lockheed Martin; Raytheon.

Guidance: semiactive laser.

Warhead: Mk 82 (500 lb) blast/fragmentation bomb.

Dimensions: length 10.9 ft, body diameter 10.7 in, wingspan 4.4 ft.

Weight: 603 lb.

Performance: CEP 29.7 ft; range about 6 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The LGB is used primarily to strike fixed armor. It can operate in cloud ceilings down to 2,500 ft. GBU-12 platforms include A-10, B-52, F-15E, F-16, and F-117 aircraft.

GBU-15

Brief: An unpowered bomb carried by the F-15E and used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface guided munition.

First Flight: 1975.

Delivered: 1983-complete.

IOC: 1983.

Production: more than 2,000.

Contractor: Boeing; Raytheon.

Guidance: TV or IIR seeker.

Warhead: Mk 84 bomb (2,000-lb unitary) or BLU-109.

Dimensions: length 12.8 ft, body diameter 1.5 ft, wingspan 4.9 ft.

Weight: 2,500 lb.

Performance: cruising speed subsonic; range about 17 miles; CEP about 10 ft.

COMMENTARY

GBU-15 is an air-launched, cruciform-wing glide bomb fitted with a guidance system designed to give it pinpoint accuracy from low or medium altitudes. It also has a standoff capability. Development began in 1974, based on experience gained in Vietnam with the earlier Pave Strike GBU-8 modular weapon program. The GBU-15 is intended for tactical use to suppress enemy defenses and to destroy heavily defended targets. The target-detecting device is carried on the front of the warhead. The control module, with autopilot and data link module, attaches to the rear.

The weapon has two modes of attack. In direct attack, the weapon is locked on to the target before launch and flies a near-line of sight profile to impact. In the indirect mode, 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. A "buddy" system may be operated whereby the weapon is launched from one aircraft and controlled by another. The GBU-15 is deployed with the F-15E.

GBU-15(V)1/B. A TV-guided variant, qualified for operational service in 1983 (production complete).

GBU-15(V)2/B. IIR version entered service in 1987.

GBU-15-I. Combines accuracy of GBU-15 with the penetration capability of the improved 2,000-lb BLU-109/B penetrator bomb.

EGBU-15. GPS-guided variant, allowing pilot to select either TV, IR, or GPS guidance over the target, depending on weather and/or threat conditions. USAF had 100 initially produced for Allied Force, with field-level upgrade of over 1,200 existing GBU-15s.

GBU-16 Paveway II

Brief: An unpowered LGB used to destroy high-value enemy targets from short standoff distances.

Function: Air-to-surface glide munition.

First Flight: early 1970s.

IOC: 1976.

Production: not available.

Contractor: Lockheed Martin; Raytheon.

Guidance: semiactive laser.

Warhead: Mk 83 (1,000 lb) bomb.

Dimensions: length 12.1 ft, body diameter 1.2 ft, wingspan 5.5 ft.

Weight: approx 1,000 lb.

Performance: CEP about 29 ft; range 9.2 miles.

COMMENTARY

Folding-wing Paveway II weapons are improved versions of the earlier fixed-wing Paveway I. The GBU-16 LGB is used primarily to strike fixed armor. Its platforms include A-10, F-15E, and F-16 aircraft.

GBU-24 Paveway III

Brief: A precise air-to-ground low-level LGB (LLLGB) equipped with an advanced guidance kit.

Function: Air-to-surface penetrating glide bomb.

First Flight: GBU-24A/B (USAF) in service May 1985; GBU-24B/B (Navy) June 1992.

Delivered: from 1986.

IOC: 1986.

Production: USAF 14,000; Navy 12,000.

Contractor: Raytheon.

Guidance: semiactive laser.

Warhead: BLU-109.

Dimensions: length 14.2 ft.
Weight: 2,350 lb.
Performance: range more than 11.5 miles.
COMMENTARY
GBU-24A/B. An air-to-ground weapon equipped with the third generation Paveway III guidance kit, integrated with a BLU-109 penetrating warhead. The kit consists of an advanced guidance section and high-lift airframe. It is extremely precise and highly effective against a broad range of high-value hard targets. The system can be employed from low, medium, and high altitudes, providing operational flexibility through the use of an adaptive digital autopilot and large field-of-regard, highly sensitive scanning seeker. The GBU-24A/B was highly successful during Desert Storm.

The GBU-24 adapts to conditions of release, flies an appropriate midcourse, and provides trajectory shaping for enhanced warhead effectiveness. The weapon is deployed on USAF F-15E, F-16, and F-117 and Navy F-14 and F/A-18.

GBU-27
Brief: A precise air-to-ground penetrating LGB equipped with an advanced guidance kit.
Function: Air-to-surface guided glide bomb.
First Flight: not available.
Delivered: from 1988.
IOC: 1988 (unconfirmed).
Production: approx 3,000.
Contractor: Raytheon.
Guidance: semiactive laser.
Dimensions: span 5.5 ft, length 13.9 ft.
Weight: 2,170 lb.
Performance: range more than 11.5 miles.
COMMENTARY
To meet the unique requirements of the F-117A, the GBU-24A/B was adapted to GBU-27 standard, incorporating specific guidance features to accomplish this mission. The GBU-27 is extremely precise and was used to great effect in Desert Storm.

EGBU-27. Integrates GPS/INS guidance into the existing GBU-27 laser seeker to provide adverse weather capability and improved target location. Entered production in FY98. First operational use was in Iraqi Freedom.

GBU-28
Brief: A large 5,000-lb class air-to-ground penetrating LGB equipped with an advanced laser guidance kit, used for striking and destroying hard underground targets.
Function: Air-to-surface guided glide bomb.
First Flight: February 1991.
Delivered: circa 1991.
IOC: 1991.
Production: approx 500.
Contractor: Raytheon.
Guidance: laser.
Dimensions: length 19.2 ft, diameter 1.2 ft.
Weight: 4,676 lb.
Performance: range more than 5.75 miles.
COMMENTARY
Under USAF's rapid-response program, the GBU-28 bunker-busting LGB was developed for Desert Storm for use against deeply buried, hardened C2 facilities. Four of the GBU-28 weapons were used during the war: two for testing and two by F-111Fs against a bunker complex Feb. 27, 1991. Guidance is by a modified GBU-27 system.

EGBU-28. Integrates GPS/INS guidance into the existing GBU-28 guidance control unit to provide adverse weather capability and improved target location. Entered production in FY99.

GBU-31/32/38 Joint Direct Attack Munition
Brief: A joint USAF-Navy INS/GPS-guided weapon, carried by fighters and bombers, that provides highly accurate, autonomous, all-weather conventional bombing capability.
Function: Air-to-surface guided bomb.
First Flight: Oct. 22, 1996.
Delivered: 1998-2009 (planned).
IOC: 1998.
Production: 240,882 (planned).
Contractor: Boeing; Textron; Honeywell.
Guidance: INS/GPS.
Dimensions: Mk 84 with JDAM 12.8 ft; BLU-109 with JDAM 12.4 ft; Mk 83 with JDAM 10 ft.
Weight: Mk 84 2,036/2,056 lb (USAF/USN); BLU-109 2,115/2,135 lb; Mk 83 1,013/1,028 lb.
Performance: range up to 17 miles, CEP with GPS 42.9 ft; CEP with INS only 99 ft.
COMMENTARY
JDAM upgrades the existing inventory of general-purpose bombs by integrating them with a GPS/INS guidance kit to provide accurate all-weather attack from medium/high altitudes. While still aboard the launch aircraft, JDAM is passed target information through the aircraft's avionics system. Once released, the inertial guidance kit takes over and, with periodic GPS updates to the INS, guides the weapon to its target. JDAM is intended for AV-8B, B-1, B-2, B-52, F-14, F-15E, F-16, F-35, F-117A, F/A-18C/D/E/F, and F/A-22 aircraft.

GBU-31. Variant that adds an INS/GPS guidance kit to the 2,000-lb general-purpose Mk 84 bomb or the 2,000-lb BLU-109 penetrator. First used in combat March 24, 1999.

GBU-32. Variant that adds an INS/GPS guidance kit to the 1,000-lb general-purpose Mk 83 bomb or the 1,000-lb BLU-110 penetrator.

