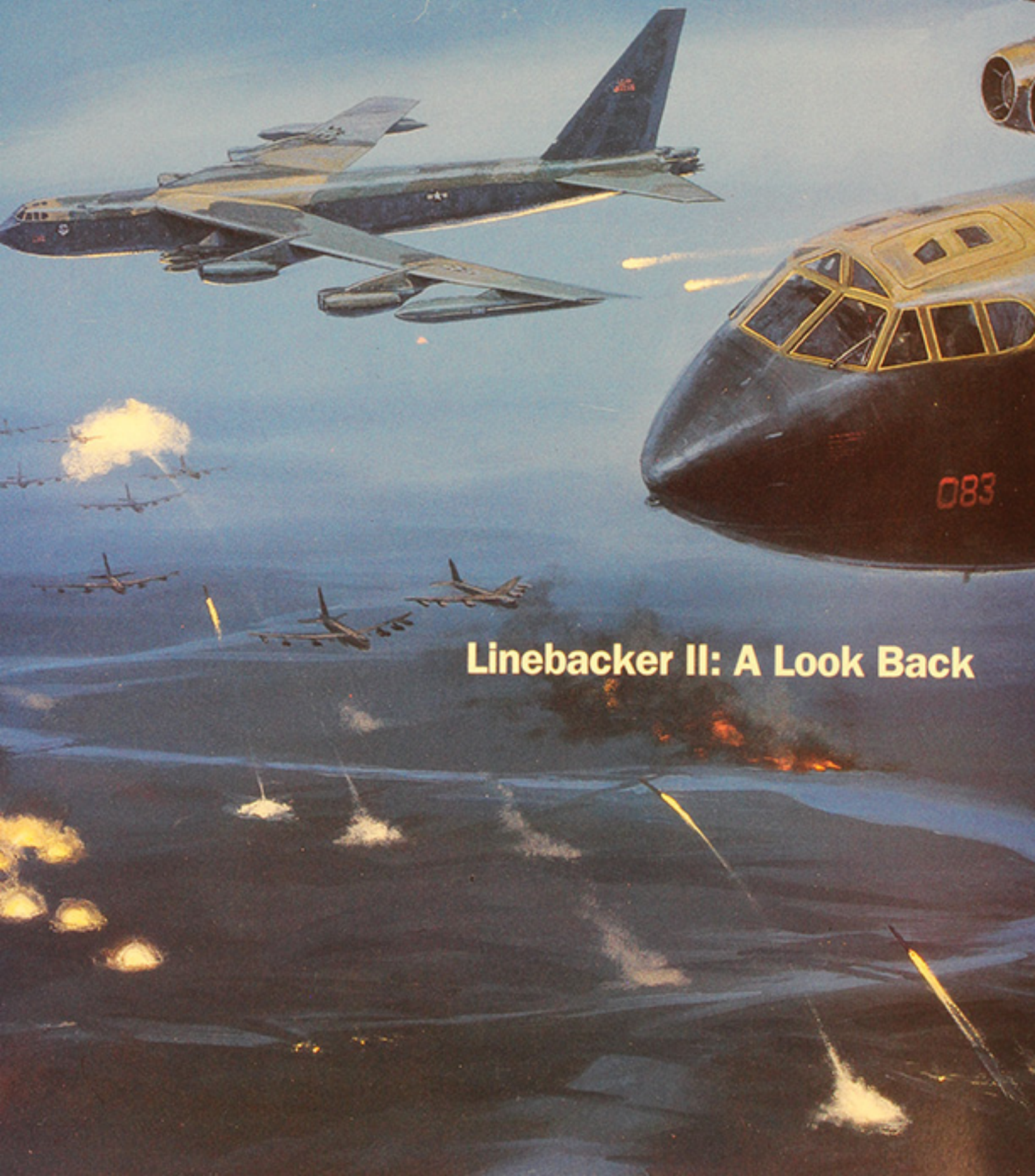


NOVEMBER 1997/\$3

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE



Linebacker II: A Look Back



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for what they face
and all they do,
deserve the
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can provide."

Burt Keirstead,
Sanders
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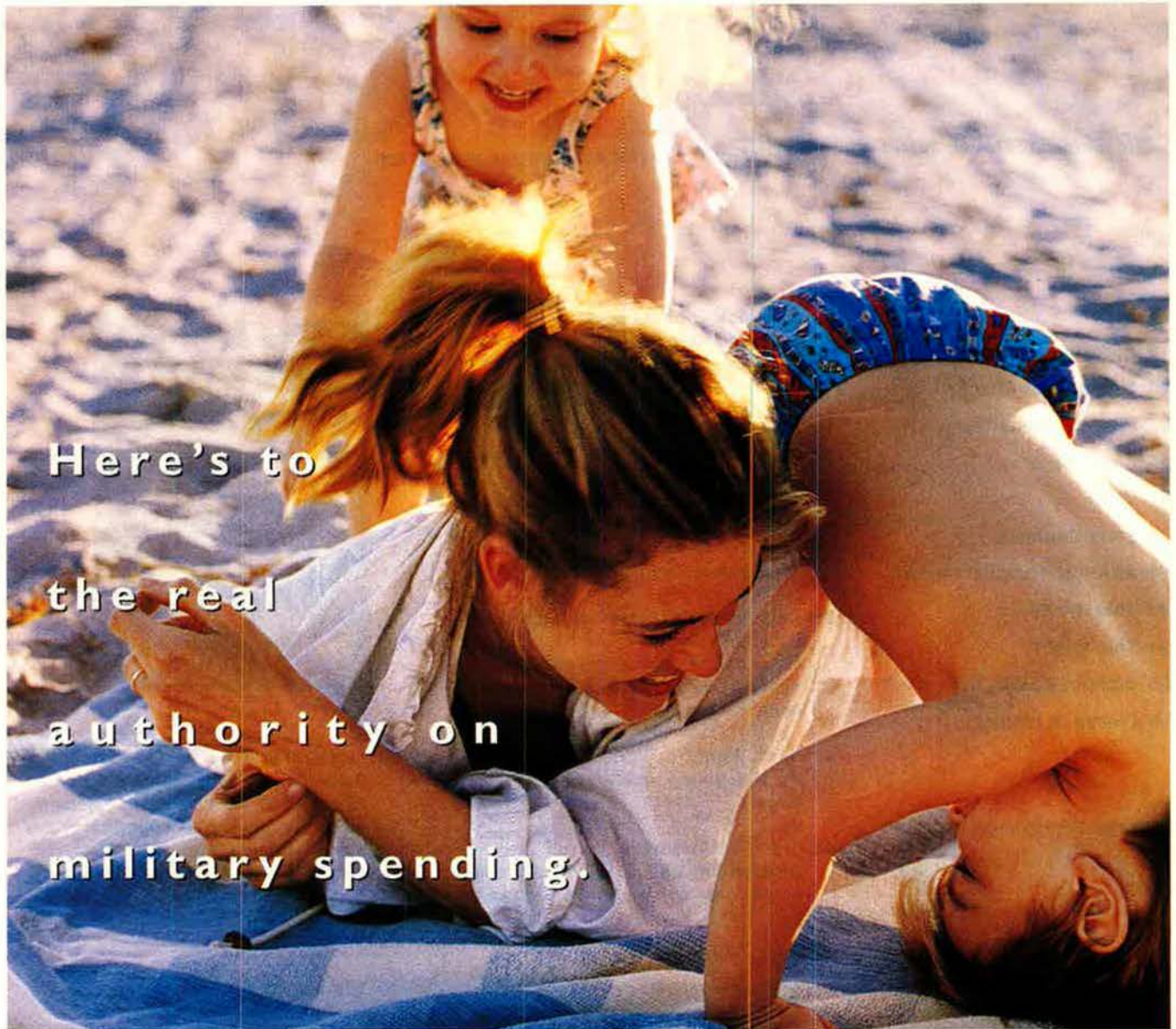


About the cover: "High Road to Hanoi," by Jack Fellows, shows Operation Linebacker II B-52s on a mission over North Vietnam. Story begins on p. 50.



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Editorial

Air Force Association 1998 Statement of Policy, adopted by the delegates to the Air Force Association National Convention, Sept. 15, 1997.

Global Force

IN THE decades following World War II, the US Air Force became the nation's first line of defense. Throughout the Cold War, the security and stability of the free world depended on the Strategic Triad, of which two principal elements were the Air Force's long-range bombers and land-based intercontinental ballistic missiles. Our capabilities in air and space have been a unique source of national strength, enabling us to project power and influence around the world and to sustain our position of leadership in world affairs.

In the opening years of the 21st century, aerospace power will be the strategic instrument of choice for the United States and the dominant element in armed conflict. The synergy of air and space assets will make it possible to find, fix, track, and target, without delay, anything that moves on the face of the earth. The inherent features of airpower will allow us to operate decisively, accurately, over long range, on short notice, while putting as few Americans in harm's way as possible. Aerospace systems will provide us ready access as well as much of the information dominance that is a fundamental premise of Joint US military doctrine.

The defining characteristic of the US Air Force is that it is a global force. It begins with Global Reach/Global Power, projecting power over great distances and providing worldwide situational awareness and mobility. That basic concept then combines with the newer requirements of Global Engagement, reflecting the national policy that we will be increasingly engaged around the world in efforts to shape the strategic environment.

In its 50 years as a separate military service, the US Air Force has matured into the air and space force of today. It is on an evolutionary path toward becoming the space and air force of tomorrow, expressly prepared to support the national security and interests of the United States.

Although our nation's first line of



The defining characteristic of the US Air Force is that it is a global force.

defense rests with the Air Force, the deepest force cuts have been relegated to the Air Force. These cuts come while the Administration increases the emphasis on and the scope of the Air Force mission. The result is an overburdened force without the necessary resources to do its assigned tasks and with attendant morale problems at all levels.

Missions and Strategies. The national defense strategy, as revised in the Quadrennial Defense Review, keeps the main focus on regional conflict. It is centered on the capability of US armed forces to prevail in two major theater wars, almost simultaneously. The broader mission is to prevent or deter conflict by the maintenance of military power and other measures and, if deterrence fails, to

fight and win quickly, decisively, and with few casualties. The strategy prescribes overwhelming power, not parity or marginal advantage, for US forces.

The Air Force Association agrees with this strategy and with the focus on regional conflict. We believe that the two-conflict standard is a good benchmark for sizing the force and for estimating resources required.

However, the revised strategy puts greater emphasis than was the case before on peacekeeping, humanitarian activities, and military operations other than war. On this point, the Air Force Association urges caution and perspective. Noncombat missions are a consideration in structuring the force, but they are not the priority consideration. We must not forget that the primary purpose of the armed forces is to fight and win wars.

We are further concerned by the propensity of the national leadership to take on new commitments, even as force and budget reductions continue. The strategy and the force planning are inconsistent, particularly with respect to air and space forces. The defense program is underfunded. It forces trade-offs among readiness,

modernization, and force structure, none of which is optional or dispensable.

The strategy must and does encompass more than regional conflict. The threat of global conflict and nuclear war is greatly diminished, but it is not gone. For post-Cold War Russia, for example, the importance of nuclear weapons has increased rather than declined. The deterrent strength of nuclear weapons is still needed for national security. The clamor for unilateral reduction of nuclear weapons or the premature abolition of them is unrealistic and ill-advised. A more relevant proposal is to get on with the deployment of a national missile defense.

Aerospace Power and Other Forces. Joint doctrine now acknowledges that we can achieve the military effects of mass without the actual massing of forces or the traditional sequencing of military operations. Airpower can strike directly and with great accuracy at critical parts of the enemy's infrastructure and order of battle. Military effectiveness is no longer measured by battle lines on the ground.

In the Quadrennial Defense Review, the Department of Defense recognized that a prime operational requirement in theater war is to halt an enemy invasion force rapidly, short of its objective, and perhaps head off a long and costly counteroffensive to evict the enemy from captured territory. The "halt" phase of a regional conflict is almost completely a mission for airpower. Once the culminating point of halting the enemy has been achieved, the joint force commander has a number of options, including a ground offensive and a continuation of the air campaign. In some

instances, the strategic objectives of the United States and its allies may have been achieved once the enemy no longer has the capability to advance and his strategic options are exhausted.

It is generally agreed that a Revolution in Military Affairs is changing the way US armed forces will fight in future wars, and that the key components of that revolution are information technology and precision strike, capabilities that are concentrated in air and space forces. Stealthy aircraft can penetrate deeply into hostile airspace with low probability of engagement by the enemy's air defenses and strike critical objectives with far less risk to aircrews than is possible with conventional aircraft.

The power to gain, exploit, defend, and attack information has emerged as a critical dimension of warfare. It also represents a threat which did not exist before. For the information-intensive armed forces of the United States, aerospace forces especially, it brings both advantages and vulnerabilities. It is a new regime of conflict, and one in which we dare not rank second.

All this would suggest a greater emphasis on airpower and space-

We believe that the further reductions now planned are a big mistake and that they will undermine our professed strategy for national defense.

power than will be found in the actions planned to implement the new strategy. We accept that the Air Force has concurred in the reductions allocated against it and has given assurance that its responsibilities can be met with the reduced force. Nevertheless, the Air Force Association finds it inexplicable that the Air Force took the deepest cuts of any service in the Quadrennial Defense Review.

Resources and Requirements. The United States continues to devise its national security posture on the basis of peacetime budget considerations rather than actual requirements. As a result, the present strategy must be regarded as ambitious and overly optimistic.

There were not enough forces and assets to respond, under the previous strategy, to two near-simultaneous regional conflicts. The revised strategy sets the mark even higher, covering two major theater wars that begin almost simultaneously, smaller-scale contingencies, expanded engagement in contingency operations, peacekeeping, and humanitarian activities.

The armed forces are expected to take on various contingency operations abroad and new obligations such as the responsibilities that come with NATO expansion—and they are expected to do this with diminished resources.

The Department of Defense has repeatedly postponed force modernization because of a so-called "chronic migration of funds" out of procurement accounts, attributable mainly to unprogrammed military operations other than war and to savings that have failed to materialize. Operations and Support accounts must be adequately and realistically funded. The Air Force, reduced in budgets and personnel, now operates at a level of activity four times that of the Cold War era. The government should acknowledge the costs of its global engagement policy and stop robbing other funding accounts to pay for these ongoing operations.

The accumulated effects of declining budgets, smaller forces, aging equipment, and increased deployments have begun to show up as training, readiness, and personnel problems. We believe that the fiscal assumptions underlying the latest round of reductions will lead inevitably to further problems and shortfalls.

Force Structure. The Air Force Association was already concerned about the adequacy of the previous force structure. *We believe that the*



further reductions now planned are a big mistake and that they will undermine our professed strategy for national defense. In World War II, Korea, Vietnam, and the Persian Gulf, the United States severely underestimated the force structure that would be required. We do not know what the penalty may be if we repeat that mistake in the next conflict. The operations tempo and the workload under which military organizations are laboring in peacetime indicates that additional force structure, not less, may be required. Our forces must meet the requirement to cover two major theater wars by shifting nimbly from one conflict to the other. Yet the Administration proposes to cut forces still more, even as demands intensify on the units that remain.

We call on the Administration and Congress to look again at the proposed defense program and bring it into better alignment with declared strategy and actual requirements.

Reserve and National Guard components have been assigned a greater share of the contingency tasking and the total mission. The Air Force has adjusted to this change better than the other services, both because of the quality of its Reserve and Guard forces and because it has integrated and used its reserve components well. The contributions of the Air Force Reserve and the Air National Guard have been outstanding, but like the active forces, they are strained by the level of current operations.

Related to the reduction in force structure is the continuing decline of the defense industrial base. The capability for surge production is essentially lost. Most defense needs will be met by the commercial market. However, it is vital that the Air Force maintain a cooperative relationship with industry, which will be the source of the revolutionary technological advancements that the global air and space forces of the future will require.

Force Modernization. US military doctrine is predicated on "full spectrum dominance," and that depends to great extent on the quality of our airpower and spacepower. Technological leadership is perishable. If we do not modernize our capabilities, we will be overtaken and surpassed.

Our strength in the 21st century depends on a commitment now to research and development and to critical military investments, including stealthy aircraft—bombers, air-superiority fighters, and deep strike aircraft—precision-strike weapons, space systems, surveillance and re-



Staff photo by Guy Aceto

Turbulence and uncertainty make this a difficult time for people in the active-duty, reserve, and civil-service components of the force.

connaissance, information superiority, and air mobility. We also believe the arguments are compelling for the development and exploration of the revolutionary potential of such systems as the Airborne Laser and unmanned aerospace vehicles.

People. Turbulence and uncertainty make this a difficult time for people in the active-duty, reserve, and civil-service components of the force. More reductions in force lie ahead, creating hardships for both those who must leave and those who will stay, as the unremitting workload is borne by a force that has already been cut by a third. There are increasing indications of retention, recruiting, and morale problems that the nation would be exceedingly unwise to ignore.

We must do better in providing for our people in matters ranging from compensation (which, for military personnel, now trails the private sector by more than 13 percent) to the services available to help families when military members are away on deployment.

However, the most critical issue, for active-duty and retired members alike, is health care. The Air Force

Association believes it imperative that a variety of options for affordable, portable, and accessible health care be made available to redeem the obligations of the government to those who have served and to provide adequately for those now serving. Quality health care is a promise upon which the government must deliver—and on which it presently is falling short.

Global Perspective. The Air Force has demonstrated that it can respond promptly to distant crises and project power from intercontinental distances. Airpower can support surface operations, but it can also achieve strategic, operational, or tactical objectives independent of surface power or with land or sea forces in support.

The missions of all services are increasingly reliant on information and communications from space, and spacepower is now becoming a factor in its own right. We must achieve and hold the command of space as surely as we have held command of the air. We must prepare for the eventuality that military operations—and probably combat—will occur in space.

The nation needs a full range of military capabilities, including forces on land and at sea. That said, airpower and spacepower are already the prime elements in national defense, and they are likely to become even more pivotal as the future unfolds.

The Air Force is molded by a strategic perspective, combining the capabilities of Global Reach/Global Power with the requirements of Global Engagement. It is a force well suited to the needs of an aerospace nation. It is a global force. ■

Fallout From Khobar Towers

Too many active duty and retired chose to remain silent as one of the greatest injustices [*"Fallout From Khobar Towers," September, p. 3*] ever to occur, at least over the past 30 years, played out in the media and Congress. Any number of people could and should be blamed for the 19 airmen killed during the terrorist bombing of Khobar Towers—except Brig. Gen. Terryl J. Schwalier.

The first people to blame are those who planted the bomb. No one foresaw that a bomb of this magnitude would and could be built and delivered undetected to the edge of the tower complex. This is probably where the blame should begin and end.

Throughout the Oklahoma City bombing trial no one put blame on anyone except Timothy McVeigh and possibly a few others who were part of the scheme. Maybe there were security lapses and maybe people in charge of security and safety of the federal complex in Oklahoma City could have been blamed for not doing better. However, the process pinned the blame where it belonged—on McVeigh.

In the case of the Khobar Towers bombing, if we want to further enlarge the circle of blame, then the next person or persons I would charge are the people who made the decision to house Americans at a site where a common-use road abutted the buildings. I would bet that many high-level State Department, Defense Department, Congressional, and Saudi government officials signed off on that decision. Second only to the terrorists, these are the people who are to blame for the 19 people killed in this bombing.

Instead, we blame the commander who inherited a bad decision made by these higher-ups. Schwalier is an outstanding officer. To place on him the responsibility for cutting through all the bureaucratic red tape is truly a great miscarriage of justice.

In the end, it was only Gen. Ronald R. Fogleman who stood proudly by his commander and retired with him. The Air Force now is short two outstanding

officers. I hope that many in Congress, the Joint Chiefs, and DoD realize that we know that the sacking of Schwalier had nothing to do with justice or accountability.

Col. Gene E. Townsend,
USAF (Ret.)
San Antonio

I am sorry, John T. Correll, but you have it all wrong! Your logic and reasoning may very well be the way a civilian should be treated when, as CEO, a terrorist strikes one of his/her plants, operations, or groups of personnel. But a military commander is an entirely different matter.

A commander is responsible for the mission readiness of the unit commanded and that includes equipment, personnel, and facilities. Protection of all assets against all threats is basic to meeting that responsibility. Schwalier was in command of a combat unit, in a combat zone, although in friendly territory, and his was a combat mission.

There is no argument that a terrorist threat existed. A successful method of attack had been adequately demonstrated in Lebanon when terrorists blew up a similar barracks in a like manner, killing over 200 Marines. The terrorists remembered how they did it—a military commander must remember as well!

Schwalier accepted the responsibility when he assumed command! The other arguments you make to vindicate Schwalier's failure to fulfill his command responsibility are pure

eyewash and of the red herring variety. It doesn't matter that Schwalier took 130 specific actions to improve security or implemented 36 or 39 recommendations from the most recent vulnerability assessment. The bottom line is 19 American airmen died, and Schwalier had the command responsibility to protect those airmen from terrorist attack and ensure his command's maintenance of combat readiness! He did not meet that responsibility!

Brig. Gen. Gerald E. McIlmoyle,
USAF (Ret.)
Annandale, Va.

Congratulations on your editorial. The intervention of the Secretary of Defense was unwarranted, unnecessary, and unwise.

Too many years as a politician seems to inculcate in an individual the overwhelming need to find a scapegoat, but: "Please, Lord, let it not be me."

His action in micromanagement only shows how far we have come from the founding concept of the Office of the Secretary of Defense—to set policy.

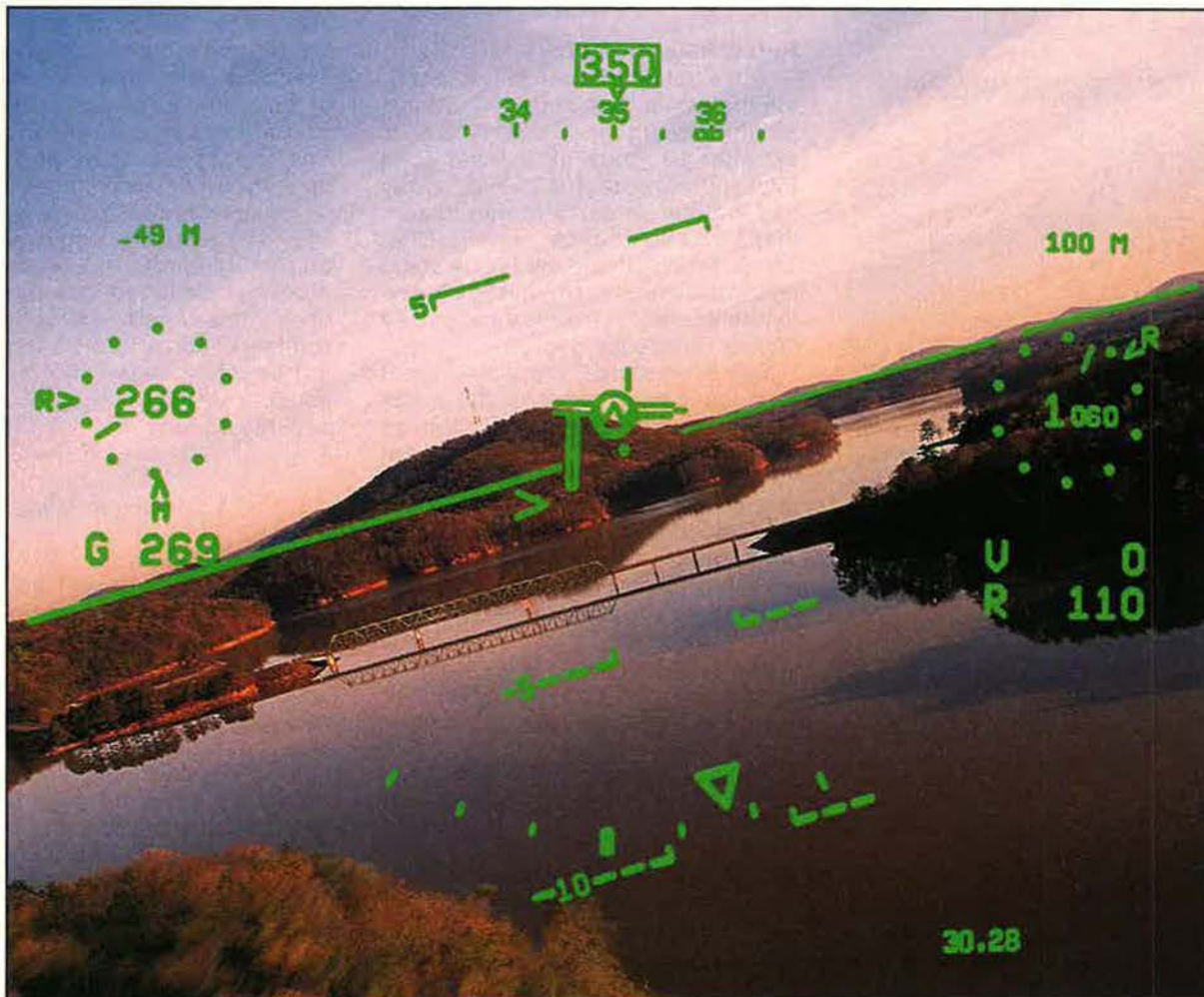
Verne Orr
Pasadena, Calif.

Thank you for the details of Fogleman's early retirement. I commend him for the courage to resign in the face of obvious injustice by those in superior positions. That marks him in stark contrast to others during Vietnam. Had they his courage and opposed Lyndon B. Johnson and Robert McNamara, things would have been different.

I have no problem with civilian control over military in setting of policy, strategy, and goals. I have a great problem with them calling tactical shots, especially in defiance of sound military doctrine. Most of all, I have trouble accepting uniformed leaders who did not speak out against what they knew was wrong, and who by their silence, allowed men to be wounded, die, or spend long years as POWs. Had these politicians possessed Fogleman's courage, Viet-

Do you have a comment about a current issue? Write to "Letters," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. (E-mail: letters@afa.crg.) Letters should be concise, timely, and preferably typed. We cannot acknowledge receipt of letters. We reserve the right to condense letters. Unsigned letters are not acceptable. Include city/base and state. Photographs cannot be used or returned.—THE EDITORS

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Letters

nam's outcome would have been drastically different.

Lt. Col. Wallace H. Little,
USAF (Ret.)
Fort Walton Beach, Fla.

Rated Retention Woes

While not rated, I can fully appreciate that which was stated by Dennis Smith [*September*, "Rated Woes," p. 6]. After 13 years as a Rivet Joint backender in the 1960s-80s, I was told that the career field was frozen, that I had no chance for retraining. To allow myself and my family some time in the country of my birth, I elected to transfer to the reserves and get my master of science degree.

Being "on-status" in the reserves, I was required to perform the same sort of semiannual certification as my rated brethren—a task that kept me at a high level of stress while on active duty. If I had problems when on active duty, was I seriously thinking that maintaining the same level of competence on a two-day-per-month schedule was a reality? Get real! So, after three years, I hung up my blues to my deep sadness.

Steve Walcott
Albuquerque, N.M.

The *Los Angeles Times* of Aug. 20, 1997, carried a news item, "Air Force Acts to Cut Flier Stress." It stated that USAF was canceling all major flier competitions [*"ACC Cancels Exercises," October*, p. 10] for the rest of this year and overall reducing training and exercises. This article needs a complete investigative report as to why one of the great morale builders and skill builders is being removed from USAF training.

I believe the Clinton Administration has been using USAF pilots and flight crews to the maximum effort, flying not only to Bosnia, Iraq, and Italy, but to remote locations in Central Africa and other locations for social programs. The aircrews are probably tired and disgusted from flying beans, rice, pigs, and goats from one African village to another.

We now have a pilot shortage in the Air Force—no doubt due to these abstract flights all over the planet.

Lt. Col. Don Campbell,
USAF (Ret.)
Seal Beach, Calif.

What the Air Force plans to do in order to stem the loss of pilots [*"Keeping Pilots in the Cockpits," July*, p. 66] does not address the related personnel impact on Guard and Reserve forces created by in-

creasing demands for peacekeeping and other deployments.

The downsizing of the military establishment and the level of overseas deployments, both inherited and augmented by the current Administration, are mutually unsupportable. The long-term impact on the ability of the armed forces to meet national security needs is of major concern. The need to use Guard and Reserve units for other than national security purposes, because of downsizing, will have a strong, negative impact on recruiting efforts to keep the improperly identified "weekend warriors" at strength. What employer wants—or can afford—a worker who is frequently called by the military for duty in anything but a national security action?

Col. Peter E. Boyes,
USAF (Ret.)
Rancho Murieta, Calif.

Pieces of 50

The cover photo highlighting "Pieces of 50" [*September*] pictured Gen. Curtis E. LeMay's flight jacket, Col. Chuck Yeager's flying suit, and my combat crewman's cap. My cap was also shown on p. 36 with the photo of a B-26 making an emergency landing.

In 1953, I was assigned to the 8th Bomb Squadron, 3d Bomb Wing, flying B-26s. The 8th had flown the first combat sortie of the Korean War three years earlier and 5th Air Force officials thought it appropriate for the 8th to drop the last bomb as well. On July 27, 1953, I flew that mission (my 33d)—with a release time of 2133 hours [11:33 p.m.]—27 minutes before the truce took effect.

Wanting to do something distinctive to mark the occasion, rather than using one of the little green felt bombs we usually added to our caps for each combat mission, I made a special red and yellow striped one which is visible in the cover photo.

In 1974, I was asked by the National Air and Space Museum to donate my "last bomb" memorabilia to their Korean War collection. I was pleased to see my cap displayed on your cover in such distinguished company.

Lt. Col. Donald W. Mansfield,
USAF (Ret.)
Alexandria, Va.

Having just finished reading the September issue of *Air Force Magazine*, I find it most interesting that the only reference to women in the Air Force was a picture of Lt. Col. Kathy

LaSauce's flight suit and jacket. Did women not make any contributions to the Air Force? What about General Holmes [sic]?

In all the time I served, I was always proud that the Air Force seemed to be at the forefront in trying to establish equality amongst everyone. However, that would not seem to be the case according to your latest issue celebrating USAF's 50th anniversary. It would appear that all the important advances/contributions were made by men only.

MSGt. Steven G. Kotrch,
USAF (Ret.)
Springfield, Va.

■ See "Faces From the First 50 Years" [June, p. 46, No. 2] for a photo of Maj. Gen. Jeanne M. Holm after she had pinned on her first star as USAF's first female general officer. Women, military and civilian, are pictured throughout the photo spread.—THE EDITORS

What a slap in the face! If you take the [September, p. 32] photo essay, "Pieces of 50," one could get the impression that ICBMs and their people didn't exist! Thanks a lot!

Lt. Col. Thomas H. Hafner,
USAF (Ret.)
Belleair Beach, Fla.

Great issue [September]! However, p. 34 contains a minor error: The ERCS payload was carried on Minuteman II not III missiles.

Steve Darr
Woodinville, Wash.

■ Reader Darr and Capt. William Pelster are correct.—THE EDITORS

Canadian Was Top Gun

I was recently honored to receive the AFA President's Award for the Outstanding Reserve Aircrew of the Year. The narrative for my award was unfortunately shortened in your September issue [p. 105] to imply that I was the Top Gun in the 1996 William Tell. That distinction belongs to Captain Nierlich of Team Canada. I finished sixth in the Top Gun competition, although first in the F-16.

Maj. Leonard S. Dick,
AFRC
Luke AFB, Ariz.

■ We compounded an error that started with the unit's President's Award write-up, which stated the major was the "F-16 Top Gun." To our knowledge, there is only one Top Gun for William Tell, and in 1996 that was indeed Capt. Steve Nierlich, 4th Wing, CFB Cold Lake, Canada, flying a CF-18.—THE EDITORS

The Chinese Buildup

In my opinion, China ["The Chinese Buildup Rolls On," September, p. 77] deliberately intends to become the superpower of the world by 2010.