GBU-38. Variant that adds an INS/GPS guidance kit to the 500-lb general-purpose Mk 82 bomb. First production deliveries were in 2004 for the B-2.

Planned upgrades include an antispoofing GPS receiver and low-cost antijam antenna.

Massive Ordnance Air Blast (MOAB) Bomb
Brief: A massive precision guided munition (PGM) designed to be dropped by B-1, B-2, or B-52 bombers.
Function: Massive bomb.
Guidance: GPS/INS.
Warhead: 18,000 lb, high explosive.
Dimensions: length 30 ft, diameter 3.3 ft.
Weight: 21,500 lb.
COMMENTARY
On March 11, 2003, USAF live-tested the largest PGM developed to date. Unlike the earlier unguided "Daisy Cutter" bomb, the MOAB does not require a parachute. Testing continues.

Small Diameter Bomb
Brief: Extended range all-weather, day/night 250-lb class near-precision guided munition. Provides increased loadout to achieve multiple kills per sortie and decreases collateral damage.
Function: Air-to-surface guided munition.
First Flight: May 23, 2003 (guided).
Delivered: from FY06 (planned).
IOC: FY06.
Production: 24,000 munitions and 2,000 carriages (planned).
Contractor: Boeing.
Guidance: GPS/INS augmented by Differential GPS.
Dimensions: length 70.8 in (munition); 126.4 in (carriage); 143.1 in (carriage with four munitions).
Weight: 285 lb (munition); 320 lb (carriage); 1,460 lb (carriage with four munitions).
Performance: near-precision capability at standoff range up to 46 miles.
COMMENTARY
The Small Diameter Bomb (SDB) system employs a BRU-61/A smart carriage capable of carrying four 250-lb class GBU-39/B near-precision guided air-to-surface munitions. It is capable of destroying high-priority fixed and stationary relocatable targets from both fighters and bombers in internal bays or on external hardpoints. SDBs can be targeted and released against single or multiple targets. Target coordinates are loaded in the weapon prior to release either on the ground or in the air by aircrew. Once the weapon is released, it relies on GPS/INS augmented by Differential GPS to self-navigate to the impact point. SDB increases loadout, decreases collateral damage, and improves aircraft sortie generation times. Threshold aircraft for SDB is the F-15E. Objective aircraft include the A-10, B-1, B-2, B-52, F-16, F-35, F-117, F/A-22, J-UCAS, and MQ-9. Boeing was awarded the contract to develop the SDB in October 2003.

Wind-Corrected Munitions Dispenser (WCMD)
Brief: A tail kit fitted to CEM/Gator/SFW (CBU-87/89/97) and CBU-107 PAW dispenser weapons. When dropped from high altitude, its inertial guidance system corrects for launch transients and wind effects to enhance accuracy.
Function: Guidance tail kit.
First Flight: February 1996.
Delivered: from 2000.
IOC: FY00.
Production: 27,700 (planned), with 19,730 delivered as of Oct. 29, 2004.
Contractor: Lockheed Martin.
Dimensions: length 1.4 ft, diameter 1.3 ft.
Weight: 100 lb.
Performance: range about eight miles.
COMMENTARY
USAF is modifying standard SUU-64/65/66 tactical munition dispensers with guidance kits to compensate for wind drift on downward flight from high altitudes. The combat-proven WCMD kits include an INS guidance unit, movable tail fins that pop out in flight, and a signal processor. The kits when fitted on CBU-87/89/97 inventory cluster weapons are designated: CEM (CBU-103), Gator (CBU-104), SFW (CBU-105), and PAW (CBU-107). Successful flight testing began in February 1996; WCMDs are now operational on B-1, B-52, F-15E, and F-16 aircraft. Objective aircraft are A-10, B-2, F-35, and F-117.

Wind-Corrected Munitions Dispenser-Extended Range (WCMD-ER)
Brief: A WCMD tail and wing kit fitted to CEM/SFW (CBU-87/97) dispenser weapons. Augments WCMD baseline capability by adding GPS guidance and a wing kit for increased accuracy and standoff capability from outside point defense ranges.
Function: GPS guidance tail and wing kit.
First Flight: April 2005 (planned).
Delivered: 2006 (planned).
IOC: FY06.
Production: 7,500.
Contractor: Lockheed Martin.
Dimensions: wing kit: length (wings stowed) 7 ft, width 1.3 ft, height 5 in.
Weight: less than 200 lb.
Performance: standoff range about 40.25 miles.
COMMENTARY
USAF is developing a wing kit and incorporating GPS guidance into the WCMD tail kit to provide highly accurate delivery and standoff capability from outside point defense ranges for CBU-87/97 dispenser weapons. However, acquisition is subject to the current budget review.

Satellite Systems

Advanced EHF (AEHF)
Brief: Joint service satellite communications system that provides global, secure, protected, and jam-resistant communications for high priority air, ground, and sea assets.
Function: near-worldwide, secure, survivable satellite communications.
Operator: AFSPC.
First Launch: April 2008 (planned).
IOC: 2010 (planned).
Constellation: three satellites.
Design Life: 14 years.
Launch Vehicle: Evolved Expendable Launch Vehicle (EELV).
Unit Location: Schriever AFB, Colo.

***GBU-31** Joint Direct Attack Munition* (MSgt. Glenn Wilkewitz)

Orbit Altitude: 22,000+ miles (geosynchronous).
Contractor: Lockheed Martin, Northrop Grumman team for system development and demonstration.
Dimensions: length 32 ft (across payload axis), width 75.8 ft (across solar array axis).
Weight: approx 13,500 lb at launch, 9,000 lb on orbit.
Performance: five times the capability of the Milstar Block II satellite.
COMMENTARY
The Advanced Extremely High Frequency (AEHF) system comprises three satellites in geosynchronous orbit that provide at least five times the capacity of the 1990s-era Milstar Block II satellites. Advanced EHF allows the President, Secretary of Defense, and combat forces to control their tactical and strategic forces at all levels of conflict through general nuclear war and supports the attainment of information superiority. AEHF will provide connectivity across the spectrum of mission areas, including air, land, and naval warfare; special operations; strategic nuclear operations; strategic defense; theater missile defense; and space operations and intelligence.

Defense Meteorological Satellite Program
Brief: Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations.
Function: Environmental monitoring satellite.
Operator: National Polar-orbiting Operational Environmental Satellite System (NPOESS) program office.
First Launch: May 23, 1962.
IOC: classified but in use during Vietnam War.
Constellation/on-orbit: two.
Design Life: 48 months (Block 5D-2); 54 months (Block 5D-3).
Launch Vehicle: Titan II.
Unit Location: Suitland, Md.
Orbit Altitude: approx 575 miles.
Contractor: Lockheed Martin; Northrop Grumman.
Power Plant: solar arrays generating 1,200-1,300 watts.
Dimensions: length 20.2 ft (with array deployed), width 4 ft.
Weight: 2,545 lb (including 592-lb sensor).
Performance: DMSP satellites orbit Earth at about 500 miles altitude and scan an area 1,800 miles wide. Each system covers the Earth in about 12 hr.
COMMENTARY
For the last 40 years, the DMSP constellation has provided high-quality, timely weather information to strategic and tactical warfighters worldwide. In addition, DMSP satellites provide critical land, sea, and space environment data required by US forces across the globe. The DMSP constellation will be replaced by the tri-agency NPOESS late in this decade.
Block 5D-2. Two operational DMSP Block 5D-2 satellites survey the entire Earth four times a day. The last of the Block 5D-2 satellites was launched in December 1999. The Block 5D-2 spacecraft "sees" visible and IR cloud-cover imagery to analyze cloud patterns with the operational linescan system. Secondary instruments include microwave imagers and sounders and a suite of space environment sensors.
Block 5D-3. DMSP F16, the first Block 5D-3 satellite, was launched successfully on Oct. 18, 2003. (DMSP F15, with a 5D-3 satellite bus but 5D-2 sensors, was launched Dec. 12, 1999, and is credited as the first 5D-3 launch.) Block 5D-3 satellites have an improved spacecraft bus and sensors that provide for longer and more capable missions. Successful flyout of the DMSP Block 5D-3 satellites will help ensure a seamless transition to the NPOESS program for DOD.

Defense Satellite Communications System
Brief: A spacecraft traveling in geosynchronous orbit used to transmit SHF high-priority C2 communication.
Function: Communications satellite.
Operator: AFSPC.
First Launch: 1971 (DSCS II); 1982 (DSCS III); 2000 (DSCS III/SLEP).
IOC: Dec. 13, 1978 (DSCS II).
Constellation: five (III).
Design Life: 10 yr (III).
Launch Vehicle: Atlas II.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 22,000+ miles in geosynchronous orbit.
Contractor: Lockheed Martin.
Power Plant: solar arrays generating 1,269 watts, decreasing to 980 watts after 10 yr; 1,500 watts (SLEP).
Dimensions: rectangular body 6 x 6 x 7 ft; 38-ft span with solar arrays deployed.
Weight: 2,580 lb; 2,716 lb (SLEP).
Performance: DSCS satellites orbit Earth at about 22,000 miles altitude and employ six SHF transponder channels for secure voice and high-rate data communications.
COMMENTARY
DSCS III satellites support globally distributed DOD and national security users. The final four of 14 satellites received SLEP modifications, providing substantial capacity improvements through higher power amplifiers, more sensitive receivers, and additional antenna connectivity options. The DSCS communications payload includes six independent super high frequency (SHF) transponder channels that cover a 500 MHz bandwidth. Three receive and five transmit antennas provide selectable options for Earth coverage, area coverage, and/or spot beam coverage. A special-purpose single channel transponder is also on board.
The DSCS III system provides the capabilities needed for effective implementation of worldwide military communications. It can adapt to dynamic operating conditions and perform under stressed environments, providing nuclear hardened, antijam, high data rate, long-haul communications to military users globally. The final DSCS III satellite was launched in August 2003. The modernization of satellite communications will continue with the deployment of the Wideband Gap-filler System.

Defense Support Program
Brief: An early warning spacecraft that travels in geosynchronous orbit and provides alert of possible ballistic missile attack on US forces or homeland.
Function: Strategic and tactical launch detection system.
Operator: AFSPC.
First Launch: November 1970.
IOC: circa 1972.
Constellation: classified.
Design Life: three yr.
Launch Vehicle: Titan IV inertial upper stage.
Unit Location: Peterson AFB, Colo.
Orbit Altitude: 22,000+ miles in geosynchronous orbit.
Contractor: TRW (now Northrop Grumman).
Power Plant: solar arrays generating 1,485 watts.
Dimensions: diameter 22 ft, height 32.8 ft, with solar paddles deployed.
Weight: 5,000 lb (approx).
Performance: orbits at approx 22,000 miles altitude in geosynchronous orbit; uses IR sensors to sense heat from missile and booster plumes against Earth's background.
COMMENTARY
The incredibly flexible Defense Support Program (DSP) satellite system was used extensively in Desert Storm to detect theater missile launches against coalition forces. Though not designed to spot and track smaller missiles, the system was highly successful in detecting launches, enabling timely warnings of Iraqi Scud attacks. Using existing sensors and data collection sources, global data related to theatre missile warning was transmitted to the Attack and Launch Early Reporting to Theater (ALERT) and Shield systems then located at the National Test Facility (NTF) at Schriever AFB, Colo. The Space Based Infrared System (SBIRS) mission control station (MCS), located at Buckley AFB, Colo., became operational in December 2001 and now performs both the strategic and theater missile warning missions. ALERT was deactivated in September 2001, and Shield continues as a research and development effort that evaluates and demonstrates the potential benefits of using multiple data sources and novel techniques in support of missile warning.
DSP satellites are a key part of the North American and theater early warning systems, capable of detecting missile launches and nuclear detonations. Warning data are fed to NORAD and US Strategic Command early warning centers at Cheyenne Mountain AFS, Colo. Since the first launch, DSP satellites have provided an uninterrupted early warning capability to the US; 21 satellites have been launched to date. The final two DSPs launched in 2004-05. America's early warning capability will be modernized with the introduction of the new SBIRS to be phased in beginning in FY07.

Global Positioning System
Brief: A constellation of orbiting space vehicles that provides highly precise and reliable navigation data, 24 hours a day, to military and civilian users around the world. Signals permit calculation of location within less than 100 ft.
Function: Worldwide navigation satellite.
Operator: AFSPC.
First Launch: Feb. 22, 1978.
IOC: Dec. 9, 1993.
Constellation: 28.
Design Life: six yr (II/IIA); 7.5 yr (IIR).
Launch Vehicle: Delta II.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 12,636 miles (IIA); 12,532 miles (IIR).
Contractor: Boeing (II, IIA, IIF); Lockheed Martin (IIR, IIR-M).
Power Plant: solar arrays generating 700 watts (II/IIA); up to 2,900 watts (IIF).
Dimensions: IIR: body 5 x 6.3 x 6.25 ft, span incl solar arrays 38 ft.
Weight: 2,370 lb (IIR) on orbit.
Performance: GPS satellites orbit the Earth every 12 hr, emitting continuous navigation signals. The signals are so accurate that time can be figured to within one-millionth of a second, velocity within a fraction of a mile per hr, and location to within a few ft. Receivers are used in aircraft, ships, and land vehicles and can also be handheld.
COMMENTARY
Worldwide military operations, such as precision bombing, CSAR, mapping, and rendezvous, are successful in part due to the 24-hour, worldwide navigation service provided by the Global Positioning System (GPS) navigation satellite constellation. Accurate three-dimensional (latitude, longitude, and altitude) position, velocity, and precise time are provided continuously in real time to support an unlimited number of users around the globe, both civilian and military. Concern over potential enemy denial of GPS is being addressed under GPS modernization efforts. The modified Block IIR-M GPS satellites, launched 2004, have two jam-resistant channels for military-only use. Block IIF satellites with extended design life, faster processors, and a new civil signal on a third frequency launches 2006. Future generation GPS satellites are slated for launch 2012.

Milstar Satellite Communications System
Brief: A satellite communications system that provides secure, jam-resistant worldwide C2 communications for tactical and strategic forces in all levels of conflict, linking command authorities to ground forces, ships, submarines, and aircraft.
Function: Communications satellite.
Operator: AFSPC.
First Launch: Feb. 7, 1994.
IOC: July 1997 (Milstar I).
Constellation: five.
Design Life: 10 yr.
Launch Vehicle: Titan IV/Centaur.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 22,300 miles.
Contractor: Lockheed Martin; Boeing; TRW (now Northrop Grumman).
Power Plant: solar arrays generating 8,000 watts.
Dimensions: length 51 ft, width 116 ft with full solar array extension.
Weight: 10,000 lb.
Performance: constellation consists of three satellites in low-inclined geosynchronous orbit, providing worldwide coverage between 65° north and 65° south latitude.
COMMENTARY
The backbone of strategic-tactical communications, Milstar is a joint service communications system that provides secure, jam-resistant EHF communications. Worldwide operations are made possible by this 24-hour, all-weather capability, ready to support any deployment at a moment's notice. The Milstar inventory was fully deployed in 2003, and modernization of satellite communications will continue with the Advanced EHF (AEHF) constellation deployment.

Polar MILSATCOM
Brief: Payload on a classified satellite that provides secure, survivable communications, supporting peacetime, contingency, and wartime operations in the North Pole region, above 65° north latitude.
Function: Communications satellite.
Operator: USN.
First Launch: late 1997.
IOC: 1997.
Constellation: three.
Design Life: host satellite dependent.
Launch Vehicle: not available.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: 25,300 miles.
Contractor: classified.
Power Plant: 410 watts consumed by payload (power from host solar array).
Dimensions: numerous items integrated throughout host.
Weight: 470 lb (payload).
COMMENTARY
Augmenting the Milstar constellation, the Polar MILSATCOM payload is a cost-effective means of providing secure communications for the northern polar region. Like Milstar, the system enables worldwide operations by linking strategic and tactical forces with secure, jam-resistant EHF communication links. Polars 2 and 3 launch dates are 2004 and 2006, respectively. A much-improved next generation polar system is planned for launch circa 2010.

Space Based Infrared System High
Brief: Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes satel-

lites in geosynchronous Earth orbit (GEO) and highly elliptical orbit.