China has been granted "most favored nation" status, yet we continue to have a serious imbalance in the trade market with this nation. I will never understand why the US has sold China high-tech equipment and data for their sophisticated radar and computers that are being used in military hardware. Russia is giving China carte blanche in selling them high technology, weapons, and submarines. It seems that Russia cannot account for much of its nuclear weapons. I wouldn't be a bit surprised if some of these so-called lost or unaccounted for nuclear grade materials have been sold to China.

I predict that in the not too distant future, no country on this planet will intimidate China in any shape or form. If China wishes to annex Taiwan in the future, I don't imagine there will be too much of a fuss from other countries. Other countries around the globe need to wake up soon and take heed to what could possibly happen.

Donald E. Evett
Bountiful, Utah



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Letters

Hap Arnold

I just read the article "Hap" by Walter J. Boyne in the September edition of *Air Force Magazine* [p. 44] and have a question. On the last page of the article, p. 50, it states, "He retired on June 30, 1946." Later in the same paragraph it says, "...on May 7, 1949, Arnold was named the first and, to this date the only, General of the Air Force." How was he named "General of the Air Force" almost three years after he retired?

SMSgt. Steven L. Auchey,
USAF
Eglin AFB, Fla.

■ *Arnold's official rank upon retirement on June 30, 1946, was General of the Army (a five-star rank). However, since he was instrumental in efforts to create an independent Air Force, Congress decided, two years after establishing USAF as a separate service, to bestow upon him the distinctive rank of the first General of the Air Force.*—THE EDITORS

In reading "Hap" I was reminded of an event in the mid-1940s at Maxwell Field, Ala., where we had a B-29 pilot training program. We had great trouble keeping more than a low percentage of B-29s in the air due to failure of the engines. Arnold came to find out why.

As director of aircraft maintenance for the Eastern Flying Training Command, I was present at the meeting where Arnold was advised that the reason for our miserable record was the fact that the engines we were using were worn-out units and required replacement in about 35 hours of flying time. As a result, the general was on the phone to Wright Field within minutes with a strong message to someone and new engines poured into Maxwell on railroad flatcars within a few days.

Indeed, he was an unusual and remarkable man.

Maj. Benjamin W. Heath,
USAF (Ret.)
Newport Beach, Calif.

I was very disappointed in one very important omission in "Hap." With the help of Arnold and many others, Civil Air Patrol was established Dec. 1, 1941. It worked closely with the Army Air Corps by providing many wartime services, including the famous coastal patrols.

Arnold authorized CAP to carry depth charges and bombs under their small single wing aircraft. He stated that CAP was the only group to effect

any real control of coastal enemy submarine operations. In doing so, CAP lost 90 aircraft, 26 pilots or observers were killed, and seven were seriously injured. CAP's total wartime activities claimed the lives of 64 members.

In 1946 Arnold worked with the CAP commanders to establish CAP as a benevolent, nonprofit organization—changing its status from wartime activities to peacetime. Because of his foresight and help, CAP remains a viable organization today as USAF's official auxiliary with more than 60,000 members.

Lt. Col. Amanda B. Anderson,
CAP
Hampton, Va.

Wrong Country

The Defense Attache Office/Embassy of Romania presents its compliments to *Air Force Magazine* and has the honor to inform you a regrettable mistake occurred in your July issue [*"Air Force Fifty,"* p. 25]. The persons in the [bottom] picture are members of the Romanian (not Russian) delegation. They are Air Division Gen. Ion Sandulescu, at that time chief of air and air defense staff/Romanian Armed Forces, and Lt. Col. Liviu Serban, assistant defense, military, naval, and air attache of Romania to the USA. We avail ourselves of this opportunity to assure you of our highest consideration.

Col. Sergiu Medar
Embassy of Romania
Washington

First Five

Herman S. Wolk implies in "The First Five of the First 50," [*September,* p. 52] that the 22d and 92d bombardment groups were the first B-29s to join the war effort in Korea. That is not entirely correct.

There was a little known group on Guam at the time that the war erupted. When I arrived on Guam in February 1950 the 19th BG, 20th Air Force, Far East Air Forces, was in the process of rotating its aircraft to the States for overhaul. By the end of July it had received its full complement of aircraft from the depot, and on Aug. 29 it was sent to Okinawa. On Sept. 3 we began flying sorties over North Korea.

I have never seen and will probably never experience again the esprit de corps that existed within this group. We had World War II—experienced crew chiefs who lived and breathed aircraft maintenance and did not hesitate to pass their experi-



Statement of Ownership, Management, and Circulation

(Required by 39 USC 3685)

ence to novices. The competition to "fly the aircraft" was fierce.

We never did get back to Guam and when I finally rotated in October 1951 the aircraft that I had served on had 129 missions over Korea. But what was significant was that eight months into the tour on Okinawa, Strategic Air Command sent two groups to support the 19th, but the groups had a little trouble getting their aircraft into the air. On occasion they had to "borrow" our aircraft to get their flying time and training.

Gen. Curtis E. LeMay ordered the 19th absorbed into SAC. And so a glorious command with absolutely wonderful men was decimated with the stroke of a pen.

Paul Moon Findlay, Ohio

Lest We Forget

Thank you for "Lest We Forget," p. 130 in the September issue. I was one of the POWs on that forced march across Germany in the winter of 1945. We called it the "Black March of Germany," and I can confirm that it was terrible, to say the least.

The German guards were sometimes brutal, especially the German Air Force major who was in command. I turned him in for war crimes after my liberation and I understand he was apprehended and convicted.

My gratitude is for my marching buddy, Eugen "Dixie" Wachter, who helped me when I was sick. Captain (Dr.) Caplan was the No. 1 hero of the march. I owe my life to him.

Col. Jack R. Olsen, USAF (Ret.) Venice, Fla.

Not Quite Aces

Each year in your May Almanac edition, you publish the names of Air Force "aces," which I think we all appreciate very much. I've had some friends ask me why no one to their knowledge (and mine) has published a list of all airmen who shot down one or more (up to five) enemy aircraft in World War II. I feel these fliers, [many of whom] paid the supreme sacrifice, should be as well-honored publicly in print as those who lived long enough to become an "ace."

Jack L. Casotti Channel Island Harbor, Calif.

In checking the Air Force Victory Credits (which regrettably is out of print, since we have found no other published listing), there were roughly 8,000 airmen credited with at least one enemy aircraft kill—making such a list much too long for Air Force Magazine to print.—THE EDITORS

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Aerospace World

By Peter Grier

Photo by Nick Kennedy



Gen. Michael E. Ryan and his wife, Jane (left), talked with MSgt. Paul A. Sikora Jr., one of USAF's 1997 Outstanding Airmen, and his wife, Lynn, during the Air Force Association's National Convention in Washington in September.

Ryan Is New Chief of Staff

The Senate on Sept. 24 confirmed Gen. Michael E. Ryan as USAF's new Chief of Staff. With his Oct. 6 swearing in, he became the 16th officer to serve in that post since the Air Force became a separate service in 1947.

Until he was approved for the Chief's job, Ryan had been commander, US Air Forces in Europe. He now replaces retired Gen. Ronald R. Fogleman as the senior military leader in the Air Force.

Among other achievements, Ryan flew 149 combat missions in Southeast Asia, including 100 missions over North Vietnam.

In his Sept. 16 confirmation hearing before the Senate Armed Services Committee, Ryan emphasized the need for USAF to take care of the troops and to pay close attention to quality-of-life issues. He said he approved of current DoD and Air Force policy on the B-2 bomber—that is, he does not favor buying more than the 21 currently on order, given current budget pressures.

Ryan is the first person to follow in his father's footsteps as senior mili-

tary leader of any US military service. Gen. John D. Ryan served as Air Force Chief of Staff from 1969 to 1973.

Cohen Orders Stand-Down

On Sept. 17, Secretary of Defense William S. Cohen ordered a 24-hour halt in US military training flights so that aircrews could focus on safety.

The stand-down came in the wake of five major crashes in a four-day period. "Perfection is impossible, but that is our goal for aviation safety," said Cohen.

Notwithstanding the accidents, the Pentagon's flight safety record has been steadily improving in recent years, pointed out defense officials. In 1975, the US Air Force had 6.52 major Class A crashes per 100,000 flying hours. So far in 1997, the DoD rate is running at 1.4 Class A mishaps per 100,000 hours.

Improved equipment and greater emphasis on safety training may be the major reason for the improvement. "Fiscal Year 1996 was the safest on record," said Cohen. "We expect Fiscal Year 1997 to be a very safe year as well."

Much of the Air Force observed the stand-down on Sept. 26. Air Combat Command moved its safety day to Sept. 22, after the loss of a B-1B bomber on Sept. 19 in Montana.

Throughout the day, ACC personnel reviewed air and ground accidents from the past year and looked for ways they could have been prevented. Commanders led small-group training sessions to identify hazards in daily operations and find ways to eliminate them. Each wing will eventually forward a list of action items to the ACC Office of Safety.

"Somewhere in every ... sequence of events that leads up to an accident, you can find mistakes that were made that, if you could have avoided them, would have prevented the accident," said ACC's commander, Gen. Richard E. Hawley.

Robins Wins C-5 Depot Work

Warner Robins Air Logistics Center, Robins AFB, Ga., won an Air Force public-private source selection contest and will gain the C-5 aircraft depot maintenance work currently performed by the San Antonio ALC, Kelly AFB, Texas.

The award was announced by outgoing Secretary of the Air Force Sheila E. Widnall at a Washington press conference Sept. 4. It is worth an estimated \$434 million over a seven-year period. The Air Force will save \$190 million over the life of the program due to the cost-honing pressures of the competition, said Widnall.

The first C-5s began arriving at Robins last month. They will subsequently flow through the base at a rate of around 20 per year. There are 126 C-5A and B airlifters in the Air Force inventory.

Robins won because they submitted the lowest bid. Competitors Boeing and Lockheed Martin were close, with cost bids within six and seven percent of the Georgia depot, according to Air Force officials.

Robins will need about 725 workers to be able to perform C-5 tasks. Union leaders in San Antonio said that they estimated that about 400

The Battle of Arlington Ridge

WASHINGTON, Oct. 3—In ceremonies at high noon on Sept. 18—the 50th anniversary of the US Air Force as a separate service—a plot on Arlington Ridge, overlooking the Potomac River, was dedicated as the future site of the Air Force Memorial.

A day earlier, the US District Court in Alexandria, Va., had turned down the request of Rep. Gerald B.H. Solomon (R-N.Y.) and a group calling itself "Friends of Iwo Jima" for an injunction to stop the dedication. Solomon, a former Marine and the powerful chairman of the House Rules Committee, says the Air Force Memorial will encroach upon the "hallowed, sacred ground" of the Marine Corps Memorial, which is also located on Arlington Ridge.

The claim of encroachment was a mystery to those who gathered on the grassy slope for the dedication ceremony. From where they stood, they could not see any part of the Iwo Jima Memorial. It is located up the hill, more than 500 feet away, and behind a screen of tall trees.

Several hundred active duty airmen and veterans attended the dedication, along with a contingent of government leaders that included two Air Force veterans now serving in Congress, Sen. Ted Stevens of Alaska and Rep. Sam Johnson of Texas, then-Secretary of the Air Force Sheila Widnall, Gen. Joseph Ralston, vice chairman of the Joint Chiefs of Staff, and Gen. Ralph E. Eberhart, acting Air Force Chief of Staff at the time.

Present in the crowd was Clayton Dupue, chairman of "Friends of Iwo Jima," who told *Air Force Magazine* his group will continue its efforts to "relocate" the Air Force Memorial by legal means and through a bill introduced in Congress by Solomon to block construction. The "Friends of Iwo Jima" continue to work the crowds at the Marine Corps Memorial and say they have collected 10,000 signatures on their petition to bar the Air Force from Arlington Ridge.

Spokesmen for the group say they did not know about the project until recently. They do not say how they missed the major coverage by the *Washington Post* when the design concept for the memorial was approved in March 1996.

The project to build an Air Force



Photo by Paul Kennedy

The Air Force Memorial Foundation dedicated the site of the new Air Force Memorial on Sept. 18, 1997, USAF's 50th anniversary. Several hundred Air Force members, veterans, and civilians attended the ceremony on the Arlington Ridge site.

Memorial began in 1992 with the formation of an independent Air Force Memorial Foundation by the Air Force Association and the Air Force Sergeants Association. Since then, the foundation has followed the elaborate process prescribed for proposed monuments by Congress in 1986. It has satisfied all of the requirements imposed by the National Park Service, the National Capital Memorial Commission, the National Capital Planning Commission, and the Commission of Fine Arts. The Marine Corps was informed of the plan in 1994, before approval for the Arlington Ridge site was obtained.

Contrary to what opponents of the Air Force Memorial say, it does not "dwarf" or overshadow the Iwo Jima Memorial in the 25-acre section of parkland adjacent to Arlington Cemetery. Seven acres are occupied by the Marine Corps War Memorial. The Air Force Memorial site is two acres, within which the memorial takes only 6,500 square feet. The Iwo Jima Memorial is 78 feet high. The Air Force Memorial will be 50 feet high. The two memorials are separated by trees and distance. Also, the Iwo Jima Memorial is positioned at a higher elevation.

The controversy began in April 1997 with the formation of "Friends of Iwo Jima," a neighborhood

group, whose concerns center on an increase in cars and visitors to the area and the loss of open land. By midsummer, Marine Corps veterans were rallying to the group's alarm in significant numbers. On July 30, Solomon introduced his bill to keep the Air Force off Arlington Ridge. The Marine Corps took an open position Aug. 7, saying the Air Force Memorial should be somewhere else.

Sen. Craig Thomas (R-Wyo.)—another former Marine and chairman of the subcommittee on Parks, Historic Preservation, and Recreation—held a hearing Sept. 11 to ask questions about how memorials are placed on public land.

The leadoff witness was Solomon who said "the Air Force Memorial Foundation was misled and told that building their proposed memorial at the Iwo Jima Park would be acceptable." Solomon said Congress should reimburse the Air Force Memorial Foundation for a million dollars or more in recognition of what it has spent on design and site work. He said he would also help find another site, perhaps on the nearby Ft. Myer Army post.

Gen. Carl Mundy Jr., former commandant of the Marine Corps, told the committee that he would rather not see another monument on Arlington Ridge, but if there was to be one, he could think of none

The Battle of Arlington Ridge

preferable to the Air Force Memorial. He also said that when he was commandant in 1994, "we were aware" of the plans for the Air Force Memorial and "did not impose any objection."

Robert D. Springer, president of the Air Force Memorial Foundation, and John A. Shaud, executive director of the Air Force Association, testified that the Air Force Memorial will complement rather than detract from the Iwo Jima Memorial and that it will preserve the solemnity of Arlington Ridge.

The Air Force Memorial Foundation has now invested five years of effort in the project. Some \$13 million of the \$25 million needed has been raised from individuals and groups who pledged their support with the understanding it was for an approved memorial design on an approved site.

The Air Force Memorial design is based on a five-pointed star. The structure will be open to the elements and lightly tethered to the points of the star, capturing the impression of space and air. It was designed by James Ingo Freed, who was also the architect for the US Holocaust Memorial Museum.

The *Washington Post* said in 1996 that "Freed's imaginative design will add dignity and drama to this splendid spot." More recently, in August 1997, a *Post* editorial said

the Air Force Memorial Foundation "clearly jumped through the necessary hoops" and that the memorial ought to proceed. Striking a similar note, the *Baltimore Sun* said that "The Air Force, too, has done deeds worth remembering, and there is room enough to remember them on Arlington Ridge."

Doyle E. Larson, president of the Air Force Association, said that "It is generally forgotten that when the Marine Corps was seeking a site for its war memorial some 40 years ago, many objections had to be overcome. Among them were the accusations that the Iwo Jima Memorial would overwhelm the view, deprive the community of parkland, cause parking problems, and disrupt the skyline. The right to situate the memorial at its present location was disputed by supporters of other monuments, who felt they had better and previous claim."

Barring any changes ordered by the courts or Congress, all that remains for the Air Force Memorial project is final design approval of the architectural plans, acquiring building permits, and the completion of the fund-raising.

Rep. James V. Hansen (R-Utah) has announced that the House subcommittee on National Parks, Forests, and Lands, which he chairs, will hold hearings in October on the Arlington Ridge controversy.

Aerospace World

workers from the Texas base are interested in relocating to Georgia.

Winning the bid was the easy part, insisted Warner Robins officials. They have a lot of hard work ahead to prepare for their new workload.

Current workers must be retrained on C-5 repair techniques. Tools, technical data, and materials must be acquired. The base must acquire mobile tail enclosures—a sort of portable garage extension that's necessary because the huge C-5 tail will not fit in Warner Robins' hangars.

"It's not over because we won it," said Jackie Cleghorn, C-5 bid team deputy. "The worst thing that could happen would be to win it and not execute it."

Cause of F-117 Crash

Structural failure apparently caused the crash of an F-117 stealth fighter at an air show near Baltimore on Sept. 14, as its left wing came off during flight, said Gen. Michael E. Ryan during a Senate Armed Services Committee hearing on his nomination to be USAF Chief of Staff.

Ryan noted that in the past there have been problems with fluttering elevons on F-117s but that these controls had already been redesigned and strengthened.

The stealth fighter's limited natural gliding ability helped prevent extensive damage to the residential neighborhood where it fell, according to crash observers. The plane came straight down, like a falling leaf, and debris was limited to a relatively small area.

Subsequent to Ryan's testimony, the Air Force found that the F-117 involved in the incident, tail #810793, had a significant defect in a support structure in the left wing. The service, along with engineers from Lockheed Martin, the F-117 manufacturer, began conducting a fleetwide inspection of every F-117 to determine if any other aircraft had that same defect or any other defects. By mid-October, 33 of USAF's 53 F-117s had been inspected without finding a defect similar to the one in the mishap aircraft.

Air Combat Command on Oct. 2 returned to flying operations with cleared F-117s.

USAF Initiates B-2 Fixes

During his Sept. 16 confirmation hearing, Ryan said that the Air Force has initiated an aggressive plan to attack the issue of B-2 bomber low-observable maintenance problems.

The plan includes improvements

Photo by Susan Kennedy



Robert D. Springer, AFMF president (left), and John A. Shaud, AFA executive director, told a Congressional subcommittee on Sept. 11 that the Air Force Memorial will preserve the solemnity of Arlington Ridge, not detract from it.

in low-observable materials, new designs, and the beefing up of low-observable maintenance teams with contractor technicians. The Air Force has set up a program to track the radar of every B-2 in its inventory on a regular basis, in an attempt to determine the impact of continued operations on the scope of the problem.

Block 20 B-2 models have a mission capable rate of about 33 percent, primarily because of the low-observable problem, said Ryan. New Block 30s should significantly reduce maintenance man-hours per flying hour, he added.

Eight of the nine B-2s at the 509th Bomb Wing, Whiteman AFB, Mo., are Block 20s. The remaining aircraft is a Block 30.

USAF, Boeing Roll Out Space Maneuver Vehicle

The US Air Force and Boeing unveiled a 90-percent scale model of a proposed Space Maneuver Vehicle at Boeing's Seal Beach, Calif., facility on Sept. 3.

Production SMVs would be, in essence, small pickup trucks in space, used for quick reaction launches or in conjunction with a larger-capacity military spaceplane the Air Force is developing in a separate effort. The unpowered model will be used for the first part of a three-phase SMV ground and flight-test demonstration project.

In its first test, the model was to be dropped from a UH-60 helicopter at 10,000 feet. During the first part of its fall the model will be stabilized by a parachute. Then the chute will release and the graphite-epoxy and aluminum vehicle will perform a controlled glide, mimicking the final ap-



USAF photo by Sue Sapp

Sen. Max Cleland (D-Ga.) spoke to Warner Robins Air Logistics Center workers who gathered Sept. 8 to celebrate the Georgia facility's capture of C-5 depot work. Behind him are Rep. Saxby Chambliss (R-Ga.) (left) and Maj. Gen. Rondal H. Smith, the ALC commander.

proach and landing phases of an SMV returning from orbit.

One mission SMVs might fulfill would be rapid deployment of tactical satellites for military missions. "The vehicle's reusability would allow it to be used over and over again with a variety of payloads tailored to specific needs," said Military Spaceplane Program Office head Capt. John Anttonen.

Missile Wings Change to Space Wings

Three missile wings will be redesignated space wings by the end of the year, according to Air Force Space Command officials.

The name change reflects the next logistical step in incorporating the

entire spectrum of space operations as an integral element of air- and spacepower, said the Air Force.

Units involved are the 90th Missile Wing, Warren AFB, Wyo., the 91st Missile Wing, Minot AFB, N.D., and the 341st Missile Wing, Malmstrom AFB, Mont.

"This makes sense because we've already combined the space and missile career fields, management positions, and training functions," said former Air Force Secretary Sheila E. Widnall. "This action says we have truly integrated missiles into the space mission."

ABL Component Advances

The Boeing-TRW-Lockheed Martin team developing the Air Force's Airborne Laser (ABL) system has demonstrated that the laser's most critical component can meet its mission requirement.

The component—the singlet oxygen generator—is the site of chemical reactions that largely determine the overall power and performance of the ABL system's laser beam. In essence, the SOG uses a carefully controlled liquid/gas reaction to release the chemical energy stored in basic hydrogen peroxide.

A TRW engineering facility in Redondo Beach, Calif., completed successful SOG tests in late summer. The tests showed that a single batch of basic hydrogen peroxide chemicals can produce enough energy to "fire" a laser 16 times.

The tests "moved Team ABL another step closer to meeting the requirements of the Air Force's first

Former CINCMAC Dies

Retired Gen. Robert E. "Dutch" Huyser, commander in chief of Military Airlift Command from 1979 to 1981, died on Sept. 22 at the David Grant Medical Center, Travis AFB, Calif. The cause was heart failure. Huyser was 73.

Huyser, who flew heavy bombers in World War II, the Korean War, and the Vietnam War, also became a legendary figure in the development of US airlift capabilities and had been inducted into the Airlift/Tanker Association Hall of Fame.

Toward the end of his career (he retired in 1981), Huyser became a key figure in the CX airlifter program that eventually produced the Air Force's advanced C-17 transport. He recently said, "I started the CX program. I'm very happy with the way it turned out. The C-17 is a fantastic airplane."

Huyser's long career began when he was drafted in 1943, after which he entered the Aviation Cadet program. He was the first draftee to become a four-star general in the Air Force.

In 1979, shortly before he assumed command of MAC, Huyser went to Iran as President Jimmy Carter's personal envoy in an attempt to stabilize the government of Shah Mohammad Reza Pahlavi. However, he said he knew it would be impossible to keep the pro-US monarch in power, which proved to be correct.

Air Force Ends A-10 Search

The Air Force announced Sept. 16 it has ceased military recovery efforts related to the wayward A-10 that crashed on Gold Dust Peak in Colorado last April.

PRC Environmental Management Inc., hired to assist the Air Force with recovery and salvage operations, will continue working on the mountain until unsafe weather conditions settle in or until completing operations, whichever comes first.

The pullout ends the Air Force's mission to sift through tons of wreckage, scattered around the mountain, for the aircraft's munitions, the pilot's remains, and items pertinent to the Accident Investigation Board. By early fall searchers had recovered 70 percent of the aircraft's munitions and wreckage equal to nearly nine tons of the 13-ton aircraft.

Three hundred eighty-one 30 mm training rounds out of the plane's total 575 rounds, and 31 of its 60 magnesium flares, were among the recovered items. No trace was found of the A-10's Mk. 82 bombs.

"We have not located any parts of bombs, such as tail fins, fuses, or arming wires. I assure you that we have searched this area to the best of our ability and with the best technology we could bring to bear, and we did not find any conclusive evidence that the bombs are in the vicinity of the crash site," said Brig. Gen. Donald A. Streater, who led the Air Force's recovery efforts.

ATP [Authority to Proceed] milestone," said Paul Shennum, Boeing vice president and director of Team ABL's joint program office.

The ABL weapon system will use a high-energy chemical oxygen iodine laser mounted on a 747-400F aircraft to shoot down ballistic missiles in their boost phase. It will protect civilian and key military assets from attack by missiles such as the Scuds used by Iraq during the Persian Gulf War.

Missile Defense Gets More Money

The Pentagon's Ballistic Missile Defense Organization is getting a \$2.1 billion windfall, per the Quadrennial Defense Review. BMDO intends to use the funds to add tests, reducing the program's risk, National Missile Defense Joint program manager Army Brig. Gen. Joseph Cosumano Jr. said Sept. 16.

The extra testing is necessary because ballistic missile defense is being developed on a crash schedule. "I have been charged to do in six years what most programs do in 12 to 16 years," said Cosumano.

The BMDO is supposed to develop a national missile defense capable of defending the US against limited attack by Fiscal 2000. If national command authorities give the go-ahead, the organization will then have three years to deploy the system.

Added dollars will allow the addition of two integrated flight tests per year, according to BMDO officials. It is already too late to bolster the 1998 testing regimen, as the targets and exoatmospheric kill vehicles used in the experiments take 24-30 months to build. The 1999 schedule can be

bolstered by money received in Fiscal 1998, however.

Air Force Adjusts Pilot Service Commitments

The Air Force has adjusted the service commitments for a number of advanced flying training courses.

The changes took effect on Aug. 3, 1997. Among them: a reduction from five to three years in the service commitment for pilots who cross train from one nonfighter aircraft to another.

Equity was the reason for this move, said Air Force officials. Cross-trained fighter pilots already faced a three-

year commitment. Yet KC-135 pilots who cross trained to a KC-10 faced a five-year hitch, even though the tanker training is shorter and costs the Air Force much less.

The commitment for U-2 pilots who have undergone initial qualification training was similarly reduced from five to three years, despite the general rule that all pilots incur a five-year commitment after completing initial training. Pilot recruiting for the U-2 spy aircraft has suffered in recent years, and Air Combat Command officials believe the commitment change will improve the situation.

"Although this change may have a slight negative effect by allowing some pilots to separate sooner," said ACC chief Gen. Richard E. Hawley, "I am convinced that the overall effect of increased recruiting outweighs that, particularly since low recruiting threatens our vital student pipeline."

On the other hand, newly trained helicopter pilots now have five-year instead of three-year service commitments, in line with other newly qualified pilots.

C-141 Goes Down off Africa

The international search and rescue operation which followed the tragic Sept. 13 collision of a US Air Force C-141 Starlifter and a German Air Force TU-154 off the coast of Namibia was the largest ever conducted in that area of the world. It was called off Sept. 26.



Alaskan residents view progress on the USAF-Navy High-frequency Active Auroral Research Program, which ultimately will feature 180 70-foot-high antenna towers spaced at 80-foot intervals in a rectangular grid—designed to research space weather effects—located at Gakona, Alaska.

They don't make a sound. They're often undetectable by sight or smell. They're deliverable by the most conventional means. They're every bit as deadly as radioactive fallout.

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The Joint Warfighting Science and Technology Plan identifies the capability for standoff detection of chemical weapons as "our single and most pressing need...critical to protecting fielded forces."

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Gate guards with the 78th Security Forces Squadron, Robins AFB, Ga., donned "throw-back" uniforms on Sept. 18, to commemorate USAF's 50th anniversary. Here, A1C Jennifer Hallonquist manages traffic flow into the base in a 1940s-style, olive-drab uniform worn by Air Force members of that day.

Coalition aircraft which took part included USAF MC-130 Combat Talons, Navy P-3 Orions, German AF C-160 Transalls, German Navy Atlantiques, French and South African helicopters, and South African C-130s. Ships from several nations also participated.

The search teams did recover a portion of the C-141's right wing in the same vicinity where wreckage from the TU-154 had been found.

However, after two weeks, US Atlantic Command officials concluded there were no survivors among the nine US airmen or the 24 passengers and crew of the German aircraft.

The nine crew members aboard the USAF C-141 from the 305th Air Mobility Wing, McGuire AFB, N.J., were SSgt. Stacy D. Bryant, loadmaster; SSgt. Gary Bucknam, flight engineer; Capt. Gregory M. Cindrich, pilot; A1C Justin R. Drager, loadmaster; SSgt. Robert K. Evans, flight engineer; Capt. Jason S. Ramsey, pilot; SSgt. Scott N. Roberts, flight engineer; Capt. Peter C. Vallejo, pilot; and SrA. Frankie L. Walker, crew chief.

The C-141 was en route to Ascension island after a mission to drop off US soldiers and mine-clearing equipment in Namibia, when it disappeared.

B-1B Crash Claims Four

A B-1B from Ellsworth AFB, S.D., crashed near Alzada, Mont., on Sept. 19, killing all four airmen aboard. The crash came just days before the Air Force initiated a DoD-wide flying stand-down the Pentagon had imposed following a series of unrelated US military aircraft crashes.

The airmen killed were Col. Anthony Beat, 28th Bomb Wing vice commander; Maj. Kirk Cakerice and Clay Culver, both 37th Bomb Squadron assistant operations officers; and Capt. Gary Everett, a 37th BS weapons systems officer.

The 28th BW aircraft was on a routine training mission. According to Air Force officials, the weather was good, and the bomber had no maintenance problems. It was the first B-1B crash since 1992.

USAFE Reaffirms Civilian Rotation Schedule

US Air Forces in Europe officials have recently reaffirmed an existing Department of Defense policy that limits overseas tours for civilian employees to no more than five years.

During the European drawdown of the early 1990s, tour extensions for civilians were liberally approved. This improved stability and continuity at a time of upheaval, but that approach

will no longer be the case, said officials.

The rotation policy gives stateside DoD employees the opportunity to gain overseas job experience and widens the job market for family members.

USAFE currently employs more than 2,200 appropriated-fund DoD civilians. About 1,000 are subject to the limit. Of those, about 270 people are past the five-year point.

The command's goal is to have no more than five percent of these employees extended beyond the five-year mark and to have no extensions over seven years. USAFE expects to achieve this goal by the end of Fiscal 1999.

B-2 Money, but No More B-2s?

Lawmakers increased B-2 funds but did not mandate production of additional stealth bomber aircraft as the defense appropriations bill cleared Congress Sept. 25.

The B-2 compromise appeared to end one of the most hard-fought aerospace legislative issues of the year. Supporters of the B-2 had added \$331 million to the House version of the annual military money bill, arguing that B-2s provide cost-effective power projection and that the nation needed a larger fleet of the aircraft. The House funds were intended to reconstitute the program's manufacturing base and to begin buying components to be used in additional planes.

The Pentagon and the Clinton Administration strenuously opposed the move, saying other defense priorities needed the money. Clinton officials warned that the President would either veto the whole bill, or use his new line-item veto power to strike all B-2 funding, if the plane's proponents persisted in their efforts to add nine more planes to the planned 21-bomber fleet.

Still, the appropriations bill boosted the Administration's \$174 million B-2 procurement request to \$331 million. In the past, Air Force officials have indicated they would use such a windfall to upgrade battlefield communications programs for the stealth bomber.

A new display and Link-16 data-link capability are the Air Force's top B-2 equipment priorities, Brig. Gen. Bruce A. Carlson, Air Force director for global power programs, told reporters Sept. 12.

Full Funding for F-22

The final version of the defense money bill also fully funded the F-22 fighter program at \$2.2 billion. The

Senate had sought to cut more than \$200 million from the program as a sign of dissatisfaction with cost overruns in development of the new fighter.

Lawmakers reduced funds for the competition between the Navy/Air Force Joint Air to Surface Standoff Missile and the Navy Standoff Land Attack-Extended Range missile to \$172 million, from the Administration's \$203 million request.