Function: IR space surveillance.
Operator: AFSPC.
First Launch: (planned) High GEO: FY07.
IOC: TBD.
Constellation: High: four GEO sats, two highly elliptical orbit sensors.
Design Life: not available.
Launch Vehicle: Evolved Expendable Launch Vehicle (EELV) Heavy.
Unit Location: Buckley AFB, Colo.
Orbit Altitude: High at approx 22,300 miles.
Contractor: Lockheed Martin; Northrop Grumman.
Power Plant: solar array, 2,435 watts.
Dimensions: 6 x 7 x 17 ft.
Weight: 5,442 lb.
COMMENTARY

The follow-on to the DSP is the Space Based Infrared System (SBIRS) High, an integrated "system of systems" including satellites in GEO, sensors hosted on satellites in highly elliptical orbits, and ground assets.

SBIRS is being fielded incrementally. Increment 1 consolidated all DSP ground processing in one CONUS master control station at Buckley AFB, Colo. IOC was declared Dec. 18, 2001. Increment 2 will field the space and ground assets. SBIRS High is in the EMD phase led by a Lockheed Martin team. The system will integrate the Space Tracking and Surveillance System (STSS) capabilities as they become available.

Space Tracking and Surveillance System

Brief: Advanced surveillance system with IR and visible sensors for detecting and tracking ballistic missiles. STSS (formerly SBIRS Low) will have satellites in low Earth orbit (LEO) that work in concert with SBIRS High and other missile defense systems.
Function: Space surveillance.
Operator: AFSPC.
First Launch: FY06-07 (planned).
IOC: TBD.
Constellation: TBD (from nine up to 30 under consideration).
Design Life: not available.
Launch Vehicle: TBD.
Unit Location: TBD.
Orbit Altitude: 60-300 miles.
Contractor: Northrop Grumman (completion and launch of two R&D satellites); Raytheon.
Power Plant: TBD.
Dimensions: not available.
Weight: not available.
COMMENTARY

The Missile Defense Agency manages the Space Tracking and Surveillance System (STSS), which, in December 2002, replaced the program known as SBIRS Low. In April 2002, MDA ended the SBIRS Low program definition and risk reduction competition and named TRW (purchased by Northrop Grumman) as prime contractor for a redefined space-based sensor R&D element of MDA's integrated Ballistic Missile Defense System (BMDS). The initial STSS contract calls for completion and launch of two LEO satellites in FY06-07 under Block 2006. New technologies will be inserted into subsequent R&D satellites under Block 2008 and beyond, leading to an operational system.

Wideband Gap-filler System (WGS)

Brief: Satellites that provide wideband communications for deployed tactical forces (air, land, and sea).
Function: Worldwide satellite communications.
Operator: AFSPC.
First Launch: Dec. 31, 2005 (planned); two further launches planned within a year.
IOC: August 2007 (planned).
Constellation: three-five satellites.
Design Life: 14 years.
Launch Vehicle: EELV, Delta IV.
Unit Location: Schriever AFB, Colo.
Orbit Altitude: GEO.
Contractor: Boeing.
Power Plant: solar arrays generating 9,934 watts.
Dimensions: based on Boeing 702 Bus.
Weight: 13,200 lb at launch.
Performance: approx 12 times the capability of a DSCS satellite.
COMMENTARY

The WGS constellation is planned to bridge the gap between current DSCS and GBS systems and the next generation system. It will provide two-way services for national leaders, Diplomatic Telecommunications Service, Defense Information System Network, and all military ground fixed and mobile users. In addition, it will provide direct broadcast of digital multimedia, high-bandwidth imagery, and video information directly from global and theater sites to deployed warfighters. Primarily a commercial product, the satellites will have X-band (DSCS III-like), Ka-band broadcast (GBS Phase 2-like), two-way Ka-band services, and cross-channelization between its X- and Ka-band services.

Aerial Targets

BQM-34 Firebee

Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: 1951; 1958 (BQM-34A).
Delivered: from 1951.
IOC: circa 1951.
Production: 1,800+.
Inventory: 33.
Unit Location: Tyndall AFB, Fla.
Contractor: Teledyne Ryan.
Power Plant: one General Electric J85-GE-100 turbojet, 2,850 lb thrust.
Guidance and Control: remote-control methods incl choice of radar, radio, active seeker, and automatic navigator developed by Teledyne Ryan; the current model of the BQM-34A is configured to accommodate the GRDCUS, which allows multiple targets to be flown simultaneously.
Dimensions: length 22.9 ft, body diameter 3.1 ft, span 12.9 ft.
Weight: launch weight 2,500 lb.
Performance: max level speed at 6,500 ft 690 mph, operating height range 10 ft to more than 60,000 ft, max range 796 miles, endurance (typical configuration) 30 min.
COMMENTARY

Current BQM-34As, with an upgraded General Electric J85-100 engine that provides a thrust-to-weight ratio of 1:1, offer higher climb rates and six-G maneuvering capability. A new microprocessor flight-control system provides a prelaunch and in-flight self-test capability. BQM-34s are used for research, development, test, and evaluation and the Weapon System Evaluation Program.

BQM-167 Skeeter

Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: Jan. 3, 2005.
Production: full-scale production began in 2004, with 350 Skeeters contracted over seven years.
Unit Location: Tyndall AFB, Fla.
Contractor: Composite Engineering Inc.
Power Plant: Microturbo Tri 60-5+ turbojet.
Guidance and Control: remote piloting methods.
Dimensions: length 20 ft, body diameter 2 ft, span 11 ft.
Weight: not available.
Performance: max level speed Mach 0.9 mph, operating height range 20,000-50,000 ft, endurance 3 hr.
COMMENTARY

BQM-167A will replace both the aging MQ-107 and BQM-34A as the Air Force's newest subscale aerial target. It features an increased load capability, higher speeds, G-loads, a digital architecture for avionics, and a composite airframe making it significantly lighter than the earlier platforms. Future development on this target will take it to supersonic speeds, internalize and miniaturize many countermeasures systems, and expand the flight envelope beyond any target system in the inventory today.

MQM-107 Streaker

Brief: A jet-powered, variable speed, recoverable target drone.
Function: Aerial target.
Operator: ACC.
First Flight: not available.
Delivered: from 1984 (B).
IOC: 1987.
Production: 70 (B); 221 (D); 78 (E).
Unit Location: Tyndall AFB, Fla.
Contractor: Raytheon (D model); Marconi (formerly Tracor) (E model).
Power Plant: initially on D model, one Teledyne CAE 373-8 engine, 950 lb thrust; MQM-107Ds delivered since 1989 have 950 lb thrust TRI 60-5 turbojets. Microturbo TRI 60-5 engine, 1,061 lb thrust or TCAE 373-8B (E model).
Guidance and Control: analog or digital, for both ground control and preprogrammed flight (D model); high-G autopilot provisions; digital autopilot and remote control by the Gulf Range Drone Control Upgrade System (GRDCUS), a multifunction C2 multilateration system (E model).
Dimensions: length 18.1 ft, body diameter 1.3 ft, span 9.8 ft.
Weight: max launch weight (excl booster) 1,460 lb.
Performance: operating speed 207-630 mph, operating height 50-40,000 ft, endurance 2 hr 15 min.
COMMENTARY

MQM-107D. A third generation version of the MQM-107 Streaker, it is a recoverable, variable-speed target drone used for research, development, test, and evaluation and the Weapon System Evaluation Program.

MQM-107E. Improved performance follow-on to the MQM-107D. In operational service, it replaces the MQM-107D and expands the flight envelope.

MQM-107 Streakers are being replaced by the BQM-167 Skeeter.

QF-4

Brief: A converted, remotely piloted F-4 Phantom fighter used for full-scale training or testing.
Function: Aerial target.
Operator: ACC.
First Flight: August 1993.
IOC: not available.
Unit Location: Tyndall AFB, Fla. (detachment at Holloman AFB, N.M.)
Contractor: Marconi (formerly Tracor).
Power Plant: two General Electric J79-GE-17 turbojets, each with approx 17,000 lb thrust with afterburning.
Guidance and Control: remote-control methods incl the GRDCUS (Tyndall) and the Drone Formation and Control System (Holloman); will also accommodate the triservice Target Control System currently under development.
Dimensions: length 16 ft, height 6 ft, wingspan 38.4 ft.
Weight: mission operational weight 49,500 lb.
Performance: max speed Mach 2+, ceiling 55,000 ft, range (approx) 500 miles.
COMMENTARY

The QF-4 replaced the QF-106 Full-Scale Aerial Target (FSAT) in 1998 when the F-106 inventory was depleted. The QF-4 provides for a larger operational performance envelope (maneuvering) and greater payload capability compared with its predecessors.

More than 160 F-4 surplus aircraft have been converted to QF-4 FSATS since 1995. QF-4s are used for research, development, test, and evaluation and the Weapon System Evaluation Program. ■

BQM-167 Skeeter (MSgt. Michael Ammons)

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AFA / AEF National Report

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By Frances McKenney, Assistant Managing Editor

The Air Force Way

At Eielson AFB, Alaska, the 354th Fighter Wing's new commander, Brig. Gen. Marke F. Gibson, turned to the **Fairbanks Midnight Sun Chapter** to help him and his new group commanders become more involved in the Fairbanks community.

Gibson suggested to James V. Drew, chapter president, that the chapter help Eielson develop the same kind of co-commander program that had been a success at other bases. The idea was to team a community leader with the commander of a unit on base. It would introduce local business people to the Air Force way of life, and it would give the base personnel a way to connect socially and professionally with the community.

Karen S. Washburn, who is the Alaska state VP; Steven R. Lundgren, state leadership development VP; and Butch Stein, the chapter VP, helped a panel from the Greater Fairbanks Chamber of Commerce identify business leaders for the co-commander slots. Many of those selected were AFA Community Partners, Drew noted.

The co-commander program officially began in March with an induction ceremony at Eielson's Joint Mobility Complex. Drew spoke at this kickoff banquet, summarizing the project's purpose and benefits for both the airmen and the community.

Host units had already come up with ideas for involving their civilian co-commanders in their activities. The 354th Mission Support Squadron, for one, was matched with Carolyn Chapman, the human resources director at the University of Alaska Fairbanks, and planned to give her a base tour, invite her to a squadron change of command and its annual picnic, and have her speak at the commander's call and at the Airman Leadership School graduation.

Co-commanders "serve" for one year and can renew their command for one more. All Eielson's groups, squadrons, and staff agencies, as well as tenant units and the 168th Air Refueling Wing (ANG), participate in the program.

USAF photo by Duncan Wood

At the Air Force Ball in Colorado Springs, Colo., AFA Board Chairman Pat Condon presents AFA memberships to Amn. Travis Cunningham (right) and his wife, Amn. Erin Cunningham (center). The Cunninghams were the newest airmen at the February gala, hosted by the Lance P. Sijan Chapter and AFSPC.

Investment in Youth

The **Pensacola Chapter** in Florida donated $200 to an aerospace education project at the National Museum of Naval Aviation in Pensacola.

The museum—which features more than 170 vintage Navy, Marine Corps, and Coast Guard aircraft—plans to establish a National Flight Academy to teach math and science topics to seventh- through 12th-grade students. Officials anticipate 6,000 students coming to the National Flight Academy every year for six-day sessions.

The teaching facility will have its own building next to the museum and will be jammed with classrooms, 36 cockpit simulators, system trainers, laboratories, flight physiology equipment such as spin trainers, and dormitory and dining areas. The youngsters will learn about aerodynamics and propulsion and will gain a familiarity with navigation, communications, and the sensations of flight, according to the museum's Web site.

In February, TSgt. Tyrone J. Davis, the Pensacola Chapter president, and MSgt. Michael J. Fleischmann, the chapter's VP for Community Partners, were among the invited guests at the groundbreaking ceremony for the academy.

Davis said afterward that he felt the aerospace education program would have "a huge impact" on improving the math and science skills of the young students.

Falcons vs. Purple Eagles

Although they were a long way from home, when the Air Force Academy hockey team played against Niagara University in New York, they knew they had fans at the ice rink: Retired Lt. Col. Richard H. Waring, at least, was easily identifiable because he wore his Air Force uniform.

President of the **L.D. Bell-Niagara Frontier Chapter,** he and other members formed a Falcons cheering section at Dwyer Ice Arena, by combining forces with the Niagara Military Affairs Committee and a New

Harry S. Truman Chapter President James Snyder (third from right) and the Lee's Summit North High School AFJROTC color guard flank US Rep. Emanuel Cleaver II (D-Mo.), who addressed the chapter in February in Kansas City, Mo.

York chapter of the academy's parents' association

The 914th Airlift Wing, the AFRC unit based at Niagara Falls Arpt., provided a color guard for the pregame ceremony, and Lt. Col. Terry Lawrence, the 914th Operations Group commander, dropped the first puck to start the game between the academy and Niagara University's Purple Eagles. Waring noted that when Lawrence was introduced to the audience as an academy graduate, the Falcons tapped their hockey sticks on the ice in approval.

It's becoming a tradition for the chapter and its cheering-section partners to host a party in a special area overlooking the rink, with the hockey team, coaches, and staff as guests of honor. This year, Frank Serratore, the head coach, and Steve Mead, team captain, were among those who attended the party.

Proud to Pledge

When the Florida state legislature convened its 2005 session on March 8 in Tallahassee, John E. Schmidt Jr., president of the **Col. H.M. "Bud" West Chapter,** and chapter member Stephen C. Sullivan were on hand as official representatives of the Florida AFA.

Joining them in the well of the House chamber were about 30 others representing veterans organizations. They were introduced to the audience, and together the vets led the House members in the Pledge of Allegiance. Afterward the veterans marched out of the chamber, to applause from legislators, many of whom reached out to shake their hands, Schmidt said.

A retired chief master sergeant who served for 30 years in the Air Force, Schmidt said he is an avid history buff, and taking part in opening day ceremonies at the state legislature was "being part of history."

He said that Raymond Turczynski Jr., Florida region president, had asked him to represent the association at the legislature's opening day ceremony, the fifth time he has done so. Ceremony organizers asked Schmidt to bring a second AFA representative with him and, said Schmidt, they were thrilled to learn that the AFAers planned to wear their uniforms that day. Schmidt and Sullivan attended a formal reception at the capitol beforehand and met several state legislators.

Sullivan is a retired senior master sergeant, who served from 1966 to 1993 and is now an aerospace science instructor at Amos P. Godby High School in Tallahassee.

To Its Former Glory

When **Gold Coast Chapter (Fla.)** leaders Robert M. Rawls and Ransom Meriam saw the F-86H Sabre in 1999, it was painted white, had a bird's nest on its tail, and its wingtank fins had been bent by hurricanes. The vintage fighter jet was marred by corrosion, cracks, rust—and a generic label, "US Armed Forces," painted on its fuselage.

Displayed outdoors for 25 years at a Fort Lauderdale park, the F-86 had deteriorated to become "an embarrassment," said Meriam. The situation particularly saddened Rawls, who had originally persuaded the city to acquire F-86H serial no. 53-1255 in 1970 from the Maryland Air National Guard.

So Meriam, as chapter president, called the city's parks and recreation department and offered to have the chapter restore the aircraft. The city welcomed the help.

Joined by chapter members Rod Edmunds, Milton Markowitz, Walter E. Houghton, Bill Kotziers, and Samuel Sherman, Meriam and Rawls then turned to Air Force Reserve Command's 482nd Fighter Wing at Homestead ARB, Fla. CMSgt. John I. Folger and the maintenance division there agreed to refurbish the F-86 if the chapter paid for the material and supplies.

Houghton persuaded a trucking company to haul the aircraft some 50 miles from Fort Lauderdale to Homestead, and the five-year project began. The 482nd FW Reservists worked on the restoration in between maintaining the unit's F-16s and deploying for Operation Northern Watch. Meanwhile, the chapter raised approximately $9,000 through several air shows.

Folger tapped restoration experts from all over the US. AFRC's 419th Combat Logistics Support Squadron at Hill AFB, Utah; the 433rd CLSS at what was then Kelly AFB, Tex.; and the 507th CLSS from Tinker AFB, Okla., were among the units that lent aircraft structural repair personnel to the effort.

Rawls died before the Sabre's restoration was completed in June 2003. It took another year before the restored aircraft got placed at a new site in the city's Holiday Park.

As a guest speaker at a ceremony dedicating the restored F-86, Meriam told the audience how fitting it was that the restored Sabre now overlooked a road named Sandy Nininger Drive. Alexander R. "Sandy" Nininger Jr. received the first Medal of Honor in World War II for actions in January 1942, fighting the Japanese in the Philippines. His roommate at West Point had been Robert Rawls.