The House, in its version of the bill, included no money for JASSM. The Air Force has said it would need about \$175 million in the program to maintain its planned JASSM schedule, with a choice between competitors Boeing and Lockheed Martin next July.

National missile defense was a big winner in the appropriations bill, gaining a \$474 million increase over and above Clinton's budget request.

News Notes

- On Sept. 17 the Senate unanimously confirmed Army Gen. Henry H. Shelton to become Chairman of the Joint Chiefs of Staff. Shelton, a Green Beret paratrooper who led US forces in Haiti, replaces Gen. John M. Shalikashvili. Shelton is the third Army general in a row to fill the post.

- The first annual Air Force marathon was held on Sept. 20 at Wright-Patterson AFB, Ohio. Andre R. Herr of Latrobe, Pa., won the 26.2-mile race with a time of 2:28:34.

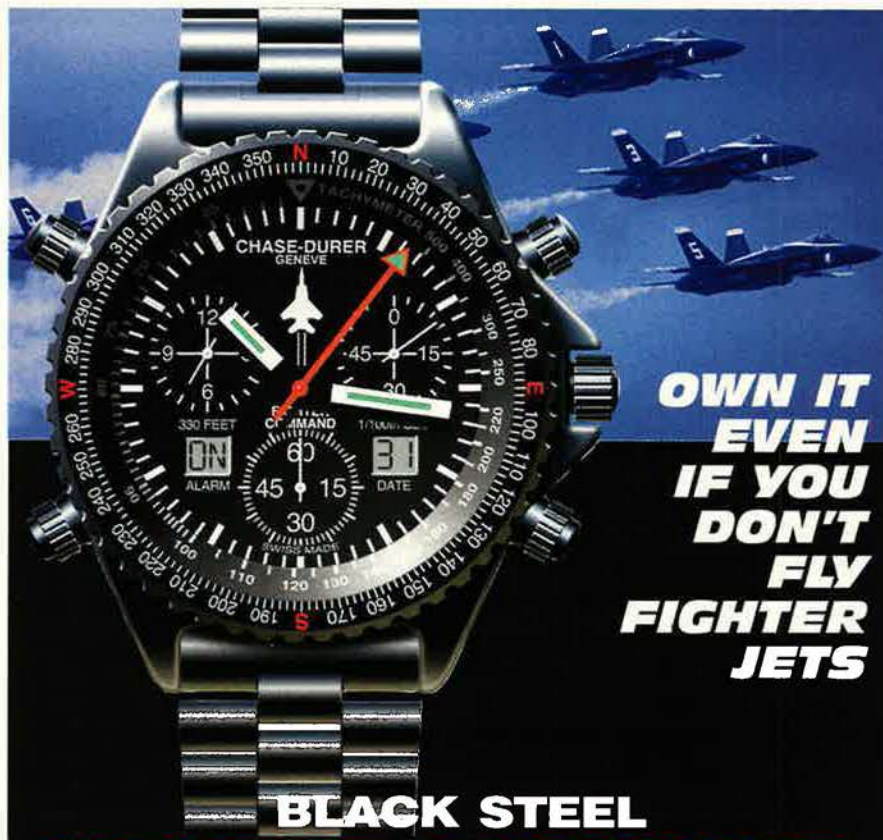
- Two Air Force firefighters and an Air Force base fire department were named tops in their field at the Department of Defense Fire and Emergency Services Training Conference in Dallas. SSgt. Michael L. Rosser, Rhein-Main AB, Germany, was named military firefighter for 1997. Bret D. Stohr, McChord AFB, Wash., won the civilian firefighter of the year award. The Yokota AB, Japan, fire department earned best department distinction.

- Singapore has asked to base 80 personnel at McConnell AFB, Kan., so they can learn KC-135 refueling techniques from US crews. Singapore's air force is purchasing four KC-135R aircraft from the US through the Foreign Military Sales program.

- USAF will not get its first C-130J transport aircraft as early as it had planned. Lockheed Martin has delayed delivery of the new models from January 1998, until the middle of the year.

- On Sept. 4 Air Mobility Command declared Fiscal 1998 the "Year of the Enlisted Force." Proposed AMC enlisted-oriented initiatives include tuition assistance and recognition programs.

- The last operational USAF T-33



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trainer was formally retired Aug. 14 in a public ceremony at the US Air Force Museum at Wright-Patterson AFB. Designated the NT-33A In-Flight Simulator, this specially modified "T-Bird" had fulfilled many key R&D goals during its almost 50 years of active duty.

- A four-member Aeronautical Systems Center team at Wright-Patterson AFB created an all-fiberglass bridge for testing by the state of Ohio. The

two-lane span, now installed in Butler County, could last 150 years without major repairs.

- MSgt. Porfiro O. Castillo of Lackland AFB, Texas, won the Air Force Sergeants Association Pitsenbarger Award for saving a handicapped man from a burning home. The award honors an enlisted member who performs a heroic act; Castillo was commuting to work when he noticed smoke pouring from a nearby home and rushed in



Northrop Grumman began fabrication of a new composite horizontal stabilizer for the C-17 airlifter under contract with prime contractor Boeing. The composite structure—designed to reduce weight and cost—will replace aluminum components beginning with the 51st production aircraft.

to save the man without regard for his own safety.

■ Michael A. Parker, a research scientist with the Surveillance and Photonics Directorate at Rome Laboratory, Rome, N.Y., won the 1997 Air Force Basic Research Award. Parker was cited for his prolific contributions to research in integrated optical circuits and interconnects and their application to signal processing.

■ Patients gave Air Mobility Command medical clinics the highest satisfaction scores in a recent Department of Defense survey. The poll measured opinions about overall quality, ease of access, and attention from personnel for both DoD and civilian medical facilities.

■ The new Lockheed Martin Launch Vehicle boosted a NASA Earth-observing satellite into orbit on Aug. 23. The launch overcame a setback the LMLV suffered two years ago when the program's first booster began oscillating and was destroyed near the end of its first-stage burn.

■ Two F-16s from the 177th Fighter Wing (ANG), Atlantic City Airport, N.J., collided about 60 miles southeast of Atlantic City on Sept. 16. The accident occurred during a night recertification training flight. One of the aircraft involved, a two-seat F-16D, crashed into the Atlantic. Both pilots ejected safely. The other plane, a single-seat F-16C, returned safely to base despite extensive damage.

■ Top medical services officers from the Reserve and Guard visited Charleston AFB, S.C., in August to

assess the use of C-17 airlifters as an aeromedical evacuation aircraft. "I see this airplane spanning the strategic and tactical missions so we don't have to change aircraft en route," said AFRC Maj. Gen. Walter John Giller Jr., mobilization augmentee to the Air Force surgeon general. "We can plan a mission directly and seamlessly."

■ As a result of retention concerns, the Air Force Chief of Staff has au-

thorized adjutants for small fighter squadrons with 18 single-seat aircraft. Nineteen ACC squadrons, 10 Pacific Air Forces squadrons, and seven USAFE squadrons will receive the new positions. The adjutants will be personnel officers who will handle squadron duties, such as resource management, flight scheduling, disaster preparedness, and other related functions.

■ US Transportation Command's Rodeo competition will move to Pope AFB, N.C., in 2000. Rodeo provides an opportunity for aerial refuelers and airlifters to demonstrate their abilities, improve procedures, and standardize operations. Its current home is McChord AFB, Wash.

■ Greenham Common, a former US air base in southern England where cruise missiles were deployed at the height of the Cold War, is reverting to pasture. Fences around the base were torn down on Sept. 14 to let cattle and other animals graze on its grass.

■ The 1st Fighter Wing, Langley AFB, Va., is the first ACC unit to integrate the new additive JP8+100 into its fuel inventory. JP8+100 is similar to the detergents used in gasoline. It cleans the aircraft fueling system and allows components to operate more efficiently and at higher temperatures.

■ The 729th Air Control Squadron is fighting illegal drugs in Peru. Twenty airmen from the Hill AFB,

Senior Staff Changes

RETIREMENT: Maj. Gen. George W. Norwood.

PROMOTION: To be General: John A. Gordon.

CHANGES: Brig. Gen. Walter E.L. Buchanan III, from Cmdr., AF Recruiting Svc., AETC, Randolph AFB, Texas, to Dep. Dir., Allied Command Europe Reaction Force Air Staff, NATO, Kalkar, Germany, replacing Brig. Gen. Ralph Pasini ... Gen. (sel.) John A. Gordon, from Assoc. Dir., Central Intelligence for Mil. Spt., CIA, Langley AFB, Va., to Dep. Dir., CIA, Langley AFB, Va. ... Maj. Gen. Charles R. Henderson, from Dir., Cmd. and Ctrl., DCS Air and Space Ops., USAF, Pentagon, to Dir., Ops. and Tng., DCS Air and Space Ops., USAF, Pentagon, replacing retired Brig. Gen. Terry J. Schwalier ... Brig. Gen. Theodore W. Lay II, from Cmdr., 1st FW, ACC, Langley AFB, Va., to Cmdr., 57th Wing, ACC, Nellis AFB, Nev., replacing Brig. Gen. T. Michael Moseley.

Brig. Gen. T. Michael Moseley, from Cmdr., 57th Wing, ACC, Nellis AFB, Nev., to Dep. Dir., Politico-Military Affairs, JCS, Pentagon, replacing Lt. Gen. (sel.) Robert H. Foglesong ... Brig. Gen. James E. Sandstrom, from Dep. Dir., Cmd. and Ctrl., DCS Air and Space Ops., USAF, Pentagon, to Dir., Cmd. and Ctrl., DCS Air and Space Ops., USAF, Pentagon, replacing Maj. Gen. Charles R. Henderson.

SENIOR EXECUTIVE SERVICE (SES) RETIREMENTS: Ronald L. Haas, Richard R. Hildebrand.

SES CHANGES: Daniel F. McMillinn, to Dep. Dir. for Plans and Policy, USTRANSCOM, Scott AFB, Ill. ... James A. Papa, to Exec. Dir., AF Flight Test Ctr., Edwards AFB, Calif. ■



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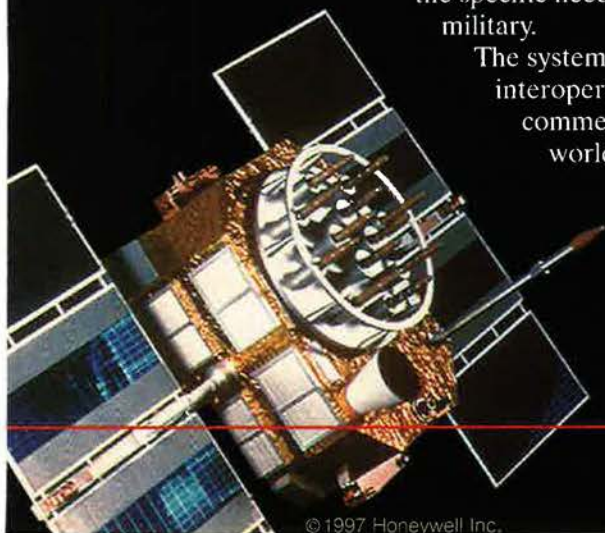
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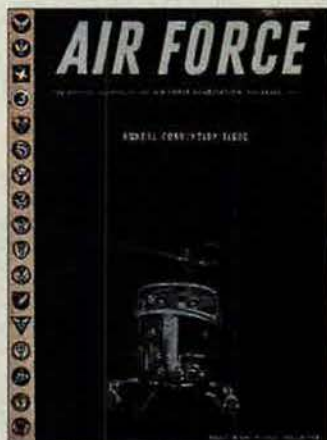
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Aerospace World



50 Years Ago in Air Force Magazine

November 1947

On the cover: Bell's 47-B, the first helicopter to rate Civilian Aeronautics Administration approval for night flying.

■ Senior officers and distinguished visitors were thick on the ground when AFA held its first annual convention in Columbus, Ohio, Sept. 15-16. Not present, however, was the founding father, Gen. of the Army H.H. "Hap" Arnold, who sent his greetings from his home in California, along with regrets that he could not attend on the advice of his "medicos."

■ AFA officers elected at the convention were: Jimmy Doolittle, chairman of the board; Tom Lanphier Jr., president; James Stewart, first vice president; Meryll M. Frost, second vice president; C.R. Smith, third vice president; Julian B. Rosenthal, secretary; and G. Warfield Hobbs III, treasurer.

■ Speaking to the 1,502 members who came to the convention, Gen. Dwight D. Eisenhower, Chief of Staff, US Army, said: "Our first defense is air defense."

■ Gen. Carl A. Spaatz, Chief of Staff of the US Air Force, told the AFA audience the Air Force "looks to your organization as a major link with the people of the United States, through which it will be possible to ensure that the roots of airpower are firmly established and maintained."

■ Chairman of the Board Doolittle told the delegates that the record turnout for a local AFA meeting was held by the Milwaukee, Wis., squadron, where 882 members showed up for a single meeting. Size, however, isn't everything, he said. The Beckley, W.Va., chapter had only 75 members, but "on Air Force Day, the show they put on in Beckley was so good the city fathers declared a half holiday and closed the stores and schools."

Annual AFA dues went up from \$3 to \$4.

Utah, unit are now usually on site in the Peruvian Amazon region, operating radar and satellite systems to detect suspected drug traf-

fickers flying in the area. The troops are living in a nearby town until construction of living quarters at their forward site is complete. ■

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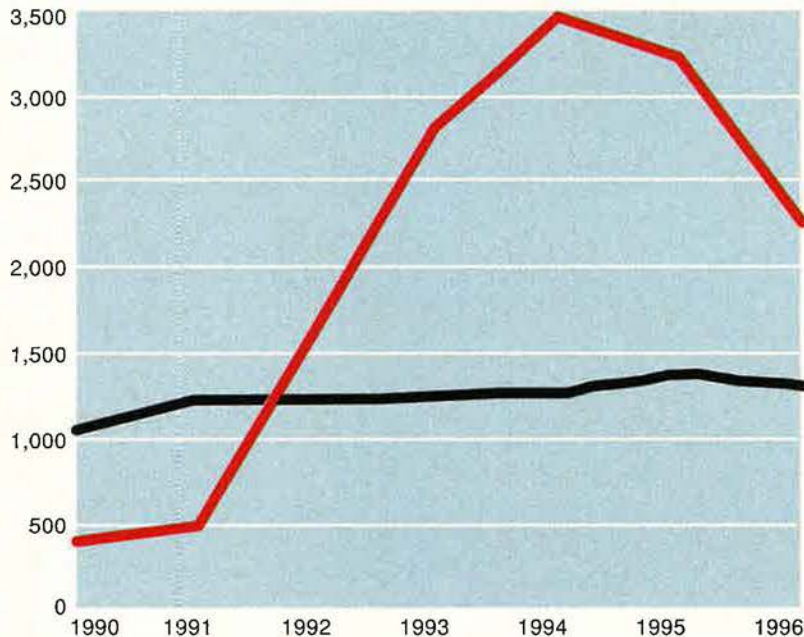
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The Chart Page

By Tamar A. Mehuron, Associate Editor

Ups and Downs of UN Peacekeeping



The UN's Peacekeeping and "Regular" Budgets

The cost of United Nations peacekeeping operations began to surge in 1991—the result of growing UN involvement in Somalia and the Balkans—and continued to rise for several years, hitting a peak in 1994 (Fig. 1). Since then, outlays have experienced a precipitous decline. Meanwhile, the "regular" UN budget has remained level. The drop in peacekeeping outlays reflects the fact that other organizations, most notably NATO, have taken over peacekeeping operations in Bosnia, and Russia has for the most part supplanted the UN in Georgia and Tajikistan.

■ Peacekeeping Budget
■ Regular Budget

Ongoing UN Peacekeeping Missions

1948	UNTSO	UN Truce Supervision Organization (Mideast)
1949	UNMOGIP	UN Military Observer Group in India and Pakistan
1964	UNFICYP	UN Peacekeeping Force in Cyprus
1974	UNDOF	UN Disengagement Observer Force (Golan Heights)
1978	UNIFIL	UN Interim Force in Lebanon
1991	MINURSO	UN Mission for the Referendum in Western Sahara
1991	UNIKOM	UN Iraq-Kuwait Observation Mission
1993	UNOMIG	UN Observer Mission in Georgia
1993	UNOMIL	UN Observer Mission in Liberia
1994	UNMOT	UN Mission of Observers in Tajikistan
1995	UNMIBH	UN Mission in Bosnia and Herzegovina
1995	UNPREDEP	UN Preventive Deployment Force (Macedonia)
1996	UNMOP	UN Mission of Observers in Prevlaka (Croatia)
1996	UNTAES	UN Transitional Administration for Eastern Slavonia, Baranja, and Western Sirmium
1997	MONUA	UN Observer Mission in Angola
1997	UNTMIH	UN Transition Mission in Haiti

Note: Year indicates the start of the operation.

In its 52-year history, the UN has undertaken 45 peacekeeping missions. Of those 45 missions, 33—or about 73 percent—were launched in the past decade. Of those 45, the UN has 16 ongoing operations (Fig. 2).

Source: United Nations

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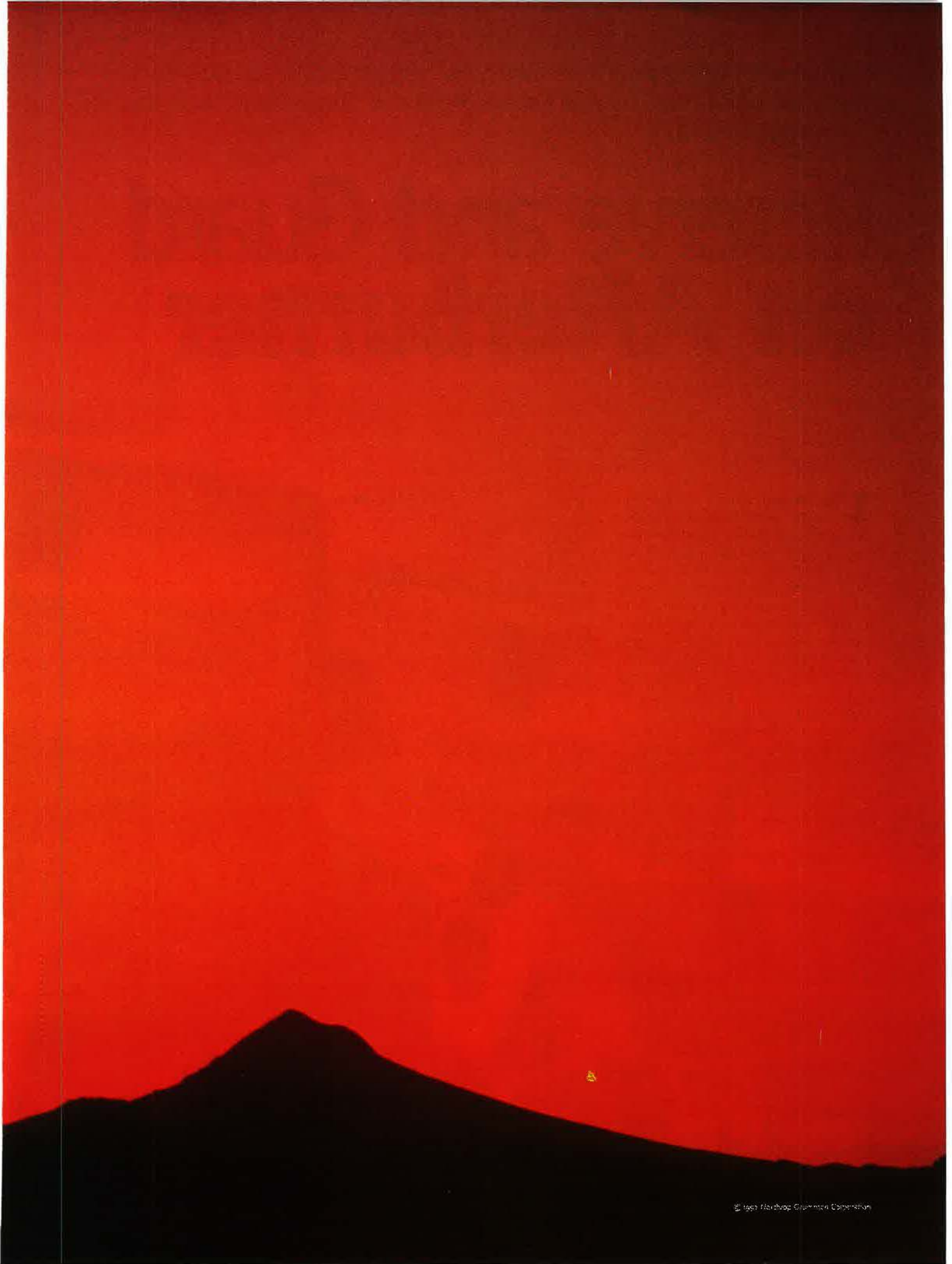
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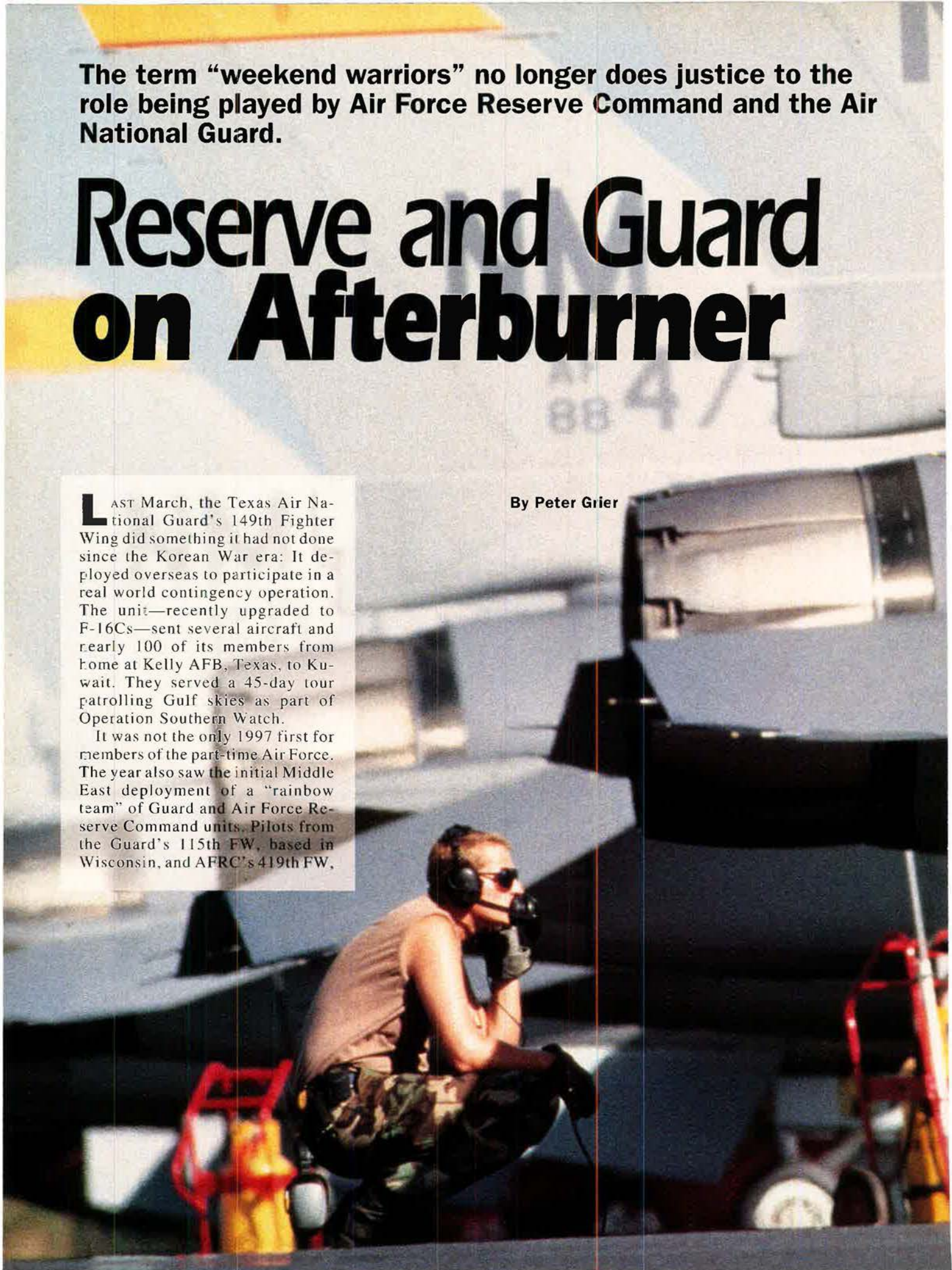
The term "weekend warriors" no longer does justice to the role being played by Air Force Reserve Command and the Air National Guard.

Reserve and Guard on Afterburner

LAST March, the Texas Air National Guard's 149th Fighter Wing did something it had not done since the Korean War era: It deployed overseas to participate in a real world contingency operation. The unit—recently upgraded to F-16Cs—sent several aircraft and nearly 100 of its members from home at Kelly AFB, Texas, to Kuwait. They served a 45-day tour patrolling Gulf skies as part of Operation Southern Watch.

It was not the only 1997 first for members of the part-time Air Force. The year also saw the initial Middle East deployment of a "rainbow team" of Guard and Air Force Reserve Command units. Pilots from the Guard's 115th FW, based in Wisconsin, and AFRC's 419th FW,

By Peter Grier





USAF photo by MSgt. Val Campes, Airman Magazine



ANG's 193d Special Operations Wing, Harrisburg IAP, Pa., flies USAF's only Commando Solo EC-130E psychological operations aircraft like this one. The unit has supported numerous operations, including Desert Storm and in Haiti.

from Hill AFB, Utah, shared 12 F-16s as they helped enforce a no-fly zone over northern Iraq throughout the spring.

As these examples show, the phrase "weekend warriors" no longer does justice—if it ever did—to the roles played by the Air Force Reserve Command and Air National Guard. More and more, these military organizations are taking part in missions all over the globe.

The redistribution of the workload has helped the two air reserve components fulfill their Total Force mandate and has made them a big help to their hard-pressed active duty counterparts. But it may also bring the Reserve and Guard operations tempo problems of their own.

Greater Stress

"There has not been a significant increase in separations, so far," said an August statement by the Air Force Reserve. "This may become an issue future leaders must address. Most will agree that reservists are under greater stress now than at any other time in their careers."

If experienced reservists leave, they may be hard to replace. Maj. Gen. Robert A. McIntosh, the AFRC commander, noted in a report that his command already faces "challenges" in recruiting. "Historically, we've been dependent on recruiting prior service personnel, who have proven an excellent pretrained resource," he said, but since the early

1990s the annual number of eligible personnel leaving active duty has dropped from about 40,000 to 13,500.

"The nonprior service market is much more difficult, expensive, and time-consuming to successfully compete within," McIntosh said, adding that this fact "will make meeting end strength ... more difficult."

Things could be worse. The Air Force's Reserve and Guard have largely escaped the internal turmoil and conflict, caused by attempted personnel cuts and other issues, that have affected their ground force counterparts this year.

The Air Force's Reserve and Guard officials must still navigate turbulent waters left by the Pentagon's recently completed Quadrennial Defense Review. And they take no comfort in the Army Guard and Reserve problems. "They are our brothers and sisters," said Brig. Gen. Paul E. Weaver Jr., the new director of the Air National Guard. "We are in this together."

Under the Defense Department's Total Force policy, service Reserve and Guard units are supposed to be formally integrated with active duty units and planning in an effort to meet national security objectives. The need to use resources efficiently is one big reason for the policy. An ANG flying unit, for instance, is said by some to cost about 60 percent as much as an active duty counterpart.

Air Force leaders have devoted significant resources, in terms of both airplanes and funding, to Reserve and Guard forces almost since the service was born. The result has been the smoothest combination of part-time and active duty units among all the services.

"The Air Force has the most integrated total force on a day-to-day basis," Assistant Secretary of Defense for Strategy and Requirements Edward L. Warner told Congress. "This is especially true of its mobility force associate units, where reserve tanker and airlift personnel often work side-by-side with their active counterparts, even sharing the same aircraft."



Maj. Anthony Basile, an F-16 pilot with the New York ANG's 138th Fighter Sq., checks out an AIM-9 missile before a training flight. Training continues, but Reservists and Guardsmen now spend more time augmenting the active force.

Proposal Would Put Guard Chief on Joint Chiefs of Staff

By voice vote, the Senate passed in July a bill that would elevate the head of the National Guard Bureau to four-star rank and give him a seat on the Joint Chiefs of Staff. Sen. Ted Stevens (R-Alaska) is the chief sponsor of the proposal, which took the form of a rider to the Fiscal 1998 defense authorization bill. Stevens recruited 49 cosponsors, but Sen. Strom Thurmond (R-S.C.), chairman of the Armed Services Committee, was not among them. There is no companion bill working in the House, where the chairman of the House National Security Committee, Rep. Floyd Spence (R-S.C.), is also opposed to the idea.

The proposal was brought on mainly by long-standing troubles between the Army and the Army National Guard. Unlike the Air Force, the Army has never worked that well with its reserve components. The problems worsened in the Gulf War, when the Army rejected—unjustifiably, Guard sources said—a National Guard round-out brigade as unfit to fight. The alienation has deepened since then.

The dam broke in May when the Quadrennial Defense Review projected a reduction of 45,000 Army Guardsmen and Reservists but only 15,000 active duty Army troops. (By contrast, the QDR cut Air Force strength by 26,900 active duty and 700 in the reserve components.) Guard supporters, including strong backers in Congress, raised a row, and the Department of Defense sent the Army and the National Guard away to an "off-site" conference to settle their differences. The meeting determined that 25,000 of the Army Guard and Reserve cuts would be postponed until after the year 2000 and adopted 11 principles, such as that "Army Guard forces will be fully missioned, resourced, and relevant."

However, that did not put a stop to activism by Guard enthusiasts. The National Guard Association of the United States is enthusiastically pushing for inclusion of the National Guard Bureau chief on the Joint Chiefs of Staff. The Department of Defense, the Joint Chiefs, and the services oppose the move, saying that it would politicize the defense program, undercut federal control of the armed forces, and make states, governors, and communities active competitors for defense resources and budgets.

The JCS presently consists of the chairman, the vice chairman, and the chiefs of the Army, Navy, Air Force, and Marine Corps. The National Guard Bureau chief was a two-star office until the post was raised to three-star status in 1979.

Together, Reserve and Guard forces now have some 1,900 airplanes, about 40 percent of the active service's level of some 4,500 aircraft. No longer are most of them hand-me-down Vietnam-era fighters. The last F-4 is gone, phased out of the Air Guard inventory at the end of 1995. Current inventory ranges from F-15 and F-16 fighters through modern C-130 models and 14 B-1B bombers.

The Reserve provides 67 percent of the Air Force's total medical crews, along with 62 percent of its special operations "Talon 1" capability and 50 percent of KC-10 tanker crews and maintenance personnel. The Guard has 70 percent of Air Force wartime deployable communications capability.

Changing Traditions

Airlift, tankers, air defense, special operations, and weather reconnaissance are among the traditional Reserve and Guard missions. But "traditional" does not necessarily mean "unchanging." Take the case of air defense.

As part of the QDR process, Air Force and ANG leaders discussed whether it made sense to maintain 10 fighter squadrons devoted solely to the protection of continental US airspace. They decided it didn't and hatched the idea to take late model F-16s out of the active force, give them to the Guard, and convert some ANG squadrons to a general purpose mission. The active force will transfer 60 older fighters to the Guard, which would retire 60 of its own.

"It makes those forces more relevant to the world we see ourselves living in," said Lt. Gen. David J. McCloud, the force structure director for the Joint Staff, in testimony to Congress this summer.

In sum, the Air Force came through the QDR with a force structure of 20 fighter wings, but the active/reserve split has changed. Where previously the Air Force had 13 active and seven reserve wings, it will now have 12 active and eight reserve.

The changing world security situation means that the part-time Air Force is expanding into whole new

mission areas. Last year AFRC entered the field of airborne warning and control, for instance, with the standup of the 513th Air Control Group. The 513th is an associate unit that employs Reserve aircrews flying active duty E-3 AWACs aircraft. Its initiation marks the first time this approach has been used for the mission, and it provides some much needed relief for active duty crews who fly one of the busiest weapon systems in the US inventory.

AFRC last year also entered the arena of battle-staff augmentation with the creation of the 701st Combat Operations Squadron, which provides support to US Pacific Command. Also, Air Education and Training Command moved to take advantage of the reserve components' traditional pool of flying experience. The new AETC/Air Force Reserve Instructor Pilot Program will provide two 25-person units for use at active duty pilot training bases.

McIntosh recently reported, "Our readiness has never been higher, and we are part of nearly every mission area. ... Air Force Reserve Command units maintain readiness levels on par with active duty units. More than 95 percent of Air Reserve units are currently combat ready, closely paralleling our active force."

The Air National Guard has in recent years taken on a long-range combat role with the addition to the Guard inventory of B-1B bombers. The ANG's first B-1 unit, based at McConnell AFB, Kan., now has 10 aircraft and will soon face its first operational readiness inspection. A second Guard B-1 unit, at Robins AFB, Ga., is scheduled to receive its final four airplanes and complete its conversion process during the first quarter of 1998. For its part, AFRC maintains a squadron of long-range, heavy B-52 bombers at Barksdale AFB, La.

Ideal Mission

The bomber mission requires experienced crews, yet has a relatively low operations tempo. It is thus ideal for the ANG and AFRC, say USAF officials. ANG crews recently demonstrated their prowess with the bomber during a deployment to Indonesia.

"Combat capability of our bomber

units will be improved within the next year when necessary hardware delivery and training are complete for cluster bomb munition capability," Maj. Gen. Donald W. Shepperd, the Air Guard director at the time, told Congress this summer, shortly before his retirement.

The ANG's 109th Airlift Wing, based in Schenectady, N.Y., will soon take over one of the Navy's more exotic workloads. The 109th has the only snow-ski-capable aircraft in the USAF inventory—and starting in 1999 it will use them to support National Science Foundation activity in Antarctica.

Recent months have seen an ANG transition of its fighter-reconnaissance inventory from old RF-4Cs to multirole F-16s. A Richmond, Va., Guard unit added recon pods to its F-16s last April. In a subsequent deployment to Europe in support of Bosnian operations, the squadron flew 124 sorties in 45 days without a mission cancellation caused by equipment problems.

"Based on this success, the ANG is procuring pods and processing stations for four additional units," Shep-

Breakdown of Flying Hours

Hours in Thousands

USAF Component	1990	1991	1992	1993	1994	1995	1996
Active	2,760	2,961	2,189	1,966	1,750	1,709	1,657
AFRC	164	208	150	145	155	141	144
ANG	442	497	428	434	412	403	380
Total	3,366	3,666	2,767	2,545	2,317	2,253	2,181

Total Air Force

Military End Strength

	1990	1991	1992	1993	1994	1995	1996	1997
Active	535,233	510,431	470,315	444,351	426,327	400,409	389,001	381,100
AFRC	83,814	84,539	83,396	80,562	79,621	78,706	76,138	73,311
ANG	117,786	117,786	119,093	117,162	113,587	109,826	110,471	109,178
Total	736,833	712,756	672,804	642,075	619,535	588,941	575,610	563,589

perd reported to Congress. The program should be completed in early 1999.

It is a foregone conclusion in the Pentagon that today's diminished military establishment will have to wring all it can out of Reserve and Guard units if they are to meet operational requirements. In the Air Force, "Total Force" has never been

a mere buzzword. However, the profusion of missions such as those in Bosnia, Somalia, Iraq, Haiti, and elsewhere are making the concept even more important.

In February 1995, then-Secretary of Defense William Perry launched a pilot program explicitly designed to lessen the burden of the over-worked active force by leaning on part-timers for help during major exercises and real-world contingencies. Proposed projects under the so-called "Increased Use Initiative" must both provide meaningful training and measurably reduce active force operations tempo and personnel tempo. The cost of these approved projects are split between the services and the relevant unified theater command.

Pentagon officials claim that, so far, this experiment has been highly successful. The number of approved projects rose from 97 in Fiscal 1995, to 163 in Fiscal 1996, and to more than 200 for Fiscal 1997. "Support for further integration of Reserve component personnel into Joint operations and exercises continues to grow," Defense Secretary William Cohen told Congress earlier this year.

Reserve and Guard members say that they enjoy the additional challenge and sense of worth these days. After all, deploying to Aviano AB, Italy, as they have done, and other foreign locales presents a welcome change of pace from the usual flying around home-state airspace. Overall, increased reliance on the reserve

Cohen Orders Full Active-Reserve "Integration"

Defense Secretary William Cohen issued a policy statement that evidently expands the role—and voice—of National Guard and Reserve forces in war and peace.

In a Sept. 4 memorandum, Cohen ordered DoD leaders to remove "all residual barriers—structural and cultural"—blocking "full integration" of active and reserve components. Cohen's goal: a "seamless Total Force."

He said the American military "can no longer achieve [its] operational goals as separate active and reserve components."

DoD, in a Sept. 11 statement, defined "integration" as "the conditions of readiness and trust needed for the leadership of all levels to have well-justified confidence that reserve component units are trained and equipped to serve as an effective part of the joint and combined force within whatever timelines are set for the unit—in peace and war."

Four principles will guide the integration effort, according to the Cohen memo. The Pentagon said they are:

Clearly understood responsibility for and ownership of the Total Force by the senior leaders throughout the Total Force;

Clear and mutual understanding of the mission of each unit—Active, Guard, and Reserve—during peace and war;

Commitment to provide the resources needed to accomplish assigned missions;

Leadership by senior commanders—Active, Guard, and Reserve—to ensure the readiness of the Total Force.

"This memorandum ... sets the tone for how we must work as a Total Force as we move into the 21st century," said Cohen. "It recognizes that in the post-Cold War world, we are having to rely on our reserves more and more."

components has so far actually helped recruiting and retention, according to Pentagon officials.

DoD officials are uncertain, however, whether that will remain the case in coming years. As the Air Force's Reserve and Guard units are increasingly deployed to lessen active duty optempo, they themselves may begin to suffer from the ill effects of frequent usage.

Running Hard

Make no mistake: Air Force Reserve and Guard units are already running quite hard. In a report to Congress earlier this year, Gen. Ronald R. Fogleman, then the USAF Chief of Staff, warned, "Air Guard and Reservist man-days per year today are almost equal to the level of effort you had during the height of the Gulf War."

Maintenance of high-performance aircraft requires constant effort—27 percent of the ANG, for instance, is composed of full-time maintenance personnel.

Fogleman and other officials said that the Air Force's projected continued reliance on the Reserve and Guard will make the weekend warrior tag virtually obsolete. In many cases the traditional one weekend per month and two weekends training per year will no longer be applicable, as the Department of Defense asks reservists to come on active duty for longer and longer periods of time.



Photo by Ted Carlsson

Both Reserve and Guard units fly C-141s, like this one, and other airlifters, providing much of USAF's airlift capability—a vital addition as the pace of peacekeeping and humanitarian missions remains high.

In 1997, USAF's Reservists and Guardsmen have taken part in every major Air Force operation and exercise, from Northern and Southern Watch in the Middle East to the interception and identification of suspected drug traffic aircraft moving across the US border.

On any given day, there are upwards of 1,400 Air Force reservists deployed somewhere in the world. Reserve and Guard duty-days per year now range from 120 for F-16 and C-130 crews to 165 for B-52 personnel and upwards of 180 for C-17 associate crews.

Some Reserve and Guard representatives warn that the Defense Department's theory of compensating leverage has already been stretched as far as possible. They say that there is little more that the reserve components can do to help lessen the full-timer's burden.

Those in Air Force Reserve flying units feel they are coming close to their maximum output. "Further increases in [Air Force Reserve] operations tempo will likely reach the limits of what a volunteer force can do," Fred Becker, an official of the Reserve Officers Association, recently told Congress.

So Far, Only Rumors

An August AFRC message to Reservists addressed what it called "rumors about Reservists opting to leave AFRC rather than be part of an increased optempo." The rumors are just that, said the message—unsubstantiated gossip. Separations have not increased, though recruiting and retention of top-notch people is becoming more of a challenge, according to AFRC.

Reduction of personnel stress will help ease the optempo burden for Reserve and Guard members, say officials. That means providing as much planning and notification time prior to deployments as possible. It means maintaining incentives for government employees who are Reserve and Guard members.

"We can do much through vol-



Staff photo by Guy Acerto

AFRC associate units which share active force aircraft, like this C-5 at Dover AFB, Del., and other airlifters, are also taking on new missions, such as airborne warning and control, providing needed relief for active crews.

Air Force Reserve Command Budget

Billions of Current Dollars

Category	1995	1996	1997	1998	1999
Reserve personnel	0.8	0.8	0.8	0.8	0.9
Operations and maintenance	1.5	1.5	1.5	1.6	1.6
Military construction	0.1	0.0	0.1	0.0	0.0
Total authorization	2.4	2.3	2.4	2.4	2.5

Air National Guard Budget

Billions of Current Dollars

Category	1995	1996	1997	1998	1999
Guard personnel	1.3	1.3	1.3	1.3	1.3
Operations and maintenance	2.8	2.8	2.7	3.0	3.0
Military construction	0.2	0.2	0.2	0.1	0.0
Total authorization	4.3	4.3	4.2	4.4	4.3

Note: Fiscal 1995-97 amounts are actual. Fiscal 1998-99 amounts are those contained in the President's budget.

untecerism, but we need to keep employers and families on our team and supportive of our participation," warned Shepperd.

It may also mean addressing the problem of a financial safety net for military part-timers. A special Reserve and Guard insurance plan set up by the Pentagon to help ease any money problems caused by deployments is on the verge of cancellation. It has become embroiled in financial problems and has attracted light participation so far.

Overall, said Air Force Reserve Command and Air National Guard officials, the recently completed QDR dealt fairly with their concerns. Combined Reserve and Guard strength of roughly 265,000 would be reduced by only about 700 spaces over the next five years, compared with a reduction of 26,900 in the active duty force. By contrast, the Army was targeted to lose 45,000 Guard and Reserve members—a plan that has touched off ferocious conflicts between the Army's Active and Guard components. [See box, p. 31.]

This does not mean that the Air Force reserve components have no resource problems. Like their active duty counterparts, Reserve and Guard officers worry about modernization money. Night operations capability is a top Guard priority, for instance; to get it, the ANG is testing low-cost, off-the-shelf equipment for its A-10s, F-16s, and F-15s.

Some Guardsmen and Reservists further worry about the future of many units beyond 2003. Will the costs



While Reserve and Guard members, such as SSgt. Allen J. Tetreault, an F-16 crew chief, 150th Fighter Wing, New Mexico ANG, shown here in Australia, enjoy the change of pace brought by deployments overseas, officials worry that continued frequent use may begin to have a negative effect on retention.

associated with the purchase of the F-22 and other new aircraft cause service leaders to swing more funds toward the active force and downsize or eliminate reserve force units with older airplanes?

On the other hand, the on-call components could become more important to the military in decades ahead as new missions come on line and

some traditional ones increase in importance. The Reserve and Guard, for instance, might play an ever-bigger role in space operations. "Satellite and space system management, the ultimate in telecommuting, is a natural for National Guard professionals," maintained Lt. Gen. Edward W. Baca, chief of the National Guard Bureau in Washington.

Remote weapons systems and unmanned aerial vehicles could also become reservist missions. Theoretically, a next-generation UAV taking pictures over places such as Bosnia or Zaire could be controlled by a trained officer sitting outside of Boston or some other American city. National missile defense could offer similar opportunities.

"These and other similar future mission areas, highly technical and predominantly home-based, offer win-win opportunities to satisfy national security cost-effectively while providing many dedicated Americans whose occupations would otherwise prohibit it a chance to contribute to their nation's defense," said Baca. ■

Peter Grier, the Washington bureau chief of the Christian Science Monitor, is a longtime defense correspondent and regular contributor to Air Force Magazine. His most recent article, "The Materiel World," appeared in the October 1997 issue.

USAF photo by MSgt. Val Gemplis, Airman Magazine



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On patrol, the Airborne Laser will pack enough energy to fire on 40 theater ballistic missiles.

Defense at the Speed of

By John A. Tirpak, Senior Editor

AFTER decades of predictions from science fiction writers and technology experts alike that world militaries would someday fight with lasers, the countdown is on to an actual deployment of such a weapon: an Air Force system that should be flying in less than five years.

While the other armed services have taken a "wait and see" posture toward lasers as a means of destruction—they have long been used as target designators and as sensor "blinding" devices—the Air Force is pressing ahead on its own, having decided that laser technology is ready to be used in a weapon ideal for theater ballistic missile defense.

The planned system, called the Airborne Laser, is one of the two re-



Light

This artist's concept shows USAF's Airborne Laser in action as it intercepts a theater ballistic missile while the missile is still in boost phase over enemy territory.



Ph. Wagner

search and development efforts designated as USAF's top priorities. (The other is the F-22 air superiority fighter.) The service touts it as nothing less than a "revolution in warfare" that portends huge changes in the speed at which future battles will be fought.

"The technical challenges are well understood, ... and we have a wealth of enabling technologies available that have already been invented," Program Director Col. Michael W. Booen said at an Air Force Association briefing for industry at AFA headquarters in Arlington, Va. "It's a pretty aggressive schedule, but we are 'buying down' the risks so that ... there are no big surprises that could seriously upset the schedule."

Booen added that the day of laser weapons "is closer than you might think."

Assuming that the Pentagon and Congress continue to fund the ABL at the requested rates—and so far they have—the first ABL aircraft capable of performing at least limited theater ballistic missile defense missions will be available in late 2002. Under the same conditions, the full planned fleet of seven aircraft is to be operational in 2008. The estimated cost of development and procurement: \$6.1 billion.

The Trifecta

The payoff is expected to be high. The operational concept calls for ABL aircraft to orbit in airspace over friendly territory, much in the manner of USAF's E-3 Airborne Warning and Control System or E-8 Joint Surveillance and Target Attack Radar System aircraft, and watch for the plumes of a ballistic missile launch. Should a Scud-type enemy missile be fired, the ABL airplane will be able to detect the launch, track the missile, target it with a low-power laser, and then focus a multimegawatt chemical oxygen-iodine laser on its body.

This could be done from "hundreds of miles away," Booen said, noting that the specific range is classified. The generated heat will weaken and rupture the missile skin, causing the entire missile to either explode or tear itself apart while still in the boost phase.

Besides the speed of the missile's destruction, confirmation that it was indeed destroyed would come almost



instantaneously, greatly helping in the overall defense equation.

The ABL will use an infrared search and track mechanism. However, it won't be the IRST system being developed for the F-22 fighter but one already used on the Navy's F-14 Tomcat fighter. "We want to minimize the risk in the program," Booen noted. The IRST on the F-14 is a known quantity; that of the F-22, though sure to be more advanced, is still in development.

Likewise, the ABL will be able to take advantage of some 157,000 lines of computer code already written for the AWACS, in another example of using off-the-shelf elements to cut cost and risk.

Under current Air Force plans, the developmental model of the ABL will be able to carry enough chemical fuel for 20 shots at a cost of about \$1,000 apiece; the fully operational version will carry a magazine capable of 40 shots. The number of shots and fuel consumed depend on the type of target and distance to it.

The need for a better theater missile defense was demonstrated in the Gulf War in 1991, when a Scud missile fired by Iraq flew toward Dhahran, Saudi Arabia. It was intercepted

by an Army Patriot missile, but when the booster fell apart, the warhead fell on an American barracks, killing 28 troops. There are today more than 30 countries with short- to medium-range ballistic missiles, and more are expected to acquire them because such weapons are relatively cheap.

"There will be a tremendous deterrent effect from this system," Booen said of the ABL. Because the airborne laser system will destroy a missile soon after launch, its warhead—be it chemical, biological, conventional, or nuclear—would fall back on the territory of the nation that fired it. Faced with the ABL, an enemy would soon learn that ballistic missile attacks could be highly counterproductive.

Forty Shots

Reinforcing the deterrent value is the fact that the ABL will be able to engage multiple targets in quick succession and carry enough chemical laser fuel on board to conceivably shoot down as many as 40 missiles—reducing an enemy's potential for overwhelming it by launching TBMs in multimissile salvos.

In addition, ABL will be joined by the Army's Theater High-Altitude Air Defense system and, if the theater of operations is close enough to an ocean, the Navy's Area- and Theater-Wide missile defense systems, all of which use missiles for terminal defense against incoming missiles.

The ABL by itself would probably not be able to handle mass launches of TBMs, but "we will make the problem significantly easier for the point-defense systems" such as THAAD and Patriot, Booen asserted.

Most of the critical technologies already are in hand. In addition to the IRST, the laser itself is well understood and has already been demonstrated at 120 percent of the necessary power levels. Also available are the "adaptive optics," or deformable mirror, in the system's 1.5-meter telescope. These compensate for atmospheric turbulence and thereby allow the laser beam to remain narrowly focused—a product of Strategic Defense Initiative development from the 1980s. The airplane which will carry it all is an off-the-shelf Boeing 747-400F freighter, with over 30 years' experience behind it and a

worldwide maintenance, parts, and support system already in place.

"There's a 25-year legacy of knowledge ... out there of trying to operationalize lasers," Booen noted, referring to the Airborne Laser Laboratory, a converted 707 testbed airframe which, in the late 1970s and early 1980s, demonstrated a limited laser capability against air-to-air missiles and drones.

Among the lessons learned from the laser lab were "system integration ... and beam control." These tasks are different on the ABL, but the older system provided an outline of where the program's toughest challenges may lie, Booen said.

A five-year plan to obtain the first ABL system was chosen not just to expedite the fielding of a capability deemed urgent for troop protection but also because "that's about as far out as people in Washington tend to look, nowadays," Booen said. Financing programs that go beyond the five-year budget cycle have fared poorly in the budget deliberations of recent years.

In addition to its primary mission of shooting down TBMs, the ABL will also have some inherent capability to perform other, "adjunct" missions such as surveillance, protection of other high-value airborne systems, defense against cruise missiles, and suppressing enemy air defenses.

A Boeing-led industrial team that includes TRW and Lockheed Martin was awarded the contract for ABL program definition and risk reduction just over a year ago. The team will first produce a half-power system, which will demonstrate the effectiveness of the ABL against live launches of typical TBMs. If successful, the team will go on to develop and build the more capable system.

Top of the Clouds

The initial airplane—known as the YAL-1A Attack Laser—will have six laser modules on board. The modules "are like batteries," said Booen. "When you put more of them together in series, you get more power." At this stage, fabricating, flying, and testing the first "flight weight" laser modules is the top program challenge and priority. The all-up version will have 14 laser modules.

While the ABL will be able to

compensate for different atmospheric conditions, it cannot shoot through clouds. For that reason, the ABL will fly at 40,000 feet, above the clouds, and shoot missiles once they break through the undercast, if any. On cloud-free days, it would be possible to engage earlier.

Booen said that weather balloons and program personnel are collecting atmospheric information in the skies over the Korean peninsula and the Persian Gulf as "representative" areas where the atmosphere has different effects on laser propagation. The two areas are being looked at "because those are the main areas of interest right now, ... areas where we might have to deploy the ABL," he said.

A typical TBM will break out of the clouds some 40 seconds into its flight. The ABL will need about 10 seconds to lock onto the target and will lase it for between 18 seconds and a minute, depending on its distance and trajectory.

Harry E. Schulte, Air Force program executive officer for weapons, said that it won't matter if the target missile is polished to a mirror-like finish; the laser beam, focused to a spot the size of a large frying pan, will still be able to heat up the missile skin sufficiently to cause it to rip apart.

"Armoring the missile is not an effective countermeasure, either," Schulte said, since the additional weight required would make it hard to get the missile off the ground in the first place.

At \$1,000 a shot, the ABL system will be considerably more cost-effective on a per-target basis than other missile defense systems which "use a missile to hit a missile," Booen noted. A single ABL shot will be at least 50 times cheaper than a typical air-to-air missile.

The laser will be fired from a rotating turret mounted on the nose of the aircraft. Different versions of the turret are now being examined in a wind tunnel to find the optimum configuration.

Booen observed that the ABL has "inherent deployability" and can fly from the continental US to any overseas contingency within 24 hours, already loaded with its first magazine of laser fuel and carrying an augmented crew. With air-refueling capability, it can remain aloft and shooting as long as the laser fuel

holds out, without the need to stage out of a foreign base.

Small Footprint

As for replenishment, a single C-17 can lift enough laser fuel to a forward operating base to allow the ABL to engage 140 more targets. The ABL has "an incredibly small airlift footprint," Booen noted, especially when compared to other systems in the ballistic missile defense architecture.

With the ability to look for targets in a full 360-degree arc, the ABL will be able to instantaneously compute not only the launch point but the intended impact point of a TBM and relay this information to the theater commander and the chief of missile defense, so other BMD systems can be cued.

Knowing the launch point would allow attack airplanes to vector immediately to the vicinity to destroy any other missiles being readied for launch at that site, greatly simplifying the kind of vexing targeting problem first seen during the "Scud hunt" in the Gulf War.

The Battle Laser Team

Boeing's Defense and Space Group of the Military Airplanes Division in Seattle is the prime contractor and team leader. Boeing performs overall program management, integration of the laser system and command and control and will provide and modify the 747-400F platform aircraft.

TRW Space and Electronics of Redondo Beach, Calif., is developing the laser and ground support system, while Lockheed Martin Missiles and Space Advanced Technology Center in Palo Alto, Calif., is in charge of the beam control and the fire control systems.

The team won a \$1.1 billion contract for the initial phase of the project, which will lead up to delivery of the first test aircraft. If successful, the contract will be followed by another for engineering and manufacturing development, in which the design will be made final and facilities readied for production.

Boeing's team beat one led by Rockwell for the ABL contract. The two companies subsequently merged to form another Boeing unit, Boeing North American. Booen said that the company has "taken the best ideas of both teams" and worked them into the project.

In Roving Sands '97, an exercise conducted earlier this year at White Sands, N.M., the ABL was gamed into the scenario. Booen reported that the theater commander in chief "kept the ABL in the air" even after its laser fuel was exhausted because of the rich intelligence and surveillance data it was able to provide.

The exercise proved valuable, Booen said, because officers at 9th Air Force "really didn't know much about the Airborne Laser" and were able to see it in simulated action and learn "how to best employ it." For example, a tactic was developed of "moving the orbit up" closer to "the front lines" as air superiority was achieved and maintained; this allowed greater coverage of the enemy's territory.

The ABL will also be able to cue—and be cued by—planned Space Based Infrared System satellites.

When the Air Force has seven ABL aircraft available around 2008, the typical response to a contingency will be to send five aircraft so that a 24-hour watch can be maintained. Two would likely remain in the US for training, test, or depot purposes and could also serve as a reserve in the event of a second contingency arising elsewhere in the world.

The system will be considered to have reached true Initial Operational Capability with the delivery of three full-up ABL airplanes in 2006.

The program office is insisting that the first test aircraft be deployable and combat-capable "because of the JSTARS lesson," Booen said. Joint STARS was in operational test when the 1991 Gulf War broke out, and two test airplanes were drafted into service for that conflict. The system got its shakedown in real-world conditions and performed beyond expectations. The lessons learned from that deployment, however, led to many revisions and changes; it was not until this year that the "full-up" Joint STARS was declared operational.

The ABL project office has calculated that the seven fully operational laser airplanes will cost \$4.9 billion over 20 years to maintain and operate, making for a total program cost of \$11 billion.

Fighting Weight

Booen said constructing the flight weight laser module is the toughest



challenge. The program office wants to significantly cut the weight of the airplane because such a weight reduction would allow the aircraft to remain aloft longer without aerial refueling and reduce the fuel penalty for operating at a higher altitude, if such was necessary.

With the current off-the-shelf materials and design available, the demonstrated laser module weighs 5,536 pounds. The planned weight of the flight weight laser module is 3,104 pounds, and the goal is a production module weighing in at just 2,020 pounds. The weight reductions will be accomplished with new materials and a streamlined design.

The ABL program office is also pursuing as many streamlined acquisition procedures as possible, Booen noted. The program office itself is limited to no more than 50 persons—"unprecedented for a program of this magnitude," he noted—and many commercial practices are being used to keep costs down. For example, the Air Force will buy the 747-400F aircraft "just as if we were United Airlines or Federal Express ... and we will pay just like a commercial customer," with a time payment plan and a minimum of red tape.

"We're getting the best price the Air Force has ever gotten" on an airplane of such complexity, Booen asserted. The selling price is around \$145 million per "empty" airplane, without the laser system aboard.

Furthermore, the system program office is leaving more of the tasks usually done by the government to the contractors, who warrant the system in exchange for less oversight of the many steps involved in its construction.

Booen noted that, within the Air Force acquisition community, "not everybody is convinced" that commercial practices are the best way to obtain high technology systems, particularly those on which so much is riding. "We have to do some selling of this concept," he said.

However, the system itself is proving highly impressive to regional commanders in chief. Booen said he has taken a "road show" around to regional CINCs to explain the ABL's mission and capabilities. According to Booen, "They wanted us to buy more airplanes. That's a strong show of support."

Booen also noted that he has been asked whether the program could be accelerated, given the tremendous benefits it offers to protecting troops based abroad.

He said, however, that "right now, we're on a reasonable schedule" that is neither too risky nor too expensive. While shifting the program into a higher gear would be possible, the benefit would be measured in gains of only months rather than years. "We couldn't shave two years off the program," given the long lead time of components such as the 1.5-meter telescope, which must be carefully ground in a lengthy and complex process.

By mid-1997, the program was within one percent of its targeted cost and within two percent variance of its planned schedule, Booen noted.

The Airborne Laser, Booen asserted, will "revolutionize warfare ... much in the same way that stealth and radar did." While those programs were developed in complete secrecy, which "can be helpful" in developing a revolutionary weapon, the ABL is being developed "all in the white," or out in the open, avoiding the often significant costs and delays inherent in compartmentalization and ultra-secrecy. ■

By John L. Frisbee, Contributing Editor

The Only Way Out

When China entered the Korean War in November 1950, several thousand US troops were entrapped near the Chosin Reservoir in North Korea. Their rescue was imperative.

ON Sept. 15, 1950, United Nations forces staged a successful landing at Inchon on the west coast of Korea in a drive to outflank the North Korean army. UN forces then advanced rapidly into North Korea.

Gen. Douglas MacArthur predicted that North Korea would be defeated and the war ended by Thanksgiving. He thought there was little likelihood that China would intervene to save its Communist neighbor.

While UN and South Korean forces were advancing, the Chinese were surreptitiously moving more than a hundred thousand troops into position west of the Yalu River. It was one of the most successful clandestine maneuvers of military history. After a few minor feelers by small numbers of "volunteers," the Chinese struck in force on Nov. 27.

With virtually no support from air, armor, or artillery, some 120,000 Chinese troops overwhelmed the 12,000 Marines of the 1st Marine Division and the four Army battalions numbering about 3,000 men. The human wave attack left thousands of dead Chinese as the UN forces fought a courageous retreat in subzero weather to the vicinity of Hagaru-ri, a small village at the south tip of the Chosin Reservoir. There, they were surrounded by an estimated 70,000 enemy troops. Marines and Navy fighters kept the Chinese at bay.

The Marines and Army gathered their wounded and those suffering severe frostbite, to care for them as best they could. Encumbered by several hundred incapacitated men, there was no way out. The only solution was air evacuation.

Under fire from the surrounding hills, the Marines scraped out a 2,500-foot strip from the frozen ground. A dike at the north end made it a two-way strip with landings to the north and takeoffs to the south.

Maj. Gen. William H. Tunner, commander of the Far East Air Forces Combat Cargo Command, was assigned the perilous task of evacuation to the 21st Troop Carrier Squadron, based at Itazuke, Japan. Eleven of its C-47s, the only available aircraft that could operate from the primitive strip and carry a respectable load, were moved to K-27 on the east coast of Korea. They would haul supplies into Hagaru-ri, then fly the wounded back to K-27 for airlift in C-54s to hospitals in Japan.

Tunner's C-119s, which could not operate from the strip, dropped additional supplies to the besieged men. Marine and Navy fighter aircraft provided continuous coverage during daylight hours.

Operating from the strip called for skilled, experienced crews. The strip was a bowl, surrounded by mountains. There were no reliable local weather reports, no navigation aids, and unpredictable braking conditions on the frozen runway. The strip could be used only during the few hours of daylight. Approach was over enemy occupied mountains and departure through a narrow valley with hundreds of Chinese snipers concealed in caves.

Most of the C-47s were hit more than once, but none was downed by enemy fire. One pilot had his elevator cables severed by a lucky shot but, by coordinated use of trim tabs and throttles, made it safely back to K-27. One C-47 lost was in a takeoff accident in which there were no serious injuries.

The more or less standard load for evacuation flight was 35 men, compared to 19 or 20 for commercial DC-3s. That standard often was stretched to crowd in a few who otherwise would have

to be left in the cold until another flight arrived. One C-47 mushed off the runway with 46 aboard.

One of the many hazards faced by crews was poor winter visibility, especially in the early morning when the strip could be blanketed by smoke and fog. On one morning vertical visibility was fair but forward visibility near zero. A pilot circling over the strip announced that he could provide a controlled approach if anyone wanted to try it. He then directed the approach of a volunteer, telling him when to turn to final approach, then giving directional corrections on final. It worked until ground visibility improved.

The evacuation continued for six days, with crews often flying several missions a day to the point of exhaustion. When the last of the wounded and dead had been flown out, the tally showed that those 11 C-47 crews of the 21st Troop Carrier Squadron had evacuated 4,608 wounded and 81 dead.

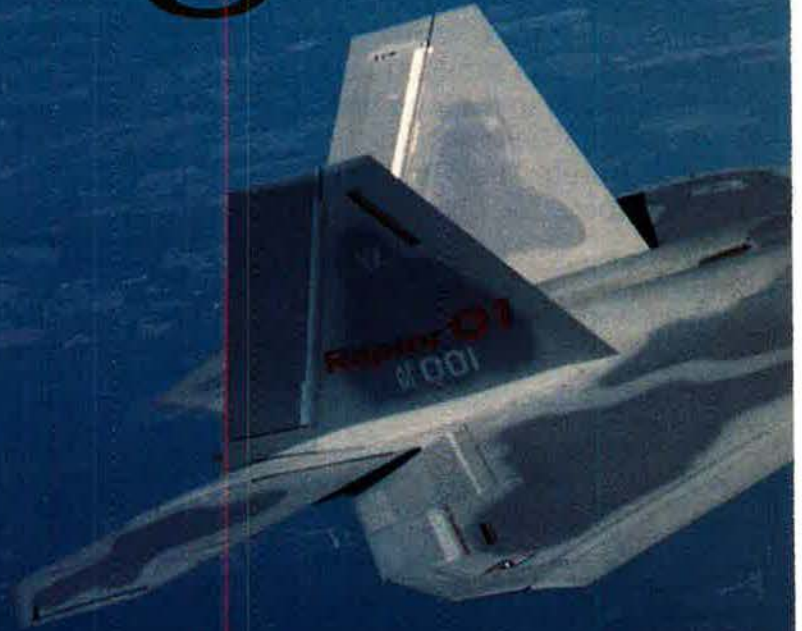
Those totals included some evacuations from Koto-ri, a second strip hacked out to support the able-bodied who fought their way out on foot when the air evacuation was completed. In total, the 1st Marine Division had suffered 8,700 casualties. Army losses were even heavier.