More AFA/AEF News

■ The **Tidewater Chapter** hosted the quarterly Virginia state AFA meeting in February at Virginia Beach, with Brig. Gen. John W. Maluda as the evening's keynote speaker. Director of communications and information at Air Combat Command, Maluda spoke about ACC programs and the F/A-22, which is slated to reach initial operational capability later this year with ACC's 27th Fighter Squadron at Langley AFB, Va. After his presentation, Maluda joined Tidewater Chapter President Allan Berg and AFA National President Robert E. "Bob" Largent in honoring SSgt. Dennis Boyd, 203rd RED HORSE Squadron, as the unit's NCO of the Year. Largent and AEF President Mary Anne Thompson both delivered presentations to the quarterly meeting.

■ After their election as president and vice president of the Gainesville Chapter in Florida, Edward J. Kelly and Robert B. Walker set to work, among other tasks renaming the group. Kelly and Walker, a former Tuskegee Airman, contacted Tuskegee Airmen, Inc., in Arlington, Va., and successfully petitioned to have the chapter renamed the **Red Tail Memorial Chapter.** The name is a tribute to the African-American military airmen in World War II who had the tails of their aircraft painted red.

■ Teacher Linda Kerins spoke to a meeting of the **Shooting Star Chapter** in New Jersey, describing a two-week NASA educational workshop for teachers in grade levels kindergarten to grade four. The summertime workshop took place at the Kennedy Space Center in Florida and was one of several held at NASA research centers across the country. The teachers learned about NASA's research and development activities from scientists, engineers, technicians, and educational specialists. The workshops helped them adapt what they learned for their specific classrooms.

■ Representing the **Central Florida Chapter,** Richard A. Ortega, aerospace education VP for the chapter and state, visited a classroom whose teacher, Michelle Thrift, recently received an AEF Educator's Grant. During the visit to the science class at Durrance Elementary School in Orlando, Ortega spoke to the students about the importance of studying math, science, and technology. AEF's Educator Grants provide teachers with $250 to fund aerospace education-related projects whose expenses are not covered by other avenues.

■ In Georgia, **Carl Vinson Memorial Chapter** President Lynn Morley and Paul Smith, the chapter's aerospace education VP, attended a 78th Air Base Wing staff meeting at Robins Air Force Base in January to present

AFA In Action

The Air Force Association works closely with lawmakers on Capitol Hill, bringing to their attention issues of importance to the Air Force and its people.

AFA Extends Hill Visits

AFA National President Robert E. "Bob" Largent continued a series of Capitol Hill visits begun earlier this year to present the Air Force Association's Statement of Policy and Top Issues for 2005 and to discuss Air Force modernization programs.

Largent met with a number of senior Congressional staffers. They included Matt Mandell, military legislative assistant to Congressman Cliff **Stearns** (R-Fla.), who is co-chairman of the House Air Force Caucus, and several staffers whose members serve on the House Armed Services Committee. Those staffers included Brandi Ballou, legislative director for Rep. Howard P. **McKeon** (R-Calif.); Mike Bindell, military legislative assistant to Rep. Jim **Marshall** (D-Ga.); Hugh Esco, special assistant to Rep. Cynthia **McKinney** (D-Ga.); Michael Schuttloffel, military legislative assistant to Rep. Curt **Weldon** (R-Pa.); and Mike Wiehe, military legislative assistant to Rep. Michael **Turner** (R-Ohio). Largent also met with Gene Irisari, legislative director for freshman Congressman Mike **McCaul** (R-Tex.).

AFA's Government Relations staff has been meeting with staffers from a number of House offices as part of a continuing education program. The recent visits focused on the need to recapitalize Air Force weapons systems and infrastructure. Fiscal 2006 budgetary pressures on Air Force recapitalization efforts have made AFA advocacy and education efforts even more critical.

Among the staffers visited were Don Bevis, legislative assistant to Rep. James **Gibbons** (R-Nev.); Derek Contreras, military fellow for Rep. John **Spratt** (D-S.C.); Marcus Friesen, legislative assistant to Jim **Ryun** (R-Kan.); Christopher Herndon, legislative assistant to Rep. Patrick **McHenry** (R-N.C.); Mac King, deputy chief of staff to Rep. Solomon **Ortiz** (D-Tex.); Joe Laird, military legislative assistant to Rep. Todd **Akin** (R-Mo.); Blair Milligan, senior legislative assistant to Mike **McIntyre** (D-N.C.); Richard Shordt, legislative assistant to Rep. Marcy **Kaptur** (D-Ohio); and Stanley White, chief of staff to Rep. Robert **Brady** (D-Pa.).

A1C Brandon Hill and Robert Willis with the chapter's quarterly achievement award. Col. Greg F. Patterson, wing commander, assisted in presenting an AFA certificate of appreciation, AFA membership, and a chapter coin to Hill, from the 78th Communications Squadron, and to Willis of the 78th Services Squadron.

■ SMSgt. Eric Miller, veterans affairs VP for the **Carl Vinson Memorial Chapter,** presented a chapter academic achievement award to TSgt. Jason Focht from the 437th Security Forces Squadron, Charleston AFB, S.C. The award honors the Robins NCO Academy graduate who attains the highest academic average. The presentation was made at the Feb. 10 NCO Academy graduation. ■

Have AFA/AEF News?

Contributions to "AFA/AEF National Report" should be sent to *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: afa-aef@afa.org. Digital images submitted for consideration should have a minimum pixel count of 900 by 1,500 pixels.

Reunions

reunions@afa.org

6th PTS/548th RTS, Yokota AB, Japan (1947-70s). Sept. 28-Oct. 1 in the Washington, DC, area. **Contact:** Charlie Wilson (770-927-6179) (cwilson193@aol.com).

47th BW. Oct. 12-17 at the Doubletree Hotel, Tampa West Shore Arpt., in Tampa, FL. **Contact:** Charlie Palmer, 8841 Augusta Cir., Anchorage, AK 99504 (phone/fax: 907-332-0296) (cpalmer@gci.net).

57th BW Assn of WWII, including all B-25 units in the Mediterranean Theater. Sept. 21-26 at the Renaissance Hotel Airport in St. Louis. **Contact:** Bob Evans, 1950 Cunningham Rd., Indianapolis, IN 46224-5341 (317-247-7507).

90th BS, Korea. Sept. 29-Oct. 2 at the Embassy Suites in Vienna, VA. **Contact:** Richard Larsen (717-352-2900) (larsengl@innernet.net).

97th BW. Sept. 22-25 in Branson, MO. **Contact:** Merrill Beck, 8131 Halsey, Lenexa, KS 66215 (913-888-8934) (mrvrb@webtv.net).

100th BG. Sept. 29-Oct. 1 in Pittsburgh. **Contact:** Don Bradley, 1310 Hansen Ave., Bellevue, NE 68005 (donduckdk@aol.com).

107th FS. July 23 at Selfridge ANGB, MI. **Contact:** Lt. Col. Ross Dickinson, 127 WG/SE, 29553 George Ave., Selfridge ANGB, MI 48045 (800-645-9416) (ross.dickinson@miself.ang.af.mil).

191st CSS/MSS/RMS. Sept. 8-11 in Alpena, MI. **Contact:** Don Hengesh (231-439-0987) (donhengesh@aol.com).

456th BG, Cerignola, Italy (1943-45). Aug. 31-Sept. 4 at the Embassy Suites Hotel Crystal City in Arlington, VA. **Contact:** Ed Moore (800-424-7515) (georgia@mooretours.sabre.net).

487th BG. Oct. 19-23 at the Red Lion Hanalei Hotel in San Diego. **Contact:** Don and Darlene Denbeck (402-336-3124) (denbeck@morcomm.net).

AFA Conventions

May 6-7	**Tennessee State Convention,** Memphis, Tenn.
May 19	**New Jersey State Convention,** Atlantic City, N.J.
June 10-11	**California State Convention,** Beale AFB, Calif.
June 10-12	**Oklahoma State Convention,** Tulsa, Okla.
June 18	**Virginia State Convention,** Arlington, Va.
June 25	**Mississippi State Convention,** Columbus, Miss.
June 27	**Alaska State Convention,** Fairbanks, Alaska
July 15-17	**New York State Convention,** Niagara Falls, N.Y.
July 16	**Pennsylvania State Convention,** Mechanicsburg, Pa.
July 23	**Florida State Convention,** Cape Canaveral, Fla.
July 29-31	**Texas State Convention,** San Angelo, Tex.
July 30-31	**Washington State Convention,** McChord AFB, Wash.
Aug. 12-13	**Midwest Region Convention,** Omaha, Neb.
Aug. 13	**North Carolina State Convention,** Raleigh, N.C.
Aug. 19-20	**Colorado State Convention,** Colorado Springs, Colo.
Aug. 20	**Georgia State Convention,** Warner Robins, Ga.
Sept. 11-14	**Air and Space Conference,** Washington, D.C.