On their inbound flights, the C-47s had delivered 547,000 pounds of supplies, supplemented by air drops from C-119s that could not operate from either strip. The C-119s also parachuted several spans of a bridge to replace one south of Koto-ri that the Chinese had destroyed. The centerpiece of the evacuation was the 21st Squadron, however. That squadron was one of the first three units of the war to be awarded the Distinguished Unit Citation for its "conspicuous gallantry and heroism that distinguished it from other units in the Korean campaign." ■

As of right now, everything else is a target.

First Flight

A new era in aerial warfare began on Sept. 7 when the first production version F-22 Raptor lifted off from Dobbins ARB and slipped into the north Georgia skies. During the 58-minute flight, the landing gear was retracted and basic handling was explored. F-16 chase planes had trouble keeping up with the F-22, which easily reached 15,000 feet in under three minutes.



Chief F-22 test pilot Paul Metz reported the Raptor handled "just like the simulator," an omen of good correlation between predicted and actual performance. The flight was the first of 50 that Raptor 01 will make before being joined by the second test plane at Edwards AFB, Calif.



The world's new top gun will undergo several years of testing before being cleared for real-world missions, but it will take that long to safely investigate its awesome capabilities, which dwarf those of any potential rival. Stealthy, able to cruise at supersonic speeds without afterburner, and equipped with cutting-edge sensor and computer power, the F-22 will rewrite the textbooks on jet combat. ■

Aviation art can turn up in the smallest places—the corner of an envelope.

Stamp of Approval



The USAF 50th anniversary stamp, issued Sept. 18, was created by graphic artist Phil Jordan. It features the USAF aerial demonstration team—the Thunderbirds. The vivid image showing four F-16Cs flying in a diamond formation was taken by noted aviation photographer Philip Handleman.

The 50th anniversary of the establishment of the Air Force as a separate service has inspired aviation artists to create paintings, photographs, and other works of art commemorating the hallmark event. Some of that work, like aviation art from past years, has taken flight itself—leaving galleries behind to crisscross the nation on the corners of envelopes—in the guise of postage stamps.

The US Postal Service released a 1997 commemorative stamp (below) to honor the Department of the Air Force, but it had already issued another golden anniversary of the Air Force stamp (left) on Aug. 1, 1957, commemorating the 1907 formation of the Aeronautical Division of the US Signal Corps. Three F-104s and a B-52 graced the winning design, selected from more than 1,500 entries and created by Alexander Nagy Jr., of USAF's Air Research and Development Command.

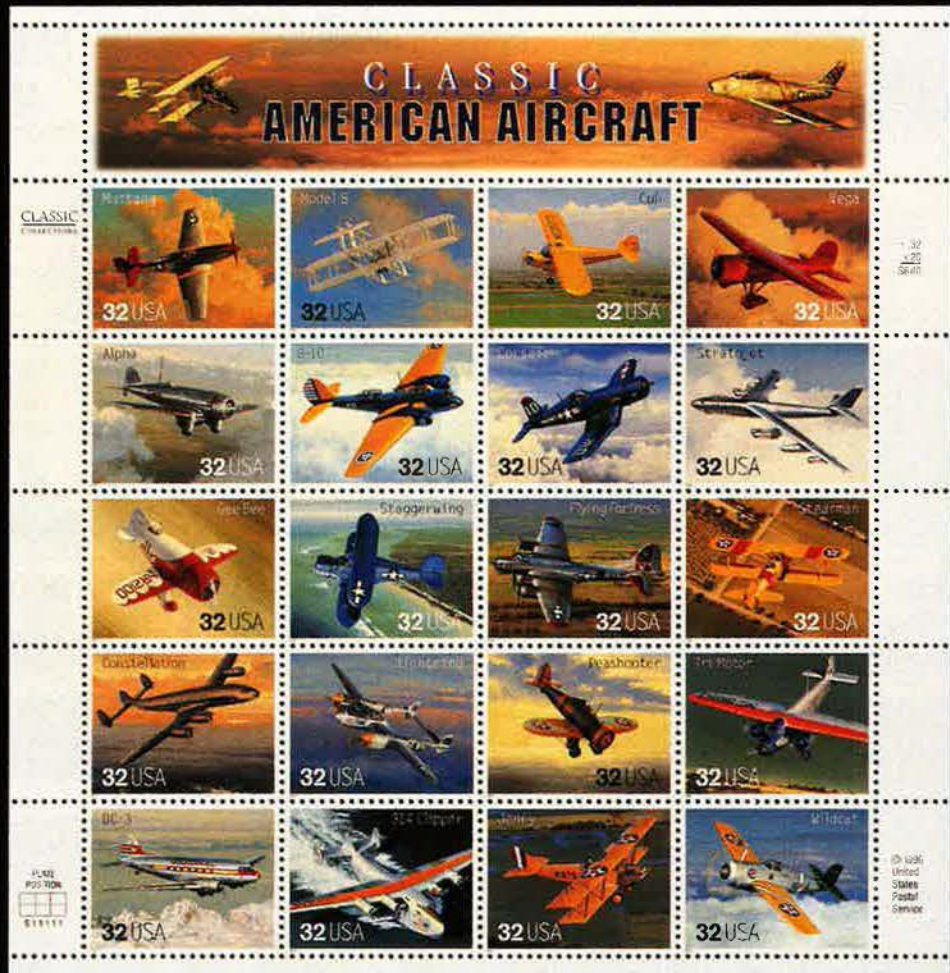


© USPS 1996

PHILIP HANDLEMAN DESIGN



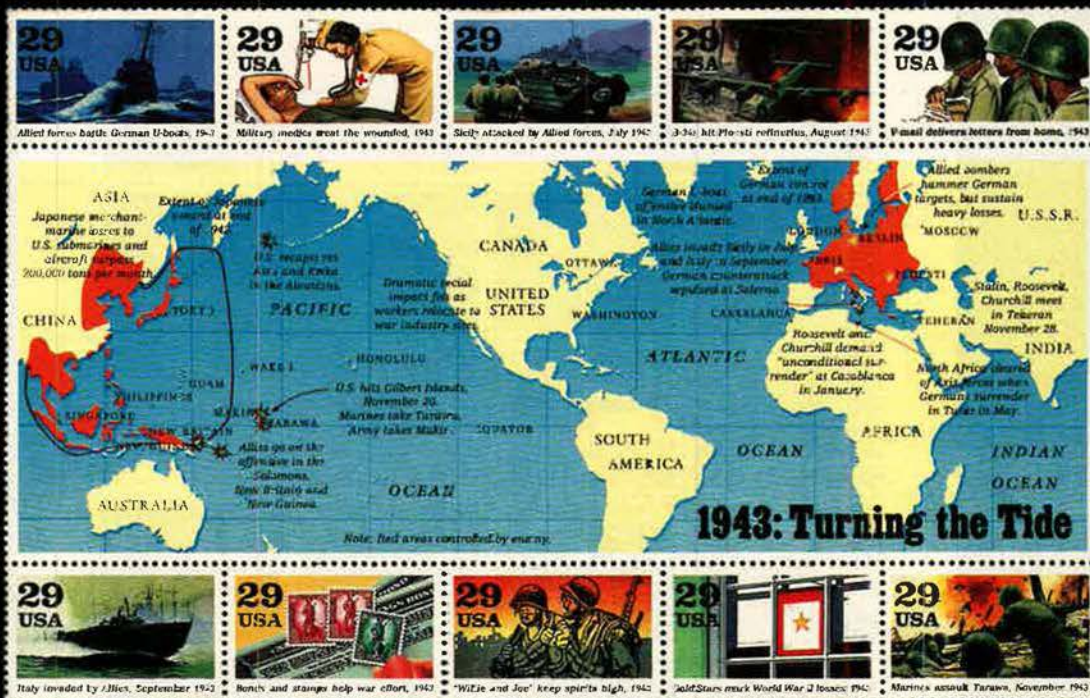
The first postage stamp to depict an airplane was this 1912 US parcel post stamp. The engraving shows a Wright Flyer, complete with "whirring" propellers. The skill and talent of early aviation artists make these tiny "canvases" as easy to appreciate as many paintings hundreds of times their size.



Another 1997 release was this set of 20 stamps (above), featuring classic aircraft from the spindly Wright Model B to the world's first swept wing bomber, the B-47 Stratojet. To create these stamps, Phil Jordan teamed with aviation artist William Phillips. Author and historian Walter J. Boyne helped choose the 20 aircraft—not an easy job, given the variety of aircraft in US aviation heritage.

The Curtiss Jenny stamp (left) with its meticulous detail is representative of the craftsmanship of each of the 20 images. The Jenny is no stranger to the philatelic world—in 1918, an error during printing of the 24-cent airmail stamp (below) created one of the stamp world's prized rarities.





Between 1991 and 1995 the USPS offered a series of stamps to commemorate the 50th anniversary of World War II. Ten stamps were issued for each year of the war and were also used to surround a large map showing pivotal events of the war during that year. The 1943 map collection, issued in 1993, is shown above. One stamp (right) depicts B-24s from Operation Tidal Wave flying over the burning remains of oil refineries, destroyed in a raid on Ploesti, Romania.



World War II glider forces won a spot on the 1944 sheet with the stamp at left, which features a painting of a CG-4A. Although the World War II stamp project was generally well-received, it was not without controversy. Conspicuously absent were B-29s and any mention of the atomic missions against Hiroshima and Nagasaki that forced Japan to surrender. A stamp showing a "mushroom" cloud was initially planned, then pulled and replaced with another, unrelated image.



On Oct. 14, 1997, exactly 50 years after the fact, Chuck Yeager was to repeat the feat that paved the way for the jet age by breaking the sound barrier again—this time in an F-15 instead of the X-1, shown on the stamp at left. The stamp, by illustrator Paul Salmon, had its first day of issue at Edwards AFB, Calif.



Aviation pioneers also have had their turn "pushing the envelope" through the US mail. Jacqueline Cochran set numerous aviation records, directed the Women's Airforce Service Pilots in World War II, and was enshrined in the National Aviation Hall of Fame in Dayton, Ohio. She is pictured above on this March 1996 stamp. At left is a September 1995 stamp honoring Capt. Eddie Rickenbacker, who entered World War I as a driver, then went on to become a pilot in the famed 94th Aero Pursuit "Hat in the Ring" Squadron and the war's top US ace, credited with 26 victories. Both illustrations were done by Davis Meltzer.

Space is well represented in this unique art form. This drawing of the 1969 moon landing was created by Paul Calle to commemorate this historic event.

Frequently taken for granted, these utilitarian works of art celebrating aviation history and achievement are beloved by collectors worldwide for their artistry and attention to detail. The rich history of aviation offers an inexhaustible supply of subjects sure to continue inspiring painters, graphic artists, and photographers to create additional images—whether for a gallery wall or an envelope. ■





WHEN HE'S OLD ENOUGH

TO SERVE HIS COUNTRY,

HOW OLD WILL HIS

FIGHTER TECHNOLOGY BE?



We hope he grows up in a peaceful world. But if America needs him, will he fly 30-year-old fighters or the state-of-the-art F-22 Raptor and Joint



Strike Fighter? Our opinion: You can't stand tall if you stand still. Pratt & Whitney. *THE POWER OF READINESS.*

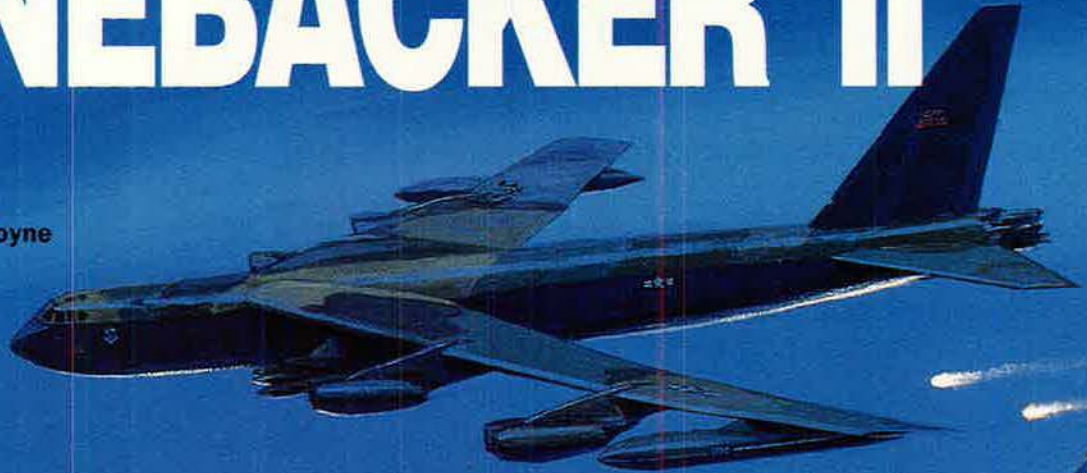


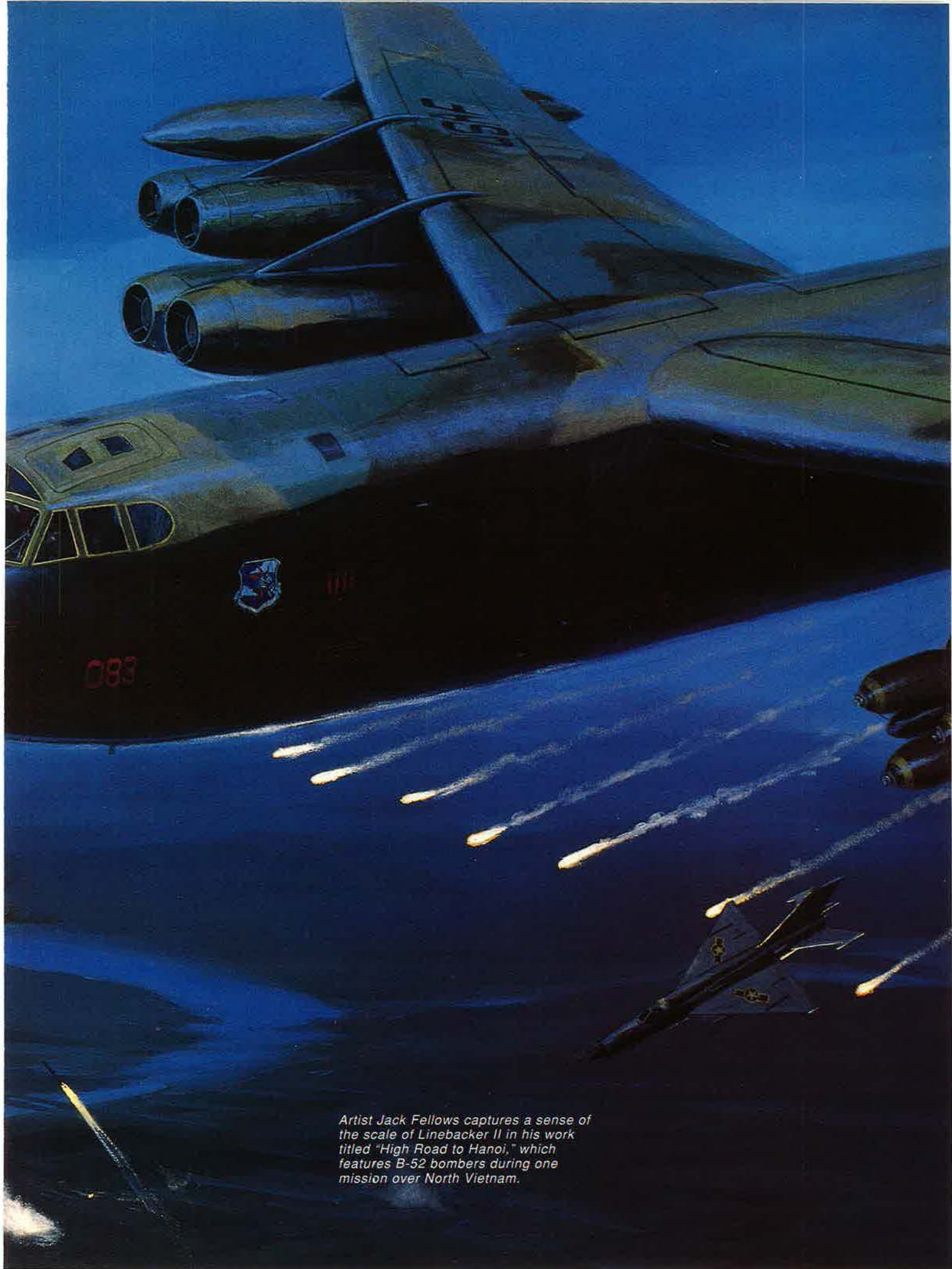
Pratt & Whitney
A United Technologies Company

Not since World War II had bombers been employed in an operation of this scope. After 11 days of bombing, Hanoi was ready for peace negotiations.

LINEBACKER II

By Walter J. Boyne





Artist Jack Fellows captures a sense of the scale of Linebacker II in his work titled "High Road to Hanoi," which features B-52 bombers during one mission over North Vietnam.



A B-52D leads a force of B-52Gs as the bombers start out from Andersen AFB, Guam, on the long flight west for Linebacker II. During the intensive 11-day campaign, B-52s flew more than 700 sorties against 34 key targets.

IN 1965, the Air Force entered direct combat in Vietnam, despite the fact that its leaders had always opposed involvement in Southeast Asia. It fought in an outstanding manner, though hampered by highly political rules of engagement that violated all principles of airpower. As it fought, the Air Force gathered the expertise it needed to combat an enemy whose strength grew year by year, fueled by virtually unlimited support from the Soviet Union and China.

In December 1972, 25 years ago next month, the intransigence of the tough and resilient North Vietnamese foe finally exposed the total failure of gradualist war policies set in motion years before by President Lyndon B. Johnson and Secretary of Defense Robert S. McNamara. In fact, the North's thorough defeat of South Vietnam's forces convinced Hanoi that it need not seriously pursue peace negotiations with the United States in Paris. Military victory was within its grasp.

For Washington, the situation was inordinately bleak. The process of "Vietnamization" and US military force withdrawal had reduced the American ground presence to about 26,000 troops—too few to win a major battle but enough for a huge contingent of prisoners in an inglorious defeat. President Richard M. Nixon called upon the Air Force to save the situation. It did so with a powerful, 11-day bombing campaign,

Operation Linebacker II. The campaign unfolded over the 12-day period of December 18–29, 1972. Because there was a one-day stand-down on Christmas Day, the operation came to be known by many as "the 11-Day War."

Seven Years Late

When President Nixon gave the order the Air Force collectively saluted and went to work, pleased at last to be carrying out the strategy it had advocated from the start—concentrated, sustained air attack against the enemy heartland. In 1965, that enemy heartland had been virtually defenseless and could have been attacked at will. Now, after a huge buildup, it was shielded by the most extensive and strongest integrated air defense system in the world.

The size and strength of those defenses were so great that many believed the B-52 heavy bomber, backbone of the Air Force's long-range force, would not be able to survive encounters with it. By 1972, North Vietnam had amassed a defense that included 145 MiG fighters, 26 SA-2 Guideline surface-to-air missile sites (21 in the Hanoi–Haiphong area), a heavy concentration of anti-aircraft artillery, and a complex, overlapping radar network that served an efficient and many-times-redundant command-and-control system. In addition, the radar network secretly had been improved in recent times by introduction of a new fire-control

Targets Hit by B-52s

Target	Planned Sorties
Lang Dang railroad yard	86
Kinh No military complex	78
Yen Vien military complex	63
Gia Lam railroad yard	54
Thai Nguyen TPP*	42
Van Dien supply depot	39
Hanoi Radio	36
Thai Nguyen railroad yard	36
Bac Giang TSP*	33
Haiphong railroad siding	27
Phuc Yen SAM storage site	23
Hanoi POL storage site	21
Trai Ca SAM support facility	20
Phuc Yen SAM support facility	18
Giap Nhi railroad yard	18
Duc Noi railroad yard	18
Haiphong POL storage site	18
Haiphong transfer station	15
Hanoi Bac Mai storage site	12
Kep railroad yard	12
Trung Quan railroad yard	12
Duc Noi storage site	12
Kep airfield	9
Quang Te airfield	6
Hoa Lac airfield	6
Phuc Yen airfield	6
VN 549 SAM site	3
VN 234 SAM site	3
VN 243 SAM site	3
VN 266 SAM site	3
VN 158 SAM site	3
VN 537 SAM site	2
VN 660 SAM site	2
VN 563 SAM site	2

Total **741**

Source: Pacific Air Forces

*TPP stands for Thermal Power Plant; TSP for Transshipment Point.

radar that improved the accuracy of the SA-2 weapons.

All previous air campaigns, including the initial Linebacker carried out in May–October 1972, were "limited," designed to interdict the overland routes by which the North resupplied its regular units and Viet Cong forces operating in South Vietnam. Linebacker II was to be different. The intent was to destroy all major target complexes in the Hanoi and Haiphong areas, using two distinct types of efforts, both of which had to contend with the mon-



Linebacker II Total Night USAF Sorties

Day / Date	B-52 Attack	SEAD	CAP/Escort	Chaff	Total
1: Dec. 18	129	17	63	22	231
2: Dec. 19	93	19	61	24	197
3: Dec. 20	99	18	55	26	198
4: Dec. 21	30	13	23	9	75
5: Dec. 22	30	15	27	15	87
6: Dec. 23	30	13	12	3	58
7: Dec. 24	30	16	22	16	84
8: Dec. 26	120	18	34	23	195
9: Dec. 27	60	23	32	23	138
10: Dec. 28	60	7	28	23	118
11: Dec. 29	60	11	33	25	129
Totals	741	170	390	209	1,510

Of 741 planned B-52 sorties, 12 were aborted. The Air Force SEAD (Suppression of Enemy Air Defenses) mission was carried out by F-105, F-4C, and F-4E fighters. CAP (combat air patrol), escort, and chaff dispersal were carried out by numerous types. In addition, US Navy and US Marine aircraft flew a total of 277 night support sorties in A-6, A-7, and F-4 aircraft.

soon season. An all-weather force of heavy B-52s and smaller F-111 attack aircraft would bomb by night while tactical aircraft would continue to press daytime attacks.

Air Force officers carefully shaped the list of targets so that the bombers could avoid civilian collateral damage and, most particularly, avoid damaging installations housing American POWs. As it turned out, one of the valuable side effects of Linebacker II was the boost in morale it brought prisoners as they saw their Communist captors tremble at the explosions and realized that at long last, the United States was fighting the war as it always should have been fought.

The initial orders calling for the Linebacker II effort specified three days of intensive effort, with a strong prospect of continued bombing. Throughout the Pacific theater, Air Force headquarters, flight lines, supply depots, barracks, mess halls, and all the other elements of a fighting force throbbed with preparatory activity. The flight line at Andersen AFB, Guam, was jammed with an enormous force of 99 B-52Gs and 53 B-52Ds. The mission from Guam would run about 12 hours and require in-flight refueling. At U Tapao Royal Thai Airfield, Thailand, another 54 B-52Ds were available. The mission from U Tapao would take only about three to four hours and did not require in-flight refueling.

All of the D models of the BUFFs had received the latest electronic coun-

termasures modifications, while only half of the G models had been so modified. This would prove to be an unfortunate and at times fatal difference, because the unmodified G models turned out to be vulnerable to SAMs.

Double Duty

Air Force tactical air units were called upon for double duty. They were to fly in support of the nighttime bomber attacks then go on to conduct a vigorous attack effort in the daytime. In the course of the campaign's 11 days, tactical units flew 530 daytime sorties, including 126 for suppression of SAM

complexes, 273 for MiGCAP [MiG Combat Air Patrol] or escort, 85 for chaff dispersal, and 46 other types of missions. By night, tactical air units flew 769 sorties, including 170 SAM suppression, 390 MiGCAP/escort and 209 chaff.

The effectiveness of the US tactical force's precision guided munitions was greatly diminished by poor weather over the North. Still, when the campaign was over, Gen. John W. Vogt Jr., commander of 7th Air Force, would rate one precision guided weapon to be equal in worth to 100 "dumb bombs." The tactical air units also received excellent support from US Navy and Marine Corps aircraft.

As Linebacker II operations unfolded, a number of critical elements played a role in the execution of the attacks, including routes, spacing, altitudes, bomb loads, and basing. The routes to and from the targets were governed by many factors, including disposition of surface-to-air missile sites, the proximity of the Chinese border, and strength of the prevailing winds. Flight tactics called for formations of three B-52s, separated by 500 feet in altitude and one mile in horizontal distance.

Unlike bomber forces in the Korean War, the B-52s were under the command of Strategic Air Command, not "chopped" to the theater commander. SAC headquarters had ordered aircraft commanders not to take evasive action in the face of threats



Displaying a full internal bomb load, this B-52D was one of 54 marshaled at U Tapao Royal Thai Airfield, Thailand, during Linebacker II. In all, B-52s would drop 15,000 tons of bombs.

Hank Marlos via Warren Thompson

from either SAMs or MiGs during the long run in from the initial point to bombs away. The speed and direction of the turn after the bomb drop was designed to get the bombers out of SAM range as soon as possible. The tactics were needed primarily because SAC wanted to preserve electronic countermeasures integrity of the three-ship formations while making sure that only military targets were hit.

It took nearly two hours for 87 B-52s from Guam to taxi, take off, and become airborne on the afternoon of Dec. 18, 1972. They then were joined in the attack by 42 additional B-52s flying out of U Tapao, forming the largest attacking bomber force assembled since World War II. The B-52 targets on the first day were Kep airfield, Hoa Lac airfield, Phuc Yen airfield, Kinh No vehicle repair site, Yen Vien rail yards, Hanoi railroad repair facility, and the main Hanoi radio station. The F-111 force was assigned missions against nine targets.

The North Vietnamese leaders had expected a US air attack, but they were shocked by the intensity of the assault on Dec. 18. Reacting swiftly, the forces of the North used their SAMs effectively and quickly began to concentrate their efforts on the post-target turn.

SAM Dangers

This turn was the point of greatest B-52 vulnerability, for three reasons. First, it was here that the North Vietnamese radar had the greatest chance to "burn through" the B-52 cells' combined electronic countermeasures protection. Second, a banking B-52 presented a greater radar cross section to the defenders. Finally, the turn would reverse the benefits of the wind, transforming a 100-knot tailwind into a head wind that slowed down the enormous aircraft.

On Day 1 of the campaign, the Communist forces fired more than 200 SAMs, often sending them up in four- or six-weapon volleys. Once, the air was filled with more than 40 SAMs. On that day, the US lost three B-52s, two from Andersen and one from U Tapao, as well as one F-111. The losses were lighter than had been expected and were not considered unacceptably high. For the entire 11 bombing days, the BUFF crews up-



This U Tapao B-52D shows the distinctive black underside favored at the time for night missions. Clearly visible also is the left wing outboard pylon (at right in photo) loaded with extra bombs for Linebacker II missions.

held the Air Force tradition of never being turned back from an assigned mission, pressing on regardless of the ferocity of the enemy attack. On Day 1, SSgt. Samuel Turner, tail gunner on Brown 03, also shot down a MiG-21, the first in B-52 combat history.

Tactics were revised slightly on Day 2 of the attack, but routes remained the same. Bomber cell altitudes were lowered to 34,500 and 35,000 feet, the better to place the B-52s more securely within the chaff corridors being laid by the F-4s. Time separation between cells and between Times Over Target (TOTs) was increased to four minutes. Evasive action was authorized on both inbound and outbound routes. The results of the changes seemed to be positive. On Day 2, the North launched some 180 SAMs at the 93 attacking B-52s, but no losses occurred.

On Day 3, tragedy struck. Only 90 of 99 planned B-52s sorties were effective and six BUFFs were shot down. Two Gs and one D were lost in the first wave and an identical number were downed in the third wave. Three were struck prior to bomb release and three afterward; four went down near Hanoi while two made it out of North Vietnam. None of the lost B-52Gs had been modified to carry the new AN/ALT-22 ECM equipment. In the first three days of the campaign, five unmodified Gs and only one modified G had

been lost. Of the total of nine B-52s lost to date, five had been hit during their turn off the target.

This constituted an unacceptably high seven-percent loss rate. Even so, Gen. John C. Meyer, the commander in chief of SAC, made the tough decision to press on, calling for even heavier strikes on SAM sites and storage areas. His decision proved to be correct, for the enemy had been hurt, too, and now was rapidly expending SAMs.

Tactics were altered again, too; cell separation and TOTs were compressed to 90 and 120 seconds, respectively. The altitude separation between cells was increased, and withdrawal routes were changed, enabling some bomber streams to withdraw directly toward the Gulf of Tonkin. Electronic warfare officers received authorization to add an ALT-28 ECM transmitter to their system with the intent of jamming the SAM downlink frequency.

On Day 4 of the campaign, attacks were staged by only 30 heavy bombers, all D models from U Tapao. Planning was simplified and a total of 75 tactical aircraft were available for support. Two B-52s were lost to SAMs in an attack on Bac Mai airfield.

On each of the next three days—Days 5, 6, and 7—USAF carried out attacks with packages of 30 B-52s, losing none. The Air Force was making good use of its experience and new tactics (including altitude changes, multiple approach paths,



North Vietnam fired some 1,240 SAMs, but tactical forces like this pair of USAF F-105Fs armed with AGM-45 Shrikes helped keep US losses low during Linebacker II.

and the selection of new targets outside the Hanoi–Haiphong area) to confuse the North Vietnamese defenders. On Dec. 24, the seventh day of the air campaign, A1C Albert Moore, a gunner on Ruby 03, shot down a MiG.

Wrong Signal

US bombing forces stood down on Christmas Day in order to give planners a chance to review events so far and give the crews some rest. Politically, the stand-down was like the previous bombing halts, a well intended “signal” that negotiations were in order. Once again the North Vietnamese interpreted the respite as a sign of American weakness, and they spent the day feverishly restocking their SAM sites with missiles.

The next day, Day 8, the bombing resumed. All of the previous experience gained was exploited in new tactics. Seventy-eight B-52s in four flights attacked Hanoi simultaneously from four different directions. At the same time, 42 aircraft in three other flights struck Haiphong, North Vietnam’s principal harbor and transshipment point for military supplies.

The compressed nature of the attack intensified the difficulties of the 114 tactical support aircraft. However, they executed the mission flawlessly. The versatile USAF F-4 Phantom served as the MiGCAP and also dispensed the dense chaff blanket necessary to shield the B-52s

from enemy radar. Phantoms and the redoubtable Republic F-105 Thunderchiefs suppressed SAMs in the dangerous Wild Weasel mission.

Aging EB-66s were forced by the heavy SAM threat to operate farther than desired from the target area, but they nonetheless provided efficient ECM support. F-111s and Vought A-7s attacked northern airfields. KC-135 tankers furnished fuel to all types of aircraft, often moving well into a combat area to reach aircraft in trouble. The Air Force Linebacker II team was completed by C-130 search and res-

cue aircraft, HH-53 Jolly Green Giant helicopters, and EC-121s.

The Navy and Marines both supplied F-4 aircraft for the MiGCAP and BARCAP [Barrier Combat Air Patrol], while A-6s attacked designated targets. Even though there was still no centralized control of all air assets, the Navy and the Air Force worked together closely.

The attack on Day 8 went off with precision, although two B-52s were lost because of the heavy increase in SAM firings.

The United States Air Force had now established a clear ascendancy over the North Vietnamese defenders. Sixty B-52s were dispatched on each of the three remaining nights of the campaign, Days 9, 10, and 11. Two B-52s were shot down on Dec. 27, one going down in North Vietnam and the other making it back to Thailand, where the crew bailed out.

Under Siege

On the final day of the campaign, Day 11 on Dec. 29, USAF crews—both bomber and support—were at the peak of their form while the enemy was in obvious distress, able to fire only a total of 23 SAMs. Where once they had salvoed six SAMs at a time, they now were reduced to individual snap shots. They were almost out of SAMs, their MiGs were shut down, and their radar and communication links were disrupted. In short, they were at the mercy of the United States.



US tactical forces numbered 114, including USAF F-111s and A-7s, such as these shown here, primarily used to attack airfields. Tacair units flew support at night, but also pressed the attack during the day—flying 530 sorties in all.

The US had proved decisively that B-52s, supported by tactical air assets, were an effective force, able to meet and defeat the enemy. In the miserable prisons in which they were held, American prisoners of war experienced an unimaginable elation at seeing their brutal captors frightened and suddenly polite.

The result of Linebacker II was exactly what had been predicted by those who had advocated full application of airpower against North Vietnam: a military victory. The badly shaken North Vietnamese accepted that the war was at a stalemate, returned to the negotiating table in Paris, and signed the Paris Peace Accords on Jan. 27, 1973. Within 60 days of the signing, 591 American POWs were released and back in the United States.

In Linebacker II, SAC's B-52s had flown 729 sorties out of a total of 741 planned sorties and dropped 15,000 tons of bombs. North Vietnamese forces had fired about 1,240 SAMs. The Air Force lost 15 B-52 bombers, which amounted to a loss rate of less than two percent. Of 92 B-52 crew members involved in the losses, 26 were recovered, 25 came up missing in action, 33 became prisoners of war, and eight were either killed in action or later died of wounds. In addition, the US lost two F-111As, three F-4s, two A-7s, two A-6s, one EB-66, one HH-53, and one RA-5C.

As soon as Hanoi signaled it wished to resume peace negotiations, Linebacker II raids immediately ceased. Some in the Air Force argued that this was a mistake; if the United States continued the attacks, they maintained, North Vietnam would have to accept a military defeat. Instead, they secured at the peace table a political victory that they would in due course translate into a full-scale military conquest of South Vietnam.

Not long after the end of Linebacker II and the formal return of the US prisoners of war, United States forces at last formally disengaged from the war in Southeast Asia. There then followed what Henry Kissinger described as a "decent interval" of about two years, after which Hanoi, knowing that it no longer faced any realistic threat of another Linebacker II, invaded



Bruce Chavis via Warren Thompson

USAF Aircraft Losses Dec. 18–29, 1972

Date	Type	Call Sign	Target (Mission)	Cause
Dec. 18	F-111A	Snug 40	Hanoi Radio	unk.
Dec. 18	B-52G	Charcoal 01	Yen Vien complex	SA-2
Dec. 18	B-52G	Peach 02	Yen Vien complex	SA-2
Dec. 18	B-52D	Rose 01	Hanoi Radio	SA-2
Dec. 20	B-52D	Quilt 03	Yen Vien complex	SA-2
Dec. 20	B-52G	Brass 02	Yen Vien complex	SA-2
Dec. 20	B-52G	Orange 03	Yen Vien complex	SA-2
Dec. 20	B-52D	Straw 02	Gia Lam rail yard	SA-2
Dec. 20	B-52G	Olive 01	Kinh No complex	SA-2
Dec. 20	B-52G	Tan 03	Kinh No complex	SA-2
Dec. 21	B-52D	Scarlet 03	Bac Mai airfield	SA-2
Dec. 21	B-52D	Blue 01	Bac Mai airfield	SA-2
Dec. 22	F-111A	Jackle 33	Hanoi port facility	unk.
Dec. 23	EB-66C	Hunt 02	(non-combat)	engine out
Dec. 26	B-52D	Ebony 02	Giap Nhi rail yard	SA-2
Dec. 26	B-52D	Ash 01	Kinh No complex	SA-2
Dec. 27	F-4E	DeSoto 03	(strike escort)	MiG-21
Dec. 27	F-4E	Vega 02	(MiGCAP)	MiG-21
Dec. 27	HH-53	Jolly Green	(rescue)	small arms
Dec. 27	B-52D	Ash 02	SAM site	SA-2
Dec. 27	B-52D	Cobalt 02	Truong Quan rail yard	SA-2

Source: Pacific Air Forces

South Vietnam across a broad front. The Communist forces entered Saigon on April 30, 1975, and unified the two Vietnams under Hanoi's totalitarian control.

To Air Force observers, the events of 1975 pointed up a classic case of "what might have been." To them, full application of airpower in a Line-

backer II-type campaign in 1965, a decade earlier, would have achieved military victory, prevented the long and costly US involvement in Southeast Asia, saved South Vietnam as a nation, and allowed the US to escape the calamitous effects that the Vietnamese war has afflicted on America ever since. ■

Walter J. Boyne, former director of the National Air and Space Museum in Washington is a retired Air Force colonel and author. He has written more than 400 articles about aviation topics and 28 books, the most recent of which is Beyond the Wild Blue: A History of the United States Air Force, 1947–1997. His most recent article for Air Force Magazine, "Hap," appeared in the September 1997 issue.

A F A 1 9 9 7 N A T I O N A L

CONVENTION

The Big Week

By Tamar A. Mehuron, Associate Editor



It was a full house: AFA's 1997 National Convention in Washington brought together more than 9,000 people, including 352 delegates—shown here in a business session—from nearly all 50 states.

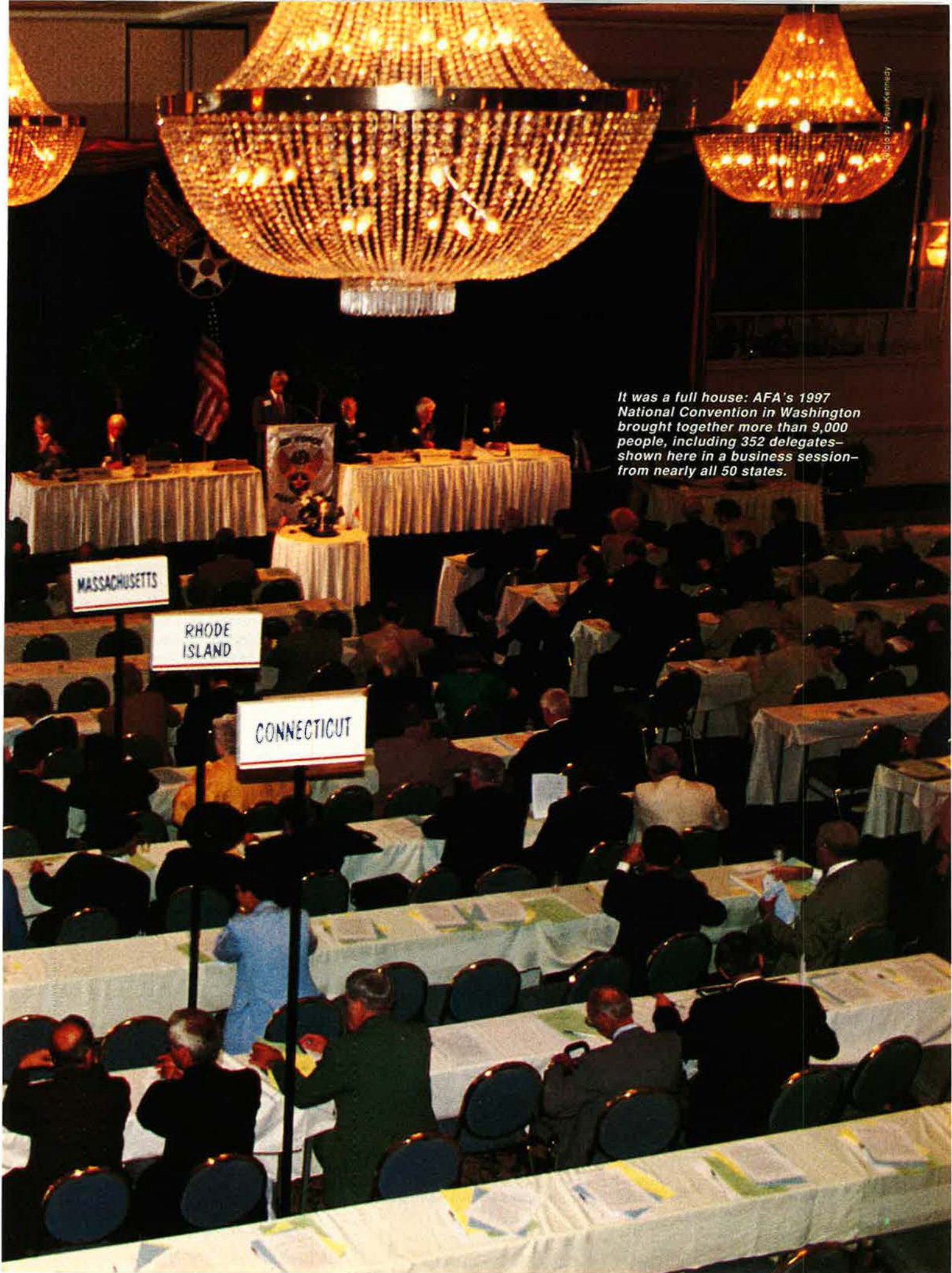


Photo by Paul Kennedy



AFA's councils, senior enlisted advisers from USAF major commands, and Aerospace Education Foundation trustees were among the groups meeting during the convention. Above, William McBride, chairman of the Constitution Committee, delivers his report to AFA board members, including Mary Anne Thompson, outgoing secretary; Gene Smith, chairman of the board; and Doyle Larson seated at the head table (l-r).

DELEGATES from Guam to Georgia attending the AFA 1997 National Convention capped a year of celebration and remembrance by honoring the 50th anniversary of the Air Force. The three-day event, held at the Sheraton Washington Hotel Sept. 15-17 in Washington, featured speeches, ceremonies, and music saluting five decades of Air Force achievements.

Highlighting the convention was the Sept. 16 Air Force Anniversary Dinner. In that evening's award ceremony, the Air Force Association presented its prestigious H. H. Arnold Award to the Men and Women of the United States Air Force for serving the nation for 50 years "with courage, skill, and dedication" and for building what is "unquestionably the finest air and space force in the world." Accepting on their behalf were outgoing Secretary of the Air Force Sheila E. Widnall and Chief Master Sergeant of the Air Force Eric W. Benken.

AFA that night also honored former Secretary of Defense William J. Perry, presenting him with the W. Stuart Symington Award for inspirational leadership as the 19th Secretary of Defense. Perry stepped down in January 1997. The USAF

Academy Cadet Chorale, directed by Joseph Galema, performed a musical tribute to the Air Force's 50th anniversary.

The 1997 keynote speaker, Secretary of Defense William S. Cohen, opened the convention on Sept. 15. Convention delegates also heard major addresses by Widnall and

USAF Vice Chief of Staff Gen. Ralph E. Eberhart. Retired Chief Master Sergeant of the Air Force and former AFA National President James M. McCoy spoke at the Outstanding Airmen of the Year dinner on the first evening, with Benken serving as toastmaster. The three-day Aerospace Technology Exposition featured 97 exhibitors.

Election of officers. Doyle E. Larson of Burnsville, Minn., was reelected AFA president for a second term. Gene Smith of West Point, Miss., was reelected chairman of the board for a second term. William D. Croom Jr., of Colorado Springs, Colo., was elected national secretary for a first term, and Charles H. Church Jr., of Lenexa, Kan., was reelected national treasurer for a third term.

More than 9,000 people attended convention activities at the Sheraton Washington Hotel. The 352 registered delegates, representing 46 states and the District of Columbia and Guam, were joined by senior military and government officials attending the Aerospace Technology Exposition, featured speeches, and social events. On hand to cover the convention were 147 reporters and other news media representatives.

Meeting concurrently with the



It wasn't all business at the board meeting. National Director William Lafferty (left) and James Trail, national director emeritus and a former AFA chairman of the board, at one point put their notes aside and swapped stories.

Staff photo by Guy Aceto



On Sept. 14, 1997, the AFA Board of Directors saluted 35 of their number who were changed to the status of board member emeritus. Chairman of the Board Gene Smith praised these men and women for their years of dedicated service in building AFA into the strong organization it is today. The action implements a change to the National Constitution which limits service as a permanent director to three years. The change was passed in 1992 and became effective with the close of the 1997 National Convention. The new national directors emeriti are (seated, l-r): William Spruance, George Douglas, Edward Monaghan, R.L. Devoucoux, John Brosky, John Alison, James Trail, John Henebry, Mary Ann Seibel, and Walter Scott. Standing (l-r): William McBride, Joseph Falcone, Richard Becker, Bryan Murphy Jr., Robert Carr, Sherman Wilkins, Jan Laitos, O.R. Crawford, Martin Harris, Joseph Assaf, David Blankenship, Earl Clark Jr., H.B. Henderson, Russell Dougherty, E.F. "Sandy" Faust, Jack Price, and Jon Donnelly. Not pictured are: Jack Gross, Gerald Hasler, Frank Lugo, Nathan Mazer, Ellis Nottingham, William Rapp, Peter Schenk, and Joe Shosid.

convention delegates were trustees of the Aerospace Education Foundation and USAF major commands' senior enlisted advisers, as well as AFA's Air National Guard Council, Civilian Advisory Council, Enlisted Council, Junior Officer Advisory Council, Reserve Council, Veterans/Retiree Council, and the Air Force Memorial Foundation.

There was also a joint meeting of the national executive boards of the Arnold Air Society and the Angel Flight/Silver Wings Society.

Resolutions and changes. Convention delegates unanimously adopted a resolution concerning the Air Force Memorial. It states:

"On behalf of its 160,000 members, the Air Force Association declares its strong and unqualified support for the establishment of the Air Force Memorial on its approved site



Backed by Robert Springer (left), president of the Air Force Memorial Foundation, and AFA leaders such as David Blankenship, national director emeritus, delegates adopted a resolution strongly reaffirming support for the memorial.



Between addresses by national defense leaders, awards presentations, business meetings and elections, and gala events, national directors emeriti George Douglas, R.L. "Dev" Devoucoux, and John Brosky (l-r) were kept busy.

on Arlington Ridge in Arlington, Va. The Air Force Memorial will not encroach on the Iwo Jima Memorial, which is located up a hill, beyond a grove of trees, on its own seven-acre site. Since the project began in 1992, the Air Force Memorial Foundation has meticulously followed the stringent rules and the elaborate process embedded in law. The Marine Corps raised no objections to the Air Force Memorial when the plan was presented to the senior leadership in 1994, before approval for the Arlington Ridge site was requested."

The resolution stemmed from efforts by a local Arlington citizens group and its allies to halt the project and have the memorial erected on a different site.

Congressional activity. AFA state delegations sponsored 24 Congressional breakfasts on Tuesday and Wednesday. Sixty-six members of Congress participated. Among them were Senate Armed Services Committee members, including Sens. Max Cleland (D-Ga.), Charles S. Robb (D-Va.), and James Inhofe (R-Okla.). Others who attended included Sens. Slade Gorton (R-Wa.), Robert F. Bennett (R-Utah), Ernest F. Hollings (D-S.C.), and Kay Bailey Hutchison (R-Texas), who are on the Senate Appropriations Committee.

Also participating in the AFA breakfast meetings were several

members of the House National Security Committee, including Reps. Jim Saxton (R-N.J.), Michael Pappas (R-N.J.), Saxby Chambliss (R-Ga.), Walter B. Jones Jr. (R-N.C.), Bob Stump (R-Ariz.), James Hansen (R-Utah), Duncan Hunter (R-Calif.), Ike Skelton (D-Mo.), Van Hilleary (R-Tenn.), Bob Riley (R-Ala.), Owen B. Pickett (D-Va.), Norman Sisisky (D-Va.), Herbert Bateman (R-Va.), Joel Hefley (R-Colo.), and Silvestre Reyes (D-Texas). Norman D. Dicks (D-Wash.), member of the House

Appropriations National Security Subcommittee, also participated. Two state delegations met separately with their representatives: the Kansas delegation with Rep. Jerry Moran (R), and the New York delegation with Rep. Gerald B. H. Solomon (R).

AFA's New York delegation presented an AFA appreciation award to Sen. Alfonse M. D'Amato (R-N.Y.), while Bateman, Pickett, and Sisisky received AFA appreciation awards from the Virginia delegation. Congressman J.C. Watts (R-Okla.) received the Earl T. O'Loughlin Achievement Award from the Oklahoma delegation.

Widnall and Eberhart took part in several of the Congressional breakfasts. Widnall visited breakfasts hosted by the Northwest Region, Nebraska, Arizona/Nevada, Alabama, and Virginia. Eberhart made appearances at the North Carolina breakfast and the joint breakfast of the Missouri, Kansas, and Iowa delegations. A visit by the AETC commander, Gen. Lloyd W. Newton, highlighted the Texas and Georgia breakfasts. Other senior Air Force officials also participated in the various delegation breakfasts.

Other elections. Six new national vice presidents were elected, and six national vice presidents were reelected. Newly elected are R. Donald Anderson (Central East Re-



At the AFA board meeting, AFA National President Doyle Larson (right) met Capt. Gilbert Petrina, Ark-La-Tex (La.) Chapter president, and Maj. Kevin Sluss (center), national director. Petrina served for several years on AFA's Junior Officer Advisory Council and is a former national director.

gion), George E. Masters (North Central Region), Ronald E. Palmer (New England Region), Jack H. Steed (Southeast Region), Charlie Thomas (Southwest Region), and Mark J. Worrick (Rocky Mountain Region).

Elected to the Board of Directors for three-year terms were Gerald S. Chapman of Saratoga, Calif., Samuel M. Gardner of Garden City, Kan., Daniel C. Hendrickson of Layton, Utah, Victor C. Seavers of Eagan, Minn., Mary Anne Thompson of Oakton, Va., and L.B. "Buck" Webber of Fort Worth, Texas. Elected for a one-year term was William L. Sparks of Daytona Beach, Fla., who filled the position vacated by William D. Croom Jr. when he was elected national secretary.

Three new Under-40 directors joining the AFA board are Sharon M.



Photo by Paul Kennedy

One of the best parts of convention is the chance to catch up with old friends. John Alison (left) and his wife, Penni, enjoyed chatting with Russell Dougherty (center) and Anna Chennault, widow of Flying Tigers legend Lt. Gen. Claire Lee Chennault. Alison is a 14th Air Force Flying Tigers ace.



Photo by Paul Kennedy

Good news from Aerospace Education Foundation Chairman of the Board Thomas McKee. Speaking before AEF trustees, he described the ever-increasing participation in the USA Today/AEF "Visions of Exploration" program that motivates students in their math and science studies.

Johnson of Ravenna, Ohio, Julie E. Petrina of Perry Hall, Md., and Lisa A. Smith of Fresno, Calif.

For a complete list of vice presidents and directors, including those reelected, see "This Is AFA" on p. 94.

Aerospace Education Foundation. A video on "Preparing Ourselves, Our Community, and Our Air Force for the Next 50 Years" won the foundation's annual contest for presentations by AFJROTC cadets. The winning entry was from Unit NE-771 at Bellevue West High

School in Bellevue, Neb. The cadets displayed artifacts from World War II and the Korean, Vietnam, and Gulf wars. They also participated in the Annual Arrows to Aerospace Parade, the Adopt-a-Road, and the Adopt-a-Child programs.

Steven A. Bachmeyer, nominated by the John W. DeMilly Jr. (Fla.) Chapter won the Christa McAuliffe Memorial Award as the year's outstanding aerospace science, mathematics, and computer

science teacher. The John W. DeMilly Jr. Chapter received the Sam E. Keith Jr. Aerospace Education Award of Excellence. The award is named in honor of the late AFA leader and former national president and board chairman from Fort Worth, Texas. Edith A. Magerkurth of Merced, Calif., won the George D. Hardy Memorial Award for outstanding contributions to furthering the scientific, technical, and aerospace education of the nation.

Acknowledgments. Parliamentarian for the AFA National Convention was Martin H. Harris. Jack C. Price was sergeant at arms. Inspectors of elections were R. Donald Anderson (chairman), Thomas J. Kemp, and William A. Lafferty. Cheryl L. Waller chaired the Credentials Committee, serving with Henry W. Boardman and John J. Politi.

The Association is particularly grateful to a corps of volunteers who assisted the staff in convention support: Tammy Baker, Cecil Brendle, Jimmy Canlas, Evie Dunn, Noel Garcia, Charles and Mary Lucas, Jenifer Petrina, Glenda R. Shepela, Debbie and Greg Snyder, Dana Steinhauser, Janet Voltz, and Leola Wall.

The 1998 convention will be held at the Sheraton Washington Hotel, Washington, Sept. 14-16, 1998. ■

Photos by Susan Kennedy



Chairman of the Board Gene Smith (left) and Illinois State Vice President John Bailey (center) talk with Rep. Donald Manzullo (R-Ill.) at the one of the Congressional Breakfast sessions during the convention.

Wyoming's Cheyenne Cowboy Chapter President Irene Johnigan gives Sen. Craig Thomas (R-Wyo.) an earful about the new Air Force Memorial. Thomas, a former Marine and chairman of the Parks, Historic Preservation, and Recreation Subcommittee, held a hearing Sept. 11 related to the controversy that had arisen over location of the memorial on Arlington Ridge.



Several Congressmen, USAF officials, and AFA members gathered for Virginia's breakfast. They are (l-r) Sen. Chuck Robb (D-Va.), Rep. Norman Sisisky (D-Va.), outgoing Secretary of the Air Force Sheila E. Widnall, Rep. Herb Bateman (R-Va.), Lt. Gen. Dave Vesely, assistant vice chief of staff, and George D. Golden, AFA's Virginia state president.

Rep. Joel Hefley (R-Colo.) addresses the Colorado breakfast. Among those attending were newly elected National Secretary William D. Croom Jr., new National Director Emeritus George M. Douglas, and Jack Powell, a member of AFA's Finance Committee.



Photos by Susan Kennedy



Florida State President Robert Patterson (left) took a few moments at the Florida Congressional Breakfast to present Rep. Dave Weldon (R-Fla.) with a plaque for his "Outstanding Space Program Support."

Rep. John E. Sununu (R-N.H.), at left, is being briefed on the Air Force Memorial issue by AFA members R.L. "Dev" Devoucoux, a new national director emeritus, and Robert "Mac" McChesney (right).



Awards

AFA National President Doyle E. Larson presents former Secretary of Defense William J. Perry with the W. Stuart Symington Award for Perry's "inspirational leadership" as the 19th defense secretary.



Photo by Paul Kennedy

Crew Awards and Special Citations

Award	Recipient	Achievement	Accepted by
Lt. Gen. Claire Lee Chennault Award	Maj. Mark A. Altobelli, 366th Wing, Mountain Home AFB, Idaho	Best aerial warfare tactician	Maj. Mark A. Altobelli
Brig. Gen. Ross G. Hoyt Award	Tora 98 aircrew of the 909th Air Refueling Sq., Kadena AB, Japan	Best air refueling aircrew	Capt. Scott A. Fitzgerald
Gen. Curtis E. LeMay Award	Crew A72, 96th Bcmb Sq., Barksdale AFB, La.	Best bomber aircrew	Capt. John L. Miller
Gen. Jerome F. O'Malley Award	Cobra Ball Crew, 45th Reconnaissance Sq. (Crews S-01/S-101) and 97th Intelligence Sq., Offutt AFB, Neb.	Best reconnaissance crew	Capt. Daniel B. Talati (45th RS); MSGt. Wendell Miller and TSgt. Mark C. Trimmer (97th IS)
Gen. Thomas S. Power Award	Crew S-303, 319th Missile Sq., 90th Missile Wing, F.E. Warren AFB, Wyo.	Best missile combat crew	Capt. Eric D. Brown
Space Operations Award	Delta II GPS II-27 Launch Crew, 1st Space Launch Sq., Cape Canaveral AS, Fla.	Best space operations crew	Capt. Robert W. Stanley
Lt. Gen. William H. Tunner Award	Sea Lion 23 aircrew, 21st Special Operations Sq., RAF Mildenhall, UK	Best airlift crew	Maj. Charles M. Harmor
USAF Test and Evaluation Team of the Year	Joint STARS Combined Test Team	Best test team	Cols. Scott E. Parks and Kenneth W. Pompa

National Aerospace Awards

Award	Recipient(s)	Achievement
H.H. Arnold Award <i>AFA's highest honor in national security to a member of the armed forces</i>	Men and Women of the United States Air Force	For serving the nation for 50 years with courage, skill, and dedication and, in so doing, building what is unquestionably the finest air and space force in the world.
W. Stuart Symington Award <i>AFA's highest honor in national security to a civilian</i>	William J. Perry	For inspirational leadership as the 19th Secretary of Defense in which he lay the groundwork for an even more powerful and capable US military force in the 21st century.
John R. Alison Award <i>AFA's highest honor for industrial leadership</i>	Dennis J. Picard, chairman and CEO, Raytheon Co.	For superb management of Raytheon, outstanding leadership in the defense community, and advocacy of preserving a strong defense industrial base.
David C. Schilling Award <i>outstanding contribution in flight</i>	Air Mobility Command	For exceptional service and extraordinary commitment in providing the nation with a capability to rapidly deploy, employ, and sustain the armed forces in operations around the world.
Theodore von Karman Award <i>outstanding contribution in science and engineering</i>	Lt. Gen. George K. Muellner, principal deputy assistant secretary of the Air Force for acquisition	For a long career of excellence that has made him perhaps the most respected and skilled acquisition authority in today's Air Force and a prime architect of reform.
Gill Robb Wilson Award <i>outstanding contribution in arts and letters</i>	Col. Walter J. Boyne, USAF (Ret.)	For vivid, incisive writing of USAF history—most recently in <i>Beyond the Wild Blue: A History of the United States Air Force, 1947–1997</i> —in a way that contributes significantly to public understanding of the role of air- and spacepower.
Hoyt S. Vandenberg Award <i>outstanding contribution in aerospace education</i>	US Air Force 50th Anniversary Team	For designing, planning, and executing a year-long series of events celebrating the 50th anniversary of the United States Air Force and adding to public knowledge of air- and spacepower.
Thomas P. Gerrity Award <i>outstanding contribution in logistics</i>	Col. Michael R. Cardinal	For strong leadership, superior performance, and dedication to duty as commander, 4th Logistics Group, Seymour Johnson AFB, N.C., in its support of the 4th Fighter Wing.
Department of Veterans Affairs Employee of the Year	Thomas R. Brown, South Texas VA Health Care System, San Antonio	For outstanding performance as chief of recreation therapy and for pioneering work in wheelchair sports in the VA system.

Photo by Paul Kennedy



Dennis J. Picard, chairman and CEO of Raytheon Co., thanks the association after receiving the John R. Alison Award for his "superb management of Raytheon" and efforts toward "preserving a strong defense industrial base."

Citations of Honor

Recipient	Achievement
Col. John R. Hull, Los Angeles AFB, Calif.	For outstanding leadership and acquisition management as the Global Positioning System space segment director. Under his guidance three generations of GPS satellites attained unparalleled success, ensuring that warfighters will get the navigational support they need any time and any place.
Capt. Bruce A. Till, Kadena AB, Japan	As chief of weapons and tactics, 12th Fighter Sq., Kadena AB, Japan, he designed an innovative weapons training program that pioneered the use of high-energy principles to improve kill ratios in aerial combat, thus enabling US fighter pilots to maintain a decisive advantage over any adversary.
Maj. Marybeth Ulrich, USAF Academy, Colo.	Her doctoral dissertation, "Democratization and the Post-Communist Militaries: US Support for Democratization in the Czech and Russian Militaries"—a model of social science research—made an immediate, positive, and practical impact on critical DoD policies.
Marion L. Williams, Kirtland AFB, N.M.	As chief scientist and technical director, Air Force Operational Test and Evaluation Center, his innovative approach to design, test, and evaluation of electronic combat systems used to jam enemy missiles led to breakthrough technologies that advanced the state of the art and will lead to higher crew survival rates at substantially decreased cost.
Blue Flag Exercise Team Hurlburt Field, Fla.	Their refinements to procedures and equipment for Joint Force Air Component Commander Team training in 1996 enabled participants to reach unparalleled levels of operational realism in computer-assisted exercises.
Command and Control Unified Battlespace Environment Team, Hanscom AFB, Mass.	For a superb first year of operation, in which the efforts of the Command and Control Unified Battlespace Environment Team provided enhanced multilevel security between US and NATO networks, strengthened the capability to generate in-flight updates of airborne C ² assets, and improved configuration management of communications systems.
<i>Leading Edge Magazine</i> Wright-Patterson AFB, Ohio	<i>Leading Edge Magazine's</i> well-researched and imaginatively presented monthly themed issues directly contribute to a highly motivated, informed, and dedicated professional Air Force Materiel Command force.
Men and Women of Nellis AFB, Nev.	Despite their normal heavy workload, the military and civilian men and women of Nellis AFB contributed greatly to the success of AFA's Air Force Fifty. They never faltered when support was needed and met all challenges with a can-do attitude—the epitome of professionalism.
7th Special Operations Sq., RAF Mildenhall, UK	Their expert execution of all tasks, which frequently included priority, no-notice missions—typified by 20-plus-hour duty days and minimum preparation time—provided outstanding combat airlift and resupply to special operations forces in Bosnia, Croatia, and Africa.
494th Fighter Sq., RAF Lakenheath, UK	Their outstanding performance last year included supporting seven real-world contingencies and establishing the capability to use real-time intelligence—providing a new, rapid defense option for warfighting commanders—in the F-15E during USAF's first Rapid Targeting System combat demonstration.

Management and Environmental Achievement Awards

Award	Recipient
AFMC Executive Management Award	Barney D. Klehman, Los Angeles AFB, Calif.
AFMC Middle Management Award	Lt. Col. Ivette Falto-Heck, Los Angeles AFB, Calif.
AFMC Junior Management Award	Capt. David L. Judson Jr., Tinker AFB, Okla.
Gen. Edwin W. Rawlings Award for Environmental Excellence (Management)	1st Lt. Toni A. Terhune, Luke AFB, Ariz.
Gen. Edwin W. Rawlings Award for Environmental Excellence (Technical)	SMSGt. Spero M. Thomas, Charleston AFB, S.C.