500th BS Assn, 345th BG (WWII). Sept. 1-6 in Washington, DC. **Contact:** Marvin Leventon (410-484-6788) (murphlev@aol.com).

646th AC&W Sq. June 5-7 at the Holiday Inn Boardwalk in Atlantic City, NJ. **Contact:** Henry Oehlsen (863-386-9250) (oehlsen17@tnni.net).

A-37 Assn. Sept. 1-4 in Irving, TX. **Contact:** Ollie Maier, 306 Village West, San Marcos, TX 78666-9436 (512-353-7432).

AACS Alumni Assn. Sept. 22-25 at the Marriott Hotel in Kansas City, KS. **Contact:** Mac Maginnis (866-299-1045) (c.maginnis@comcast.net) (www.aacsalumni.com).

FB-111A. July 21-24 in Portsmouth, NH. **Contact:** Dave Dow (davdow@earthlink.net) (http://members.cox.net/fb111reunion/).

Greenville AFB, MS, including 3506th and 3508th Flight Line Maintenance Sqs (1950s). Sept. 8-10. **Contact:** Billy Ray Smith (brsmith6@cox.net).

MSC Assn. Oct. 14-16 in San Diego. **Contact:** Ralph Charlip (251-248-2390).

Moroccan Reunion Assn. Sept. 21-25 in St. Louis. **Contact:** Bernie and Jim Williamson, 719 North Clifton Ct., West Peoria, IL 61604-5021 (phone: 309-637-2140 or fax: 309-637-5633) (willieil@aol.com).

OCS Classes 63-A, 63-B, 63-C, and 63-D, including associated classes. Sept. 1-5 in Colorado Springs, CO. **Contact:** Jerry Nolan (719-633-7859) (jnolancolo@aol.com).

Perrin Field/AFB, TX. June 25 at Grayson County Community College in Denison, TX. **Contact:** John Elkins, 4547 Airport Dr., Denison, TX 75020 (903-893-6400) (www.j527@texoma.net) (www.perrinfield.org).

RAFs Uxbridge and Hillingdon, UK, communications personnel, including all wideband operating locations. June 24-25 in Fairview Heights, IL. **Contact:** Larry Koerber (618-667-1957) (lkoerber@charter.net).

SOS 2005 Red Pants. July 15-17 at Maxwell AFB, AL. **Contact:** Patsy Wilson, 125 Chennault Cir., Maxwell AFB, AL 36112 (DSN 493-6060 or 334-953-6060) (sos.reunion@maxwell.af.mil).

Thunderbirds Alumni Assn. Nov. 17-20 at the Las Vegas Hilton in Las Vegas. **Contact:** Doris Wilson, 7661 Angel Crest Cir., Las Vegas, NV 89117 (702-871-7197) (doewilson@aol.com).

USAF Helicopter Pilots Assn. Sept. 19-22 at the Nugget Hotel in Sparks, NV. **Contact:** Bob Strout, PO Box 968, Medical Lake, WA 99022 (509-299-4754) (rpanddj@cs.com) (www.usafhpa.org)

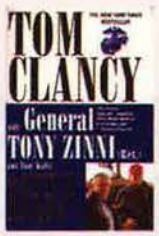
Seeking members of the **341st BW,** Dyess AFB, TX, and **Pilot Training Class 56-L,** for reunions. **Contact:** Scotty Daniel, PO Box 306, Rotan, TX 79546 (325-735-2434) (xcaptscott@aol.com). ■

Mail unit reunion notices four months ahead of the event to "Unit Reunions," *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

Books

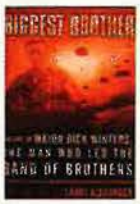
Compiled by Chequita Wood, Editorial Associate

Battle Ready. Tom Clancy with General Tony Zinni (Ret.) and Tony Koltz. Berkley Books, New York (800-788-6262). 450 pages. $16.00.



Generations of Chevrons: An Enlisted History Through the Experiences of the Chief Master Sergeants of the Air Force. Janet R. Bednarek, ed. Supt. of Documents, Pittsburgh (866-512-1800). 241 pages. $32.00.

Reading the Enemy's Mind: Inside Star Gate—America's Psychic Espionage Program. Paul H. Smith. Forge, New York (212-388-0100). 507 pages. $24.95.



Biggest Brother: The Life of Major Dick Winters, The Man Who Led the Band of Brothers. Larry Alexander. NAL Caliber, New York (800-788-6262). 297 pages. $24.95.

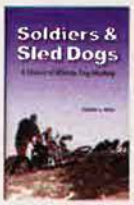
The History Buff's Guide to World War II. Thomas R. Flagel. Cumberland House Publishing, Nashville, TN (615-832-1171). 375 pages. $16.95.

A Salute to Service: The Rebirth of Patriotism. Mike Radford. New Leaf Press, Green Forest, AR (800-999-3777). 176 pages. $11.99.

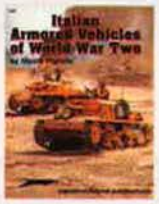
Calculated Risk: The Extraordinary Life of Jimmy Doolittle—Aviation Pioneer and World War II Hero. Jonna Doolittle Hoppes. Santa Monica Press, Santa Monica, CA (800-784-9553). 334 pages. $24.95.

Improving the Practice of National Security Strategy: A New Approach for the Post-Cold War World. Clark A. Murdock. CSIS Press, Washington, DC (202-775-3119). 190 pages. $21.95.

Soldiers and Sled Dogs: A History of Military Dog Mushing. Charles L. Dean. University of Nebraska Press, Lincoln, NE (800-755-1105). 129 pages. $24.95.



Colossus Reborn: The Red Army at War, 1941-1943. David M. Glantz. University Press of Kansas, Lawrence, KS (785-864-4155). 807 pages. $39.95.

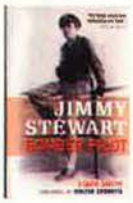


Italian Armored Vehicles of World War Two. Nicola Pignato. Squadron/Signal Publications, Carrollton, TX (800-527-7427). 64 pages. $14.95.

The UN's Role in Nation-Building: From the Congo to Iraq. James Dobbins, et al. RAND, Santa Monica, CA (877-584-8642). 273 pages. $35.00.

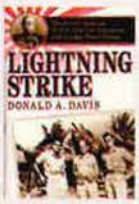
Fighting the Breakout: The German Army in Normandy From "Cobra" to the Falaise Gap. David C. Isby, ed. Stackpole Books, Mechanicsburg, PA (800-732-3669). 255 pages. $34.95.

Jimmy Stewart: Bomber Pilot. Starr Smith. Zenith Press, St. Paul, MN (800-826-6600). 287 pages. $21.95.



The War After the War: Strategic Lessons of Iraq and Afghanistan. Anthony H. Cordesman. CSIS Press, Washington, DC (202-775-3119). 73 pages. $15.95.

Fire, Fear and Guts: The B-29 and Her Gallant Crewmen. Raymond W. Clanton. Order from: Ray Clanton, PO Box 1800, Camp Verde, AZ 86322 (928-649-0820). 289 pages. $26.95.