Professional, Civilian, and Educational Awards

Award

CMSAF Thomas N. Barnes Award for Crew Chief of the Year
 Gen. Billy Mitchell Award for C⁴ Excellence
 Paul W. Myers Award for Physicians
 Verne Orr Award for Human Resources
 Juanita Redmond Award for Nursing
 Stuart R. Reichart Award for Lawyers
 Personnel Manager of the Year
 Civilian Wage Employee of the Year
 Civilian Program Specialist of the Year
 Civilian Program Manager of the Year
 Civilian Senior Manager of the Year
 AFROTC Cadet of the Year
 CAP Aerospace Education Cadet of the Year
 Diane O'Malley "Angel of the Year"
 Joan Orr Award for Air Force Spouse of the Year
 Christa McAuliffe Memorial Award for Teachers
 Sam E. Keith Jr. Aerospace Education Award of Excellence
 George D. Hardy Memorial Award
 Outstanding Initiative in Visions of Exploration Program Award
 Outstanding Visions of Exploration Chapter Award
 Aerospace Education Foundation 1996-97 AFJROTC Winner

Recipient

SSgt. Daniel J. Paris, McConnell AFB, Kan.
 Capt. David L. Judson Jr., Tinker AFB, Okla.
 Lt. Col. Russell A. Turner, Ramstein AB, Germany
 Air Reserve Personnel Center, Denver, Colo.
 Capt. Mary Ellen Tucker, F.E. Warren AFB, Wyo.
 Col. John J. Martinez Jr., Bolling AFB, D.C.
 MSgt. Sheryl L. Watson, Eglin AFB, Fla.
 Elizabeth T. Melton, RAF Lakenheath, UK
 Nancy M. Leonard, USAF Academy, Colo.
 Chong Le, Los Angeles AFB, Calif.
 Eduardo Andrade, Kelly AFB, Texas
 Scott A. King, University of New Mexico
 Tammy J. Blevins, Lexington Park, Md.
 Jennifer S. Taylor, Texas A&M University
 Rachel E. Stahl, RAF Lakenheath, UK
 Steven A. Bachmeyer, Homestead, Fla.
 John W. DeMilly Jr. Chapter, Fla.
 Edith A. Magerkurth, Merced, Calif.
 Gen. David C. Jones Chapter, N.D.
 David D. Terry Jr. Chapter, Ark.
 Bellevue West High School, Bellevue, Neb.

After receiving the Christa McAuliffe Memorial Award for Teachers at the convention, Steven A. Bachmeyer (right) from Homestead, Fla., talks with Michael E. Richardson, a past president of the John W. DeMilly Jr. Chapter in Florida.



Photo by Paul Kennedy

Air Force Reserve Command and Air National Guard Awards

Award	Recipient(s)	Achievement	Accepted by
CMSgt. Dick Red Award	CMSgt. Brank B. Wade, Tennessee ANG	Leadership and technical expertise in aircraft maintenance	CMSgt. Brank B. Wade
Earl T. Ricks Award	Capt. Christian H. Rose, D.C. ANG	Outstanding airmanship in the Air National Guard	Capt. Christian H. Rose
Outstanding Air National Guard Unit	146th Airlift Wing, California ANG	Outstanding ANG unit	Brig. Gen. John E. Iffland
Outstanding Air Force Reserve Command Unit	507th Wing, Tinker AFB, Okla.	Outstanding Reserve unit	Col. Martin M. Mazick
President's Award for the Air Force Reserve	Maj. Leonard S. Dick, Luke AFB, Ariz.	Outstanding Reserve aircrew	Maj. Leonard S. Dick



Jack C. Price (left), recipient of the 1997 Gold Life Member Card, makes a point with fellow National Director James E. Callahan.

1997 Unit Activity Awards

Donald W. Steele Sr. Memorial Award: AFA Unit of the Year
Central Florida Chapter

Outstanding State Organization
AFA Texas

Outstanding Chapters
More than 900 members: Cape Canaveral Chapter, Fla.
401 to 900 members: Paul Revere Chapter, Mass.
151 to 400 members: Steel Valley Chapter, Ohio
20 to 150 members: Highpoint Chapter, N.J.

Exceptional Service Awards
Aerospace Education: AFA Florida Best Single Program: Ark-La-Tex Chapter, La.
Communications: Alamo Chapter, Texas
Community Relations: Carl Vinson Memorial Chapter, Ga.
Overall Programming: Ak-Sar-Ben Chapter, Neb.
Veterans' Affairs: Fort Wayne Chapter, Ind.

Arthur C. Storz Sr. Membership Awards

AFA's most prestigious membership awards are named for Arthur C. Storz Sr., a former permanent AFA national director, a life member, and a principal founder of the Ak-Sar-Ben (Neb.) Chapter. The Storz Membership Awards, made possible through a generous endowment to the association by his son Art Storz Jr., have been awarded for membership excellence based on criteria approved by AFA's board of directors for the year ending March 31, 1997.

State Award

Presented to that AFA state organization that produces the highest number of new members during the 12-month period ending March 31, 1997, as a percentage of total state membership as of March 31, 1996. The state organization also must meet certain other minimum indicators of overall performance and excellence.

AFA Louisiana

Chapter Award

Presented to the AFA chapter that produces the highest number of new members during the 12-month period ending March 31, 1997, as a percentage of total chapter membership as of March 31, 1996. The chapter must also meet certain other minimum indicators of overall performance and excellence.

John C. Stennis, Miss.

Individual Award

Presented to the AFA member who has done the most to promote AFA membership during 1996-97.

Dennis F. Mathis, Texas

Edith A. Magerkurth holds up the Aerospace Education Foundation's George D. Hardy Memorial Award she just received for furthering the scientific, technical, and aerospace education of the nation.



Staff photo by Guy Aceto



Medal of Merit recipient Mark D. Venters (center) from the Cape Fear Chapter in North Carolina spends a little "tool time" with Stanley Tools representatives at the Aerospace Technology Exposition. Cape Fear won special recognition this year for new member recruitment efforts.

Special Recognition—Sustained New Member Recruitment

These awards recognize chapters that have attained the quarterly new member recruitment goal for three consecutive quarters, from October 1996 to June 1997.

- Ark-La-Tex, La.
- Bakersfield, Calif.
- Cape Fear, N.C.
- Central Florida, Fla.
- Central Missouri, Mo.
- Chautauqua, N.Y.
- Cochise, Ariz.
- Contrails, Kan.
- Eagle, Penn.
- Florida Highlands, Fla.
- Fort Wayne, Ind.
- Gen. Robert E. Huyser, Colo.
- Highpoint, N.J.
- High Desert, Calif.
- James H. Straubel, Mich.
- John W. DeMilly Jr., Fla.
- Leigh Wade, Va.
- Mifflin County, Penn.
- Mount Clemens, Mich.
- Northeast Texas, Texas
- Northern Shenandoah Valley, Va.
- Red River Valley, N.D.
- Richard D. Kisling, Iowa
- Richard S. Reid, Ariz.
- Southern Indiana, Ind.
- Total Force, Penn.
- William A. Jones III, Va.

The following chapters have qualified for these awards based on their recruitment of new members during the 12-month period ending March 31, 1997.

Jack Gross Award

These awards recognize the chapter in each size category with the highest number of new members as a percentage of chapter size at the beginning of the membership year. A minimum of 10 is required.

Small Chapter: Lloyd Schloen—Empire, N.Y.

Medium Chapter: High Desert, Calif.

Large Chapter: Northeast Texas, Texas

Extra Large Chapter: John C. Stennis, Miss.

Chapter Larger than 1,500: Colorado Springs/Lance Sijan, Colo.



AFA members (l-r) Alton V. Jones from the Kitty Hawk (N.C.) Chapter, Bill Sparks, a past state president from Florida and a national director, and Bill Michael from the Pope (N.C.) Chapter stop to talk at the technology exposition.

Staff photo by Guy Aceto

Named in Memorial Tribute

USAF and AFA leaders and supporters and aviation pioneers who died during the past year

CMSAF Arthur L. "Bud" Andrews, USAF (Ret.)
 Lt. Col. C. Peter Andrews, USAF (Ret.)
 Barbara Arnold
 Barbara M. Aronson
 Donald E. Baruch
 Col. Robert P. Baumann Jr., USAF (Ret.)
 Col. Walter W. Berg, USAF (Ret.)
 Lt. Gen. Gordon A. Blake, USAF (Ret.)
 Lt. Col. Thomas C. Bounds, USAF (Ret.)
 Capt. Jodi L. Callahan
 Maj. Gen. Harold N. Campbell, USAF (Ret.)
 CMSgt. William F. Cheek, USAF (Ret.)
 Dr. Carl L. Crawford
 Col. Dwight R. Dinsmore, USAF (Ret.)
 Jeffrey Ethell
 MSgt. Louie T. Evers, USAF (Ret.)
 Col. Fred A. Feldman, USAF (Ret.)

1st Lt. Robert M. Fenton
 Lt. Gen. Jack Flynn, USAF (Ret.)
 Col. Gilbert F. Friederichs, USAF (Ret.)
 Col. Robie Hackworth, USAF (Ret.)
 CMSAF Donald L. Harlow, USAF (Ret.)
 George W. Heller
 Naomi D. "Tillie" Henion
 Maj. Gen. Henry L. Hogan III, USAF (Ret.)
 David A.D. Jennings
 William Johnston
 John R. Kagel
 Brig. Gen. George E. Keeler Jr., USAF (Ret.)
 Harold L. "Bud" Keeler
 Grace B. Kyle
 James R. Laugherty
 Robert S. Lawson
 Ann Leferink

John "Jack" T. McCarthy
 Lt. Gen. John B. McPherson, USAF (Ret.)
 Col. William J. McQuade, USAF (Ret.)
 Maj. Henry A. McWade, USAF (Ret.)
 Col. Richter H. Moore Jr.
 Lt. Col. Frank W. Morris Jr.
 Raymond E. Oglesby
 Alan K. Olsen
 Gen. Robert D. Russ, USAF (Ret.)
 Marissa Schloen
 Lt. Col. Alan E. Snyder, USAF (Ret.)
 Brig. Gen. James M. Stewart, USAF (Ret.)
 Maj. Gen. Robert P. Taylor, USAF (Ret.)
 John S. Walker Jr.
 Maj. Gen. Winston P. "Wimpy" Wilson, USAF (Ret.)

1997 Individual Activity Awards

Member of the Year

James M. McCoy, Neb.

Gold Life Member Card

Jack C. Price, Utah

Special Award

David Gergen, D.C.
 Arthur G.B. Metcalf (posthumously), Boston

Presidential Citations

Robert E. Ceruti, Fla.
 Richard G. Galloway, Mass.
 William V. McBride, Texas
 Ivan L. McKinney, La.
 Victor C. Seavers, Minn.
 Richard C. Taubinger, Calif.
 Mary M. Tripp, Va.

Jack B. Flaig Communications Award

No 1997 recipient

Central East Region

Medal of Merit

Capt. Charles P. Armentrout, Va.
 CMSgt. Marie Ashmore, Md.
 CMSAF Eric W. Benken, Md.
 Mike Copeland, Va.
 Barry Creighton, Va.
 Tom Devine, Va.
 Walker L. Evey, D.C.
 Robert D. Gatewood Jr., Md.
 Lynn Matsler-Brod, D.C.
 Shawn A. McElheny, Md.
 Lloyd R. Mills, Va.
 Brig. Gen. John F. Regni, D.C.

Jesse O. Sandlin, Va.
 Mark Scott, Va.
 James J. Shepherd, D.C.
 Maj. Mary Ann Tipton, D.C.
 Allan M. Van Wickler, Va.
 Thad A. Wolfe, Va.

Exceptional Service Award

George Aguirre, Va.
 William M. Cuthriell, Va.
 Sandra G. Grese, D.C.
 George W. McKay, Va.
 Gary Shanafelt, Va.
 Brig. Gen. Bruce F. Tuxill, Md.

Special Citations

Allen E. Tackett, W.V.

Far West Region

Medal of Merit

Norman R. Baker, Hawaii
 Capt. Jeff Bridges, Hawaii
 Dayna Castro, Calif.
 Jack Detour, Hawaii
 James F. Fitzsimmons, Ariz.
 Melanie Habener, Calif.



James M. McCoy, member of the year and former national president and chairman of the board, and current president, Doyle Larson, take a few minutes to talk between convention meetings.

Photo by Paul Kennedy

Carl E. Immel, Ariz.
 Dion W. Johnson, Guam
 Paul B. Kincade, Nev.
 Bob Marohn, Calif.
 Paul Maye, Calif.
 William D. O'Keeffe, Calif.
 Nick Robolino, Calif.
 Capt. Robert L. Russell IV, Calif.

Exceptional Service Award

Vic Bouquet, Calif.
 Edward H. Kranz, Calif.
 Mervyn Silberberg, Calif.

Special Citations

Joel T. Hall, Nev.
 Robert J. Herculson Jr., Nev.
 Emery S. Wetzel Jr., Nev.

Great Lakes Region

Medal of Merit

John D. Bailey, Ill.
 Edward L. Bennett, Ind.
 Noel Buckner, Ind.
 Wanda Y. Eaton, Ind.
 Thomas Eisenhuth, Mich.
 Melvin H. Gerhold, Ohio
 Bill Howard, Ind.
 D. Merle Muir, Ill.
 Thomas J. O'Shea, Ill.
 Erica L. Richardson, Ill.
 Billie E. Thompson, Mich.
 Frederick C. Wismer, Mich.
 Frank Wombwell, Ill.

Exceptional Service Award

James E. Fultz, Ind.
 Ted Huff, Ind.
 Michael A. Moran, Ind.
 Ralph E. Shadel, Ohio

Midwest Region

Medal of Merit

Orville Blair, Mo.
 Joan Boyd, Mo.
 Robert H. Jones, Kan.
 Don Kohl, Kan.
 Charles D. Persinger, Iowa
 Carl Willert, Neb.
 Doris Willert, Neb.

Exceptional Service Award

Ted Beckett, Mo.
 James M. Snyder, Mo.
 Robert M. Williams, Neb.

New England Region

Medal of Merit

Francis F. Carmichael, Mass.
 Edward Cliver, N.H.
 Dr. Eugene D'Andrea, R.I.
 Louis A. Emond, N.H.
 Richard L. Penney, Mass.



Photo by Paul Kennedy

Robert E. Ceruti from the Central Florida Chapter surveys a Presidential Citation award he won this year.

Exceptional Service Award

Ronald E. Palmer, Conn.

North Central Region

Medal of Merit

Capt. Korvin D. Auch, N.D.
 Richard Gustaf, S.D.
 Brig. Gen. Ray Klosowski, Minn.
 Gary H. Olson, Minn.
 Raymond Otto, N.D.
 Clayton Pyle, Minn.
 Lt. Col. Steven R. Winegarden, Minn.

Exceptional Service Award

Col. William H. Campbell, Minn.
 Ronald L. Garcia, N.D.
 George Masters, N.D.

Northeast Region

Medal of Merit

Robert Bender, Penn.
 John Dunderdale, N.Y.
 Lincoln Edwards, N.J.
 Charles "Rik" R. Harvin III, N.J.
 Martha H. Molennor, Penn.
 Capt. Rosella S. Moore, Penn.
 Harry E. Williams, N.J.
 Rose M. Zarecky, Penn.

Exceptional Service Award

Bonnie B. Callahan, N.Y.
 Sandy L. Sandlin, N.J.

Northwest Region

Medal of Merit

Herman Thompson, Alaska
 Ed Wildeboor, Wash.

Rocky Mountain Region

Medal of Merit

Craig Allen, Utah
 Boyd Anderson, Utah
 Karl F. Benkesser, Colo.
 Larry Fortner, Colo.
 Tim Gregory, Colo.

Exceptional Service Award

David A. Brescia, Colo.
 CMSgt. Rodney E. Ellison, Colo.
 Mark J. Worrick, Colo.

South Central Region

Medal of Merit

Marty Bourgeois, La.
 Col. Robert L. Brooks, Ala.
 Sidney M. Marcus, Miss.
 Phillip V. Maywald, Tenn.
 Col. Julius R. McRee, Ala.
 Tom Normile, La.
 Rod Payne, Ala.
 Gilbert E. Petrina, La.
 Vincent P. Schiavoni, Ala.
 Joseph E. Sutter, Tenn.
 Elia T. Vasilopoulos, Miss.
 Arthur H. Wellinger, Ark.
 Bertha D. Woolfolk, Ala.

Exceptional Service Award

Michael F. Cammarosano, La.
 William F. Cocke, La.
 Francis J. Kramer Jr., Ala.
 Fred D. Womack, Tenn.

Southeast Region

Medal of Merit

Robert B. Battista, Fla.

Ronald H. Byrd, Fla.
Richard L. Cicurel, Fla.
William W. Edwards, Fla.
Joe J. Harrison, Fla.
Irma G. Moore, Ga.
Sandra H. Peavy, Ga.
Andrew Roddan, Fla.
John E. Schmidt, Fla.
Barbara Shaheen, Ga.
Mark D. Venters, N.C.
Gerald V. West, N.C.

Exceptional Service Award

James W. Councill, Fla.
Marguerite Cummock, Fla.
Melinda M. Fountain, Ga.
William B. Gemmill, Fla.
William L. Kirk, Fla.
June G. Lowe, Ga.
David L. Pennoyer, Fla.

Special Citations

Frank W. Morris, Fla.
Wayne K. Penley, Fla.

Southwest Region

Medal of Merit

Ron Buffum, Texas
James M. Carter, Texas
Robert M. Gehbauer, Texas
Capt. Bob Mendenhall, Texas
Ann Ragland, Okla.
Margi Ridenour, Texas
MSgt. (sel.) Brian L. Schultz, Okla.
Col. Stanley A. Sieg, Okla.
Donna F. Slaton, Texas
Rhonda M. Trent, Okla.
James L. Wolfe, Texas

Exceptional Service Award

Kenneth W. Calhoun, Okla.
Joyce Garza, Texas
Jake Huffman, Texas
David A. Olson, Texas
Jo Smith, Okla.
Charles G. Thomas, N.M.

Special Citations

Air Force Personnel Center, Randolph
AFB, Texas
Kaye H. Biggar, Texas

1997 Community Partner Membership Awards

The following chapters have qualified for these awards based on their recruitment of new members during the 12-month period ending March 31, 1997.

President's Award

Selection for this award is made by the National Awards Committee from among the chapters that have recruited the greatest percentage of Community Partners, in terms of chapter membership.

High Desert Chapter, Calif.

Gold Awards

These awards recognize chapters that have a total number of Community Partners equal to or greater than six percent of overall chapter membership, with a minimum number of Community Partners to qualify. The minimum number is determined by the chapter size.

Altus, Okla.
Ark-La-Tex, La.
Cape Canaveral, Fla.
Carl Vinson Memorial, Ga.
Col. H.M. "Bud" West, Fla.
Concho, Texas
Contraails, Kan.
Delaware Galaxy, Del.
Eagle, Penn.
Enid, Okla.
Fairbanks Midnight Sun, Alaska
Florida Highlands, Fla.
Fort Wayne, Ind.
Gen. Charles L. Donnelly Jr., Texas
Gen. David C. Jones, N.D.
Golden Triangle, Miss.
High Desert, Calif.
John W. DeMilly Jr., Fla.
Llano Estacado, N.M.
Lloyd R. Leavitt Jr., Mich.

Long's Peak, Colo.
Northeast Texas, Texas
Pope, N.C.
Richard S. Reid, Ariz.
Richard D. Kisling, Iowa
Robert H. Goddard, Calif.
Total Force, Penn.
William A. Jones III, Va.

Achievement Awards

These awards recognize chapters that have a total number of Community Partners equal to or greater than three percent of overall chapter membership, with a minimum number of Community Partners to qualify. The minimum number is determined by the chapter size.

Ak-Sar-Ben, Neb.
Albuquerque, N.M.
Anchorage, Alaska
Cape Fear, N.C.
Central Oklahoma (Gerrity), Okla.
Colorado Springs/Lance Sijan, Colo.
Dacotah, S.D.
David D. Terry Jr., Ark.
Gen. B.A. Schriever Los Angeles Area
Guam—Arc Light, Guam
Highpoint, N.J.
Jackson, Miss.
John C. Stennis, Miss.
Langley, Va.
Maj. Gen. Oris B. Johnson, La.
Mifflin County, Penn.
On Wings of Eagles, Fla.
Panhandle, Texas
Peace River, Fla.

Tuskegee Airman Charles E. McGee, of the Thomas W. Anthony (Md.) Chapter, tries his hand at flying tomorrow's aircraft—via an F-22 stealth fighter simulator—with assistance from Lockheed Martin's Bill Harrell in the convention exhibit hall. Some 97 exhibitors displayed their wares during the 1997 convention.



Staff photo by Guy Aceto

Staff photo by Guy Aceto



National Director James E. "Red" Smith of the Scott Berkeley (N.C.) Chapter (left) and Senior Col. Wang Yingjun, Chinese air attache (middle), listen as a TRW representative at the technology exposition explains TRW's communications exhibit.

Artist Rick Herter and Maj. Bob Wright sign prints as part of the AEF Calendar program. In the print on the table, Wright is shooting down three Yugoslavian J-1 Jastreb attack aircraft during Operation Deny Flight.



Staff photo by Guy Aceto

AFA State Contacts



Following each state name are the names of the communities in which AFA chapters are located. Information regarding these chapters or any of AFA's activities within the state may be obtained from the appropriate contact.

ALABAMA (Birmingham, Gadsden, Huntsville, Mobile, Montgomery): **Roy A. Boudreaux** 41 Tecumseh Dr., Montgomery, AL 36117 (phone 334-241-2739).

ALASKA (Anchorage, Fairbanks): **Carl W. Bradford Jr.**, 8040 Evans Cir., Anchorage, AK 99507 (phone 907-753-7143).

ARIZONA (Green Valley, Phoenix, Prescott, Sedona, Sierra Vista, Sun City, Tucson): **Raymond D. Chuvata**, 5039E N. Regency Cir., Tucson, AZ 85711-3000 (phone 520-747-2738).

ARKANSAS (Fayetteville, Hot Springs, Little Rock): **John P. "Phil" Sullivan**, 2704 Gray Fox Ln., Jacksonville, AR 72076-2641 (phone 501-982-6702).

CALIFORNIA (Apple Valley, Bakersfield, Edwards AFB, Fairfield, Fresno, Los Angeles, Merced, Monterey, Orange County, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, Sunnyvale, Vandenberg AFB, Yuba City): **Paul A. Maye**, 1225 Craig Dr., Lompoc, CA 93436 (phone 805-733-7370).

COLORADO (Colorado Springs, Denver, Fort Collins, Grand Junction, Pueblo): **Howard R. Vasina**, 1670 N. Newport Rd., Ste. 400, Colorado Springs, CO 80916-2700 (phone 719-591-1011).

CONNECTICUT (Brookfield, East Hartford, Middletown, Storrs, Stratford, Torrington, Waterbury, Westport, Windsor Locks): **Harry C. Levine**, 79 Montclair Dr., West Hartford, CT 06107-1251 (phone 860-292-2456).

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DISTRICT OF COLUMBIA (Washington): **Rosemary Pacenta**, 1501 Lee Hwy., Arlington, VA 22209-1198 (phone 703-247-5820).

FLORIDA (Avon Park, Broward County, Cape Coral, Daytona Beach, Fort Walton Beach, Gainesville, Homestead, Hurlburt Field, Jacksonville, Leesburg, Miami, New Port Richey, Orlando, Palm Harbor, Panama City, Patrick AFB, Port Charlotte, St. Augustine, Sarasota, Spring Hill, Tallahassee, Tampa, Vero Beach, West Palm Beach, Winter Haven): **Robert E. Patterson**, 95 Country Club Rd., Shalimar, FL 32579-1610 (phone 904-882-9118).

GEORGIA (Athens, Columbus, Peachtree City, Rome, St. Simons Island, Savannah, Valdosta, Warner Robins): **Edward I. Wexler**, 8 E. Back St., Savannah, GA 31419-3343 (phone 912-966-8252).

GUAM (Agana): **Dion W. Johnson**, P.O. Box 12861, Tamuning, GU 96931 (phone 671-646-0262).

HAWAII (Honolulu, Maui): **Richard M. May Jr.**, 91-311 Hoku' Aukai Way, Kapolei, HI 96707 (phone 808-449-0806).

IDAHO (Boise, Mountain Home, Twin Falls): **Chester A. Walborn**, P.O. Box 729, Mountain Home, ID 83647 (phone 208-587-9757).

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INDIANA (Bloomington, Columbus, Evansville, Fort Wayne, Grissom ARB, Indianapolis, Lafayette, Marion, Mentone, New Albany, Terre Haute): **James E. Fultz**, 3915 Baytree Ln., Bloomington, IN 47401-9754 (phone 812-333-8920).

IOWA (Des Moines, Marion, Sioux City, Waterloo): **Louis M. Rapier**, 2963 29th Ave., Marion, IA 52302-1367 (phone 319-373-1036).

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KENTUCKY (Lexington, Louisville, Paducah): **Bradley C. Young**, 636 Grabruck St., Danville, KY 40422-1764 (phone 606-748-5684).

LOUISIANA (Alexandria, Baton Rouge, New Orleans, Shreveport): **Michael F. Cammarosano**, 4500 Sherwood Commons Blvd., Apt. 302, Baton Rouge, LA 70816 (phone 504-925-4911).

MAINE (Bangor, Caribou, North Berwick): **Gerald Bolduc**, 130 Clark Ave., Bangor, ME 04401-3502 (phone 207-990-7209).

MARYLAND (Andrews AFB, Baltimore, College Park, Rockville): **Robert D. Gatewood Jr.**, 5102B Lahm Ct., Andrews AFB, MD 20335-5885 (phone 301-981-9411).

MASSACHUSETTS (Bedford, Boston, East Longmeadow, Falmouth, Hanscom AFB, Taunton, Westfield, Worcester): **Francis F. Carmichael Jr.**, 14 Carmichael Way, West Wareham, MA 02576-1486 (phone 508-999-8642).

MICHIGAN (Alpena, Battle Creek, East Lansing, Kalamazoo, Marquette, Mount Clemens, Oscoda, Traverse City, Southfield): **James W. Rau**, 466 Marywood Dr., Alpena, MI 49707 (phone 517-354-2175).

MINNESOTA (Duluth, Minneapolis-St. Paul): **Coleman Rader Jr.**, 6481 Glacier Ln. N., Maple Grove, MN 55311-4154 (phone 612-943-1519).

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MISSOURI (Richards-Gebaur ARS, St. Louis, Springfield, Whiteman AFB): **Graham Burnley**, 112 Elk Run Dr., Eureka, MO 63025-1211 (phone 314-938-6113).

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NEVADA (Las Vegas, Reno): **Albert S. "Sid" Dodd**, 1921 Dresden Ct., Henderson, NV 89014-3790 (phone 702-295-4953).

NEW HAMPSHIRE (Manchester, Portsmouth): **Baldwin M. Domingo**, 5 Birch Dr., Dover, NH 03820-4057 (phone 603-742-0422).

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Dyer, 1607 Cambridge Dr., Kinston, NC 28501-2001 (phone 919-527-0425).

NORTH DAKOTA (Fargo, Grand Forks, Minot): **Ronald L. Garcia**, 1600 University Ave. W., Minot, ND 58703-1908 (phone 701-858-3856).

OHIO (Cleveland, Columbus, Dayton, Mansfield, Newark, Youngstown): **William "Ron" Goerges**, 4201 W. Enon Rd., Fairborn, OH 45324-9412 (phone 513-429-6070).

OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **Jo Smith**, 3937 S.E. 14th Pl., Del City, OK 73115 (phone 405-736-5839).

OREGON (Eugene, Klamath Falls, Portland): **John Lee**, P.O. Box 3759, Salem, OR 97302 (phone 503-581-3682).

PENNSYLVANIA (Allentown, Altoona, Beaver Falls, Coraopolis, Drexel Hill, Erie, Harrisburg, Johnstown, Lewistown, Philadelphia, Pittsburgh, Scranton, Shiremanstown, State College, Washington, Willow Grove, York): **Jerome P. Ashman**, R.R. 1, Box 266, Bolivar, PA 15923-9644 (phone 412-238-4015).

RHODE ISLAND (Newport, Warwick): **Eugene M. D'Andrea**, P.O. Box 8674, Warwick, RI 02888 (phone 401-461-4559).

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SOUTH DAKOTA (Rapid City, Sioux Falls): **Charles A. Nelson**, 1517 S. Minnesota Ave., Sioux Falls, SD 57105-1717 (phone 605-336-1988).

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WISCONSIN (Madison, Milwaukee, General Mitchell IAP/ARS): **Gilbert M. Kwiatkowski**, 8260 W. Sheridan Ave., Milwaukee, WI 53218-3548 (phone 414-463-1849).

WYOMING (Cheyenne): **Irene G. Johnigan**, 503 Notre Dame Ct., Cheyenne, WY 82009 (phone 307-775-4552).

The Outstanding Airmen

By Tamar A. Mehuron, Associate Editor



Photo by Nick Kennedy

Standing on the steps of the Capitol are the 1997 outstanding airmen: (l-r) SrA. Jennifer D. Kover, SSgt. Tina Y. Wilson, TSgt. Loretta Brown, SrA. Trisha B. Shoup, TSgt. Suzan K. Sangster, MSgt. Randolph W. Fuller, MSgt. Benjamin C. Harper Jr., MSgt. Richard Acevedo, SSgt. David Vega Jr., SrA. Kenneth S. Holmes, MSgt. David L. Piontkowski, and MSgt. Paul A. Sikora Jr.

MSgt. Richard Acevedo serves as the resource adviser for the 49th Maintenance Squadron, Holloman AFB, N.M. His expertise in maintaining the F-117A flight-control computer system played a major role in the 60 percent rise in the stealth fighter's mission-capable rate over the last two years. Acevedo arranged needed advanced avionics training, acquired additional avionics test equipment from other USAF units at no cost, and implemented changes to avionics test procedures, among numerous other actions—greatly improving the unit's efficiency and reducing expenses.

TSgt. Loretta Brown applies her mastery of computers as an information management craftsman in the Air Force Reserve Command's personnel directorate at Robins AFB, Ga. She saved more than 150 hours in downtime by correcting hardware configurations herself. When the directorate prepared for a massive computer upgrade, her reformatting procedures sliced installation time for the new hardware and software from three hours to 40 minutes, ensuring uninterrupted service. Among many administrative actions, Brown led a detailed analysis of budgetary requirements within the unit's divisions, then

designed a comprehensive spreadsheet displaying current funding status—credited as a significant and long-overdue enhancement.

MSgt. Randolph W. Fuller, 331st Recruiting Squadron at Air Education and Training Command's Maxwell AFB, Gunter Annex, Ala., transformed a struggling flight of recruiters into high achievers. His efforts yielded a production success rate of 116 percent of the Fiscal 1996 recruitment goal—a major improvement in a single year in the flight's north central Georgia recruitment area, including greater Atlanta. Before Fuller's arrival, the flight had missed its annual goal two out of three years. Of the 209 new recruits, 70 were in hard-to-fill jobs with critical mechanical specialties—exceeding the Air Force standard. His efforts also led to 40 percent more enlistees entering basic military training in Fiscal 1997, but with a 19 percent lower loss rate.

MSgt. Benjamin C. Harper Jr. serves as superintendent, contingency support operations flight for Air Mobility Command's Air Mobility Warfare Center, Ft. Dix, N.J. He orchestrated development of AMC's force protection initiative to develop an antiterrorism response team—Phoenix Raven—to deploy with command assets to hot spots around the world. Following the 1996 Khobar Towers attack in Saudi Arabia, he was tapped to design and establish USAF's Force Protection Group. Harper wrote the Air Force Instruction on force protection and drew up the unit's requirements and its concept of operations. He also led the development of a Bosnia-based scenario that addressed AMC force protection concerns and helped better prepare command forces for Operation Joint Endeavor.

SrA. Kenneth S. Holmes, now assigned to the 303d Intelligence Squadron, Osan AB, Korea, created a formal narrator training program when he was a member of the USAF Honor Guard in the 11th Wing at Bolling AFB, D.C. When the unit experienced a rapid turnover of supervisors, Holmes provided leadership and continuity for 30 subordinates. He narrated several important events, including the retirement ceremony for former CMSAF David J. Campanale. He also served as a pallbearer at the Joint Service arrival ceremony for the persons who died in the crash of the aircraft carry-

ing Commerce Secretary Ron Brown in Croatia.

SrA. Jennifer D. Kover, named Colorado Springs Federal Military Woman of the Year for 1996, serves as a space systems maintenance journeyman with the 2d Space Operations Squadron, Falcon AFB, Colo. She managed an upgrade project for vital test equipment at remote satellite tracking sites, procuring the necessary equipment free of charge to her unit. When inadequate supply support caused site outages, threatening the mission, her investigation resulted in the return of more than a hundred critical spares.