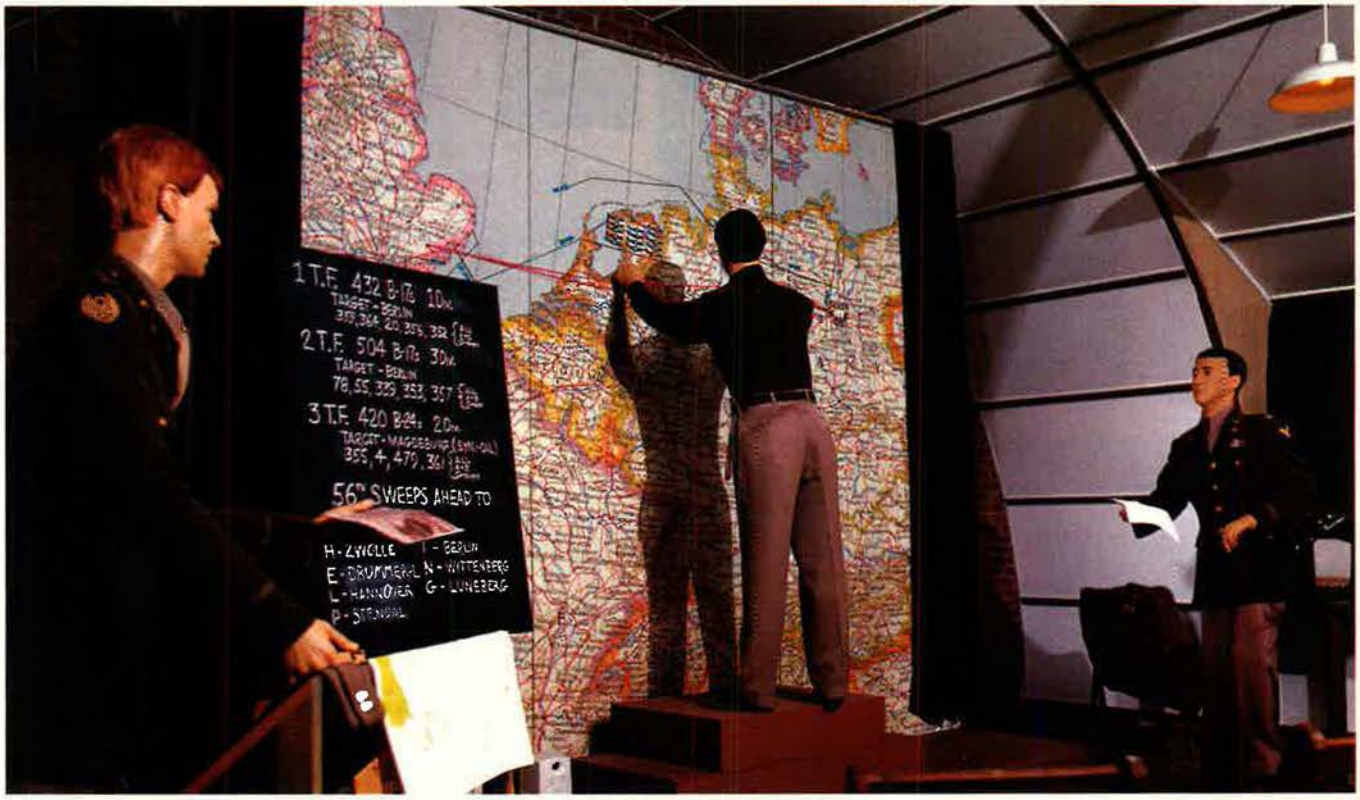
Lightning Strike: The Secret Mission to Kill Admiral Yamamoto and Avenge Pearl Harbor. Donald A. Davis. St. Martin's Press, New York (888-330-8477). 384 pages. $25.95.

War For the Hell of It: A Fighter Pilot's View of Vietnam. Ed Cobleigh. Berkley Caliber, New York (800-788-6262). 273 pages. $15.00.

Pieces of History

Photography by Paul Kennedy

Mission Brief



The date: July 7, 1944. The scene: a briefing room of Eighth Air Force's 4th Fighter Group, located at Debden, Essex, near London. The subject: fighter escort for a raid on German industrial targets. The sense of this actual World War II planning session is recreated in a life-size diorama (top) at the National Museum of the United States Air Force, Wright-Patterson AFB, Ohio. Details on the maps and briefing boards are specific to this mission. P- 51s guarded B-17s and B-24s to and from German refineries, ball-bearing plants, aircraft factories, and other targets—a mission not unlike the one being briefed in the photo at right. The diorama is housed in a Nissen Hut on the museum's grounds, adjacent to a replica of an Eighth Air Force control tower.

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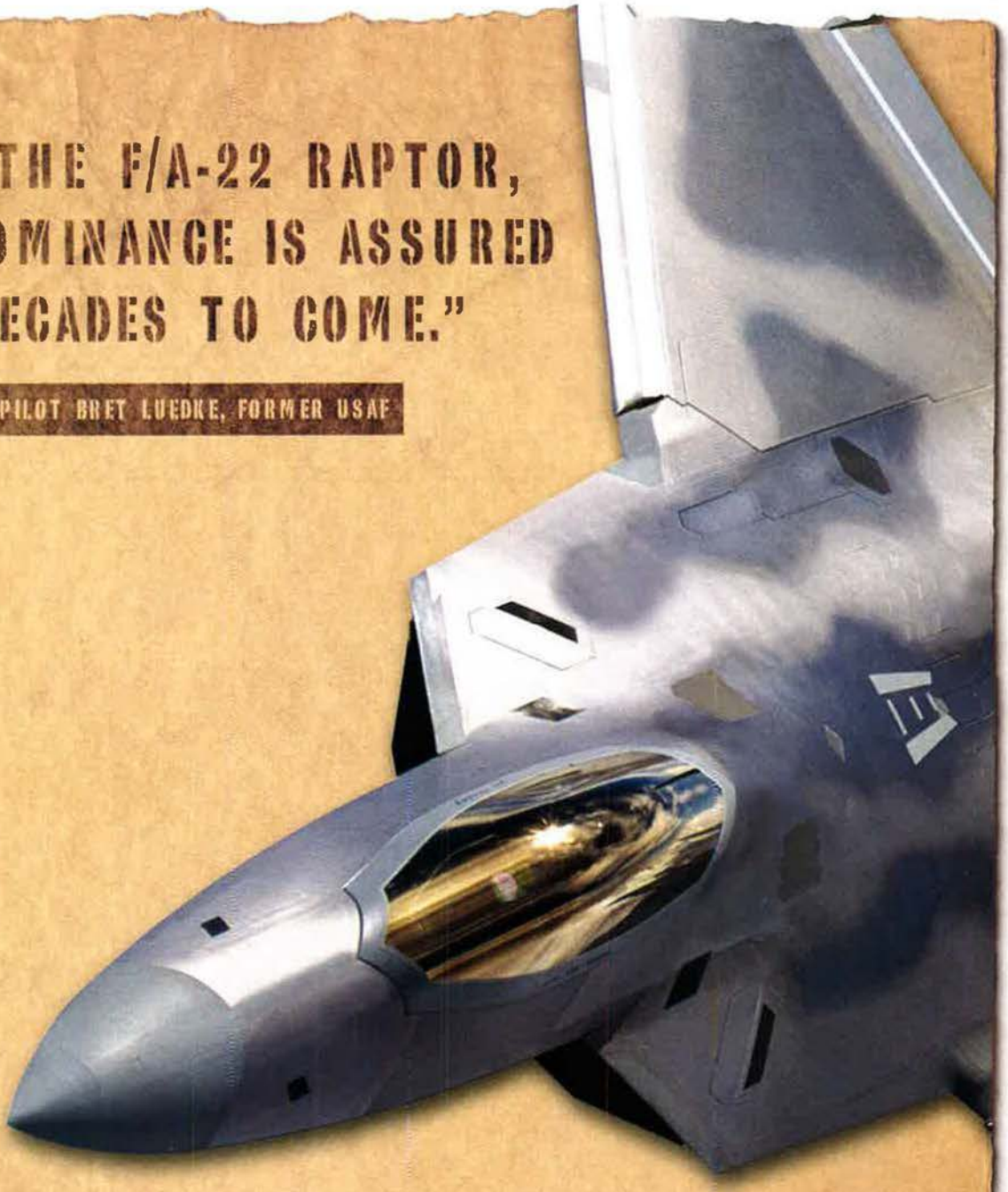

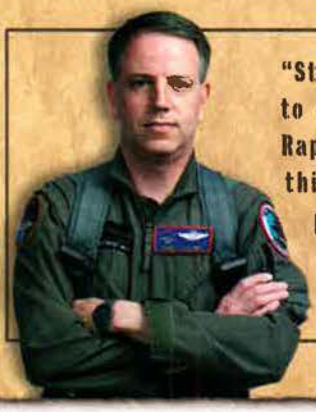

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