MSgt. David L. Piontkowski, a Minuteman weapon systems technical engineer with Det. 9 (Space and Missile Systems Center) at Vandenberg AFB, Calif., led a unique joint Air Force/contractor test team in its successful first launch of the new Multi-Service Launch System missile. His performance in this new role helped keep the program on course and directly contributed to the unit's earning the Air Force Organizational Excellence Award. When Piontkowski combined young officer engineers with enlisted technicians to tackle maintenance challenges, productivity soared by 50 percent. He also blazed a new path with his selection as the first NCO to be a launch facilities operations officer.

TSgt. Suzan K. Sangster's expertise in tactical air analysis garnered her the nomination of Outstanding Intelligence NCO of the Year while assigned to Air Intelligence Agency's 324th Intelligence Squadron, at Hickam AFB, Hawaii. During a three-month deployment to Saudi Arabia, Sangster directed a 45-person unit, filling in for a senior NCO as acting chief of Air/Naval Forces analysis branch. As the 324th's chief, tactical air analysis, she coordinated the analyses of 26 military and civilian personnel, managing a multimillion dollar communications system. Considered a subject matter expert on adversary weapons and tactical capabilities, she authored two extensive US intelligence directives and deconflicted US-Allied intelligence efforts.

SrA. Trisha B. Shoup was in charge of the Fire Alarm Communication Center at Kunsan AB, Korea. She managed the center and supervised personnel, responsibilities nor-

mally held by a staff sergeant. Shoup devised a training and certification plan that ensured all center operators were qualified according to national fire-protection standards. While on temporary assignment to Al Dhafra AB, United Arab Emirates, she was first on the scene of a serious vehicle accident and assisted four injured personnel.

MSgt. Paul A. Sikora Jr., with the 16th Security Forces Squadron at Hurlburt Field, Fla., led Air Force Special Operations Command's security [forces] into Bosnia for Operation Joint Endeavor. While there, he developed security standards used theaterwide by multinational commanders, devised the airfield security plan for the staging base at Brindisi, Italy, and developed a Joint training program with Army Special Forces and USAF Security [Forces]. At Hurlburt, he turned a substandard unit into a showpiece, overcoming equipment shortfalls and revamping numerous logistics activities.

SSgt. David Vega Jr.'s performance as chief of the unit personnel and finance office for the 752d Munitions Support Squadron, Volkel AB, Netherlands, earned him USAF's selection for the President's White House Fellowship Program. He created two spreadsheet products to provide customers with financial estimates; one product was adopted by the 52d Fighter Wing's finance office. Vega reinvigorated various personnel and finance programs, helping improve unit morale, reduce processing time, and save the Air Force money. He initiated several new programs, such as reimbursing unit members for vicinity travel and housing contract fees—never before available at Volkel.

SrA. Tina Y. Wilson, assigned to the USAF Special Investigations Academy at Andrews AFB, Md., is an information management specialist. She volunteered to be the academy's registrar, then researched and implemented an automated program covering the past 25 years. On her own initiative, she moved the academy's library, with its 5,000 books, periodicals, and video and audio tapes, closer to the students' classrooms. She also created a new automated leave program, led the academy's acquisition of a local area network system, and established the academy's first unit orderly room. ■

Aerospace Technology Exposition

By Peter Grier

THE much-discussed Revolution in Military Affairs promised by new targeting and information technologies appeared close to reality at AFA's Aerospace Technology Exposition, held Sept. 15-17 at the Association's National Convention in Washington.

New US capabilities associated with RMA were fully in evidence at the show. These ranged from Boeing's model of a Joint Direct Attack Munition exploding on a runway and Northrop Grumman's stunningly detailed simulation of an E-8 Joint STARS surveillance aircraft workstation to a full-scale mock-up of the General Atomics Predator unmanned aerial vehicle.

The explosion in computer technology has clearly made displays in the exhibit hall more colorful and informative—as attested by the long lines of attendees waiting to “fly” in the Lockheed Martin F-22 and Joint Strike Fighter simulators.

In his speech to the convention, Secretary of Defense William Cohen cited the F-22 as one of the first RMA leap-ahead systems that will define a new and different US way of war in the 21st century. Reflecting this reality, F-22-related exhibits were everywhere in the crowded hotel exhibit area.

Prime contractor Lockheed Martin focused its presentation on the first flight of F-22 Raptor 01, which took place on Sept. 7, 1997, near Marietta, Ga. “All aspects of the flight were successful,” said a Lockheed Martin spokesman.

The stealthiness that grows out of the airplane's radar-evading shape and internal weapons carriage will



Lockheed Martin's Joint Strike Fighter demonstration cockpit (shown above) at AFA's Aerospace Technology Exposition included a Russian-made ejection seat. Boeing, the other company competing for the JSF, also displayed a JSF exhibit. Each team plans to fly prototype fighters by the year 2000.

be far from its only virtue, said Lockheed Martin. Its ability to supercruise at supersonic speeds without the use of afterburners will allow it to cover nearly three times the area of conventional fighters.

No Alternative

Lockheed Martin, mindful of alternatives to the F-22, took aim at the notion of sprucing up the current F-15 and continuing to use it as USAF's prime air superiority fighter. The company insisted that any new F-15 derivative would entail 90 percent of the F-22's cost but deliver only one-third of its aerial combat effectiveness. According to the Lockheed Martin exhibit, deployment of a squadron of F-22s requires only five C-17 airlifter sorties, compared to 14 for the F-15C. Furthermore, it

maintained, direct operations and sustainment costs for the F-22 unit would be 30 percent less.

Pratt & Whitney displayed a full-scale F-22 power plant model—the F119-PW-100 Turbofan. The engine was selected in April 1991 to power the F-22. Plans call for the first full-scale production engine to roll out of the factory in late 1999.

The Lockheed Martin exhibit also devoted much space to marketing its entry in the upcoming contest to produce the Joint Strike Fighter for the Air Force, Navy, Marine Corps, and the United Kingdom's Royal Navy. The company pointed out that it has considerable expertise in single engine fighters, derived from its many years of F-16 production, plus the stealth development experience that comes from producing the F-22.

Staff photo by Guy Aceto

Boeing—the other firm awarded a JSF Concept Demonstrator Aircraft contract—made the JSF one of its exhibit centerpieces as well. The two teams will fly prototype aircraft by the year 2000.

“Affordability” and “Design Concept” were the Boeing JSF themes. Boeing’s three JSF models—one for the Air Force, one for the Navy, and a third for the Marine Corps and the Royal Navy—can all be produced on one manufacturing line, according to Boeing. Overall design commonality, it contends, is 93 percent.

Compared to today’s frontline strike aircraft, Boeing’s JSF will boast 27 percent more acceleration, 33 percent more aerial agility, and a 33 percent longer combat radius, according to company spokesmen.

In September, the Boeing JSF successfully passed its initial design review, paving the way for fabrication and assembly of the company’s two X-32 aircraft.

Robotic Aircraft

Flexible, long-range UAVs are another much-heralded leap-ahead RMA technology. Global Hawk Tier II Plus, produced by prime integrator Teledyne Ryan, was one of the exhibition’s most visible UAV programs.

The Global Hawk program is funded by the Defense Airborne Reconnaissance Office and managed by the Defense Advanced Research Projects Agency. Its only requirement is that flyaway cost be \$10 million, in 1994 dollars. All other attributes of the big UAV are goals.

Global Hawk’s composite wings are 116 feet across. The aluminum fuselage is 44 feet long. The aircraft is powered by an Allison AE-3007H turbofan engine and carries a 48-inch wideband satellite communications antenna in the nose. From an altitude of 65,000 feet, its sensors can scan 138,000 square kilometers.

The UAV’s concept of operations is flexible, trading range against endurance, per mission requirements. One scenario would have the aircraft fly 14 hours from its main operating base, remain on station at 65,000 feet for 22 hours, and then continue on for five more hours to a forward operating base.

Global Hawk air vehicle No. 1 is currently at the Air Force Flight Test

Center at Edwards AFB, Calif., for testing. Vehicle No. 2 is near completion at Teledyne Ryan’s San Diego plant.

On Sept. 16, the DARO director, Maj. Gen. Kenneth R. Israel, announced that Teledyne Ryan has been authorized to produce Global Hawks three and four and to begin long-lead activities for a fifth airframe.

Other UAV exhibits at the show included a small mock-up of Lockheed Martin’s stealthy DarkStar, which remains in development, and the General Atomics’ Predator, a medium altitude system that was 1996’s most operationally active American UAV.

Last year, the Predators flew more than 530 missions, comprising nearly 2,500 flight hours, with much of the activity occurring over Bosnia. The current Predator operational requirement is for 16 systems, with four air vehicles per system.

UAV subcontractors at the convention included Raytheon E-Systems, which has developed a High Altitude UAV Common Ground Segment that services both Global Hawk and DarkStar. The system will provide both launch and recovery capability and mission control elements to the two programs.

Hughes advertised its integrated sensor suite for Global Hawk, which blends synthetic aperture radar, electro-optical, and infrared capabilities. The suite provides image quality that will enable users to distinguish types of vehicles, aircraft, and missiles, and to determine other information not available from any single sensor, according to Hughes.

Missile Defense

One of the most crucial military needs is reliable defense against theater ballistic missile attack. The USAF Airborne Laser, one of the primary means to this end, was well represented at the AFA exhibition. ABL is a joint program of the Air Force and a contractor team, led by Boeing, that includes TRW and Lockheed Martin.

The Boeing Team will initially produce a half-power version which is set to demonstrate ABL capability against live TBMs in the middle of 2002. The current schedule sets initial operational capability with delivery of three full-power aircraft by the end of 2006.

Team ABL members claim that the technology for their weapon system is already in hand. They point out that the USAF Airborne Laser Laboratory destroyed five air-to-air missiles and one cruise missile during its 1970–83 program life span.

ABL researchers showed their ability to burn through a ballistic missile casing with a laser in 1995. In 1996, TRW demonstrated world record power and efficiency in its High Energy Laser program.

Other key components, such as beam control, adaptive optics, and atmospheric measurements, are similarly in hand, according to ABL exhibitors. The planned airframe is a 747-400F, powered by GE CF6-80C2BSF engines.

Other exhibits related to defense against so-called weapons of mass destruction included the Hughes Joint Chemical Agent Detector. The company pointed out that, according to the Joint Warfighting Science and Technology plan, “stand off detection of poison gas is our single and most pressing need ... critical to protecting fielded forces.”

Tried and True Systems

An emphasis on RMA did not mean that the AFA show stunted on tried-and-true operational systems. As always, contractors were eager to talk about the latest upgrades to everything from the C-130 theater airlifter to the B-1B heavy bomber.

Boeing, for instance, featured information on its conversion of 13 C-130H aircraft into new AC-130U gunships. The latest in a line of side-firing gunships that began with the AC-47 in the days of the Vietnam War, the AC-130Us are assigned to Air Force Special Operations Command’s 4th Special Operations Squadron at Hurlburt Field, Fla.

AC-130Us have greatly improved accuracy over earlier gunship models, according to Boeing, as well as all-weather fire control and the ability to attack two targets simultaneously with their 105 mm, 40 mm, and 25 mm guns.

As for the B-1B, Boeing continues to advertise the sleek aircraft’s conventional capability, saying that the airplane adds “mass and precision reach” to Air Force strike packages.

Northrop Grumman’s push for additional purchases of the stealthy



Full-scale mock-ups, like this one of Pratt & Whitney's F119 engine for the F-22, afford a unique opportunity for visitors to get "hands on" with the future. Here, Maj. Don Williams checks out the new stealth fighter engine.

B-2 bomber was low-key, carried out at the time when House and Senate negotiators were trying to work out a compromise on the issue of further B-2 production. The House had approved new expenditures on B-2s in its 1998 defense authorization bill, but the Senate had not.

Conventional capability was the watchword with the B-2 exhibit, as well. Northrop Grumman officials pointed out that the addition of GATS/GAM (Global Positioning System-Aided Targeting System/Global Positioning System-Aided Munitions) capability will enable a single stealth bomber to target 16 aim points on one pass.

Seeing Battlespace

Northrop Grumman's Joint STARS surveillance and battle management aircraft is not, strictly speaking, a veteran system. However, because it was called into action in the Persian Gulf War long before reaching IOC, the airplane seems as if it has been part of the official Air Force inventory for years.

The airplane's open architecture has allowed it to be dramatically improved since the days of Desert Shield and Desert Storm, according to Northrop Grumman. The E-8C has eight more operator workstations, for a total of 18. The processing speed of those workstations is 200 times faster than it was in 1991. Computer memory has grown from

three to 60 gigabytes. Radar resolution is much better, claims the aircraft's prime contractor. So is post-mission data exploitation.

And Joint STARS continues to pile up real-world experience. Two E-8s flew 97 sorties to support NATO troops in Bosnia during the late 1995-early 1996 Operation Joint Endeavor. In November 1996, the first production E-8C began flying operational missions in support of Joint Endeavor II.

America's most venerable big radar airplane, the E-3 Airborne Warning and Control System, also is developing an open architecture system that will allow updates similar to those which have occurred in Joint STARS, according to prime contractor Boeing. Current AWACS processor technology is 1970s-vintage, for instance. It's the equivalent of still using old Intel 286 series chips in a personal computer at a time when others are using the Pentium series.

Meanwhile, work continues on the first AWACS aircraft that is based on a Boeing 767 platform. Japan has ordered four such E-767 systems, for delivery in 1998 and 1999. The first E-767 recently completed a six-month flight test. Time on station

for the new AWACS models will increase from nine to 13 hours, according to Boeing.

As is usual at the AFA exposition, missile and bomb manufacturers displayed racks of colorful mock-ups of their latest munitions. Hughes, for instance, pointed out that the once-troubled Advanced Medium-Range Air-to-Air Missile has now been proven in combat, with two victories in the sky over Iraq and one over Bosnia. AMRAAM is now operational on everything from the US F-15 to the German F-4F. The firm is now integrating the missile on the F-22 and on upcoming European fighters.

Raytheon TI Systems, meanwhile, featured its long history of involvement in laser-guided weapons. The current Paveway III is a third-generation system, with variants that provide an attack capability on everything from European Tornado attack aircraft to the USAF F-117.

Raytheon Electronic System's Hammerhead project is intended to demonstrate the utility of a synthetic aperture radar seeker mounted on a free-flight munition. Such technology will allow all-weather delivery of conventional weapons with a circular error probable of less than three meters, according to Raytheon.

Going head-to-head in the exhibit hall were the competitors for the Joint Air-to-Surface Standoff Missile. Boeing boasted of test runs of its JASSM seeker that showed a 95 percent probability of homing in effectively on targets. Lockheed Martin claimed that its version of this long-range precision standoff missile is more affordable and has less technical risk.

The biggest audience draw was not munitions mock-ups or even simulator displays, however. Rather, it was a mock-up of an old airplane. In a far corner of the show, the Air Force Flight Test Center, showed off a model of a Bell X-1, just like the one that Chuck Yeager flew when he broke the sound barrier in October 1947. Crowds thronged the exhibit throughout the three-day exposition. ■

Peter Grier, the Washington bureau chief of the Christian Science Monitor, is a longtime defense correspondent and regular contributor to Air Force Magazine. His most recent article, "The Materiel World," appeared in the October 1997 issue.

Aerospace Exhibitors in Review

Companies represented at the AFA Aerospace Technology Exposition

Acumentrics Corp. Uninterruptible power supplies plus a wide range of power protection devices.

Aerojet Development of technologies in ejection seat systems and struJet and spacecraft propulsion systems.

Air Force Times An independent weekly newspaper published by *Army Times* Publishing Co. Alliant Techsystems Titan IV, medium caliber ammunition, AMRAAM, AIM-9X, fuzing and warhead technologies, Delta II/III, special operations, ammunition, SFW, and AGM-130 Single Prime for ICBM.

AlliedSignal Aerospace Designs, develops, manufactures, markets, and services hundreds of products found on many USAF aircraft currently in the fleet.

Allison Advanced Development Company Specializes in R&D of high-performance turbine engine components for various US government agencies.

Allison Engine Company Designs and manufactures gas turbine engines for aerospace, industrial, and marine applications.

Andersen Consulting World leader in helping agencies change to be more successful by giving them a strategic advantage.

Armed Forces Journal International Professional journal of military and industrial affairs.

Army and Air Force Mutual Aid Assn. A nonprofit service organization providing aid to military members and their families since 1879.

Atlantic Research Corp. Designs and builds rocket propulsion systems for use in commercial, space, and military projects.

B & L Intl. Provides the eL-BRUTUS SCREW EXTRACTORS for large and small screws used in aerospace applications.

Bell Helicopter Textron V-22 Osprey Tiltrotor, UH-1N Upgrade Program, and Bell Eagle Eye UAV.

Boeing Company, The Highlights of Boeing's long history of supporting America's warfighters and the US Air Force.

Bombardier Inc., Aerospace Group NATO Flying Training in Canada, an undergraduate and graduate fighter pilot training program.

Bombardier Inc., Defense Systems Div. Provides total integrated logistics management solutions for late generation fighter aircraft.

Calspan SRL Corp. Provides high technology aerospace RDT&E services. Also EW modeling and simulation of enemy defense systems.

Chadwick-Helmuth Co., Inc. Originator of the helicopter rotor and propeller system vibration analysis and balancing industry.

Cincom Systems, Inc. Provides the complete business cycle of companies who build complex, highly engineered products.

CMS Defense Systems The AFDST, a turbojet powered dispenser providing all-weather precision payload delivery for a range of missions.

Curtiss-Wright Flight Systems A leader in the design and manufacture of advanced aerospace flight control equipment.

DAC International, Inc. COTS avionics systems, MagnaStar Airborne Digital Telephone, LCR-93 Attitude & Reference System, and other cockpit and avionics systems.

Daimler-Benz Aerospace (DASA) Design, manufacture, and support of military and training aircraft.

Defense Systems Management College Provides education, research, consulting, and information to the civilian and military acquisition workforce and defense industry.

Dowty Aerospace Flight control actuation systems, hydraulic systems, composite propeller technology, and product support.

ECC International Corp. Design, produce, and support technology-based training devices and computer-based training.

EFW Inc. A complete electronic systems house, specializing in sophisticated hardware and software.

ERDAS, Inc. Leader in geographic imaging software solutions.

Fairchild Defense, Orbital The design, development, production, integration, and test of advanced digital electronics and avionics systems.

GE Aircraft Engines F110 fighter engines, YF120 for the Joint Strike Fighter, Axisymmetric Vectoring Exhaust Nozzle, and engines for tanker/transport applications.

GEC-Marconi Dynamics Inc., Radar & Defense Systems Air-to-surface weapons and related technologies.

General Atomics Leader in high technology R&D, taking concepts through prototype to full-scale development.

GTE Worldwide Telecommunication Services Modernize and upgrade existing Air Force base communications.

Gulfstream The C-37A (GulfstreamV) will enter USAF service in 1998, operated by the 89th Airlift Wing at Andrews AFB, Md.

Hardigg Cases. A Division of Hardigg Industries, Inc. Produce rotationally molded polyethylene shipping and storage cases.

Hughes Aircraft Company Promoting information dominance for the Joint warfighter.

Hughes Sensor and Communications Multifunction integrated avionics for the JSF, the reconnaissance suite for Global Hawk, SAR and IR technology, and APG-73(V)1 radar upgrade for APG-63 fire control radar system.

Hughes Defense Communications Information and communications systems for connectivity, Joint Service, and multiprocessor compatibility.

Interface Products, Inc. Designs, engineers, and manufactures controls and display modules for commercial and military applications.

Intergraph Corporation, Federal Systems Division Develops, integrates, and supports computer graphics systems.

Jane's Information Group The world's leading provider of defense, aerospace, and transportation information.

Kwajalein Missile Range (US Army) US Army's premier missile test range located in the Marshall Islands.

Litton Industries

Amecom Division EW Systems, telecommunications, and space systems.

Data Systems Battlespace Awareness/BMC²; modern tracking system; computerized

interactive training and interactive electronic technical manuals; Handheld Terminal Unit, and automated decision support, and Operator Systems Interface IRAD initiatives.

Guidance and Control Systems Inertial navigation systems, inertial platforms, and inertial measurement systems for all military vehicles and weapons utilizing laser and fiber-optic gyros.

Litton PRC Software Process Improvement Program; "open" systems computer solutions from Super-Minicomputer Program.

Litton-Sperry Marine Designs, develops, and manufactures marine electronic products for defense and commercial markets.

Lockheed Martin Tactical and transport aircraft, launch vehicles, satellite systems, electronics, and munitions.

Lockheed Martin/Boeing Team SBIRS Low Visual description of the experience, personnel, and facilities for mission success on SBIRS.

LPA Software, Inc. Supply chain planning solution to the aerospace, high technology, durable equipment utilities, telecommunications, and MRO markets.

Lucas Aerospace Electric actuation, engine controls, personnel rescue hoist, and a scale JSOW model.

Lucent Technologies, Government Solutions New applications of the Internet and wireless and broadband/multimedia technologies.

Management Consulting & Research, Inc. Automated tools for supporting management consulting, business research, and forecasting and information systems.

Martin-Baker Aircraft Co., Ltd. The Mk-16L ejection seat for the T-6A and the Mk-16LS ejection seat proposed for the T-38.

Motorola Space and Systems Technology Group Specializes in the research, design, and development of space-based communications systems.

National Imagery and Mapping Agency Provides timely and accurate imagery, imagery intelligence, and geospatial information in support of the nation's military and national policy makers.

National Institutes of Health Awarded three government-wide area IDIQ contracts providing all government agencies' products and task orders better, faster, and cheaper than ever before in the government.

Nichols Research Systems engineering, systems analysis simulation development, and system integration for defense and intelligence technical services.

Northrop Grumman The technologies, resources, and critical skills for requirements in surveillance, precision strike, advanced battle management, and intelligence technical services.

Pentagon Federal Credit Union Explains the market-leading financial and insurance services available from one of the strongest credit unions serving Air Force personnel.

Pratt & Whitney, A United Technologies Company

P&W Canada Full-scale PT6 cutaway engine.

P&W Large Military Engines C-17 powered by F117 engines, F-22 powered by the F119, and F-15 with F100-229 engine.

P&W Space Propulsion Division Supplier of solid and liquid rocket propulsion systems for space and missile applications.

Raytheon Products and services for missiles, communications and radar systems, aircraft upgrade and modernization, imagery, sensor and signal data management, reconnaissance and UAV systems, jammers, and decoys.

Recon/Optical, Inc. Supplies tactical and long-range reconnaissance systems, optomechanical and electro-optical sighting systems, and military and industrial optics.

Rockwell, Collins Avionics and Communications Division Advanced communications, navigation, and mission management solutions.

Rolls-Royce North America Major aircraft engine supplier to USAF.

Rugged Portable Systems Designs, manufactures, integrates, and supports rugged SPARC workstations for harsh environments.

SCI Systems, Inc. Designs, manufactures, markets, and services electronic products and systems, primarily for the computer, aerospace, telecommunications, medical, and banking industries, as well as for the US government.

Sight, Sound & Motion FitMaster, a complete flight simulation and visual tool.

Smiths Industries Aerospace Systems for Global Air Traffic Management, cockpit modernization, and capabilities to lower training costs and monitor aging fleets.

Sprint A full range of telecommunications products and services to the DoD and Intelligence communities.

The Stanley Works Manufactures industrial and commercial storage products.

Stavatti Corp., Aerospace Division Producer of general aviation and government aircraft

TEAC America, Inc. Designs and manufactures airborne video tape recorders.

Teledyne Ryan Aeronautical Tier II Plus Global Hawk unmanned aerial vehicle.

Textron Systems The design, development, and production of sensor-fuzed munitions systems.

Thiokol Corp. Producer of solid propulsion systems, ordnance, composite products, and designer and manufacturer of high-performance proprietary fasteners and installation systems.

Thompson-Thorn Missile Electronics Designs, develops, and manufactures high-performance systems and subsystems for worldwide military applications.

TRW Space, software, and avionics systems and advanced technologies for space-based surveillance and communications, ICBM systems, command and control, laser missile defense, combat simulation and training, imaging, and F-22 and JSF avionics.

United Missile Defense Company Formed of Lockheed Martin, Raytheon, and TRW to work in partnership with the US government to develop, integrate, and deploy a National Missile Defense system.

USAA Auto, property, life, and health insurance, investments, banking, travel, and merchandise services.

USAF Modeling, Simulation, and Analysis Modeling, simulation, and analysis technologies used to support US warfighters and peacekeepers.

Vision Systems International Helmet-mounted displays.

Achievements and Challenges

By Peter Grier

THE accomplishments of the US Air Force during its 50 years as a separate service and the promise and challenges of coming decades were the main themes struck by key speakers at the 1997 AFA National Convention in Washington.

US airmen over the years have pushed their minds, their muscles, and their machines to the limit in order to demonstrate what airpower can do, noted Gen. Ralph E. Eberhart, Air Force vice chief of staff and, at the time of his speech, acting Chief of Staff. Such total effort will continue in the future as technology expands Air Force capabilities, he said.

"As we move from today's most respected air and space force to tomorrow's most respected space and air force—how exciting to be a part of that," said Eberhart.

The 1997 AFA National Convention and Aerospace Technology Exposition ran from Sept. 15–17 and helped mark the 50th anniversary of the establishment of the Air Force as a separate military service in 1947.

In his speech to assembled AFA delegates, Eberhart noted that the official signing of the act that created the Department of Defense and the Air Force took place earlier than planned. Rising tensions from the nascent Cold War caused President Harry S. Truman to push things forward a few weeks and affix his signature to the document on Sept. 18, 1947, as he sat waiting for takeoff aboard his plane, *Sacred Cow*.

"A number of Army Air Corps representatives stood watch over the moment," said Eberhart. "When Truman was done, he looked up and quietly said, 'Gentlemen, we now have an independent air force.'"

At the time, the United States military had just dropped from 12.5 million people in uniform to an active duty military of only 500,000. Yet world events soon put the new service to the test.

One Year to Respect

"In less than a year, we earned the respect of the world and the eternal gratitude of the German people with the Berlin Airlift," said Eberhart.

Within 10 years the new USAF had fully entered the supersonic age. The U-2 had made its first flight, and the KC-135 was being readied to service B-47s and B-52s.

Later anniversaries highlighted further development of the force, said Eberhart. Twenty years on, the US was embroiled in Vietnam, with all the operational experience and problems that conflict entailed. The 30-year anniversary saw the Air Force in the midst of its post-Vietnam draw-down—and at the beginning of its adaptation of precision weapon and information technologies. "At 40 years, in 1987, the service was getting ready for the two minute drill in the fourth quarter of the Cold War," said Eberhart.

Today the service is on the edge of entering frontiers of technology and capability outlined in such efforts as Joint Vision 2010 and the Quadrennial Defense Review.

"Just as the Army Air Corps officers who watched President Truman sign the national defense act had no idea in the late 1940s what the Air Force would become today, we have no idea what the next 50 years will hold," said Eberhart.

The vice chief noted that he was delivering an AFA convention speech

normally reserved for the Chief of Staff. The decision by Gen. Ronald R. Fogleman to cut short his term and retire one year early, however, left the Air Force without a titular leader during AFA festivities.

"I certainly miss having a Chief," said Eberhart. "I feel sort of like the best man at a wedding, and the groom doesn't show up. Everybody knows what's supposed to happen, but it's not quite the same."

Then-Secretary of the Air Force Sheila E. Widnall, in her last address to AFA in her official capacity, also reminisced about the changes the Air Force has seen in the last 50 years. She stepped down to return to a post at the Massachusetts Institute of Technology.

When the service was formed, milk was 78 cents a gallon and bread was 13 cents a loaf. The Dow Jones Industrial Average was a whopping 177, but "since our origin in 1947, one commodity has remained unchanged, priceless and, quite frankly, the envy of the world: American airpower," said the Secretary.

Furthermore, USAF will remain enviable, she said, remarking that the service is likely to continue to define the much-heralded Revolution in Military Affairs as it applies to air and space.

Parallel Warfare

For instance, the US and its Air Force may be on the edge of an ability to wage warfare in parallel fashion, said the Secretary. That means using stealthy UAVs, as well as satellites and other reconnaissance assets, in combination with sophisticated information and targeting systems, to hold all of an

adversaries target classes at risk—nearly simultaneously.

Long-range planning for such developments has now been institutionalized in the Air Force, Widnall said. Evidence of this can be seen in the recent production of the vision document "Global Engagement: A Vision for the 21st Century Air Force," the result of an 18-month comprehensive effort.

The Secretary then gave what she called a trip report of Air Force accomplishments during her four-year tenure. Among them: the advent of the C-17, the future backbone of strategic airlift; the establishment of the Global Engagement Wargame series, intended to test the service's long-range plans; and the Lightning Bolt acquisition reforms that have already chalked up \$17 billion in savings and cost-avoidance.

Other big steps the Air Force has taken during Widnall's time in office include bomber conventional weapon upgrades, continued development of the F-22 fighter and the Joint Strike Fighter, and the battlelabs initiative, which is aimed at rushing new operating concepts and technologies to the field as fast as possible.

The idea is to move so fast that adversaries don't have time to consider how to counter US capabilities.

"Clearly," said Widnall, "the symbiosis of innovation and technology will be key to realizing our destiny: the primacy of space operations."

Already, USAF space operations are undergoing explosive growth. Today the United States has 250 percent more satellites in orbit than it did during the Cold War. "Talk about a bull market!" said Widnall.

Neither technology nor acquisition will be the greatest challenge as USAF moves to more emphasis on space, in Widnall's view. The biggest problem, instead, may be cultural. "Every member of our Air Force team needs to learn to think differently about the concept of future operations if our Air Force is to remain as viable 50 years from now as it is today," she said.

Personnel issues have been important to Widnall during her time at the Pentagon. She said she has tried to pursue a balanced Quality of Life strategy that includes attempts to reduce high optempo and perstempo

rates, dormitory and housing improvements, preservation of retirement benefits, and continued support of educational systems, among other things.

Some Ways to Go

The three percent pay raise authorized in Fiscal 1997 should help bring US military compensation closer to comparability with that in the private sector. "But clearly we have some distance yet to travel in this area," said Widnall.

To close, Widnall paraphrased remarks she had made four years ago in her first address to AFA. Back then, she recalled the words of Lt. Gen. Ira Eaker when he arrived in Britain, signaling America's participation in World War II: "We won't do any more talking until we've done some fighting, and after we leave, we hope you will be glad we came." Then Widnall said, "It is my hope that Ira Eaker's words ring true in your hearts today. I hope that I have met your expectations."

Secretary of Defense William Cohen told the AFA audience that the 50th anniversary of an independent air arm was a time for looking ahead, not just celebration.

His speech focused on the Revolution in Military Affairs. As a result of this technological upheaval the US will continue to have the most dominating military on the planet, he said, and air and space forces are likely to be the global symbols of this decisive power.

"Our forces will be able to descend on the scene very early in the conflict, take the initiative away from a numerically superior opponent, getting inside his decision cycle and ending the battle quickly on our terms," he said.

The guide for building toward this future force is the Joint Vision 2010 report prepared by the Chairman of the Joint Chiefs of Staff. It lays out a vision of a system of systems that gives US forces total battlespace awareness, said Cohen.

"The Revolution in Military Affairs is going to integrate the laptop, the microchip, the microwave, the video cam, the satellite, and the sensor," said Cohen. "It's going to collect and distribute a steady flow of information to our forces throughout the battlespace, while denying the enemy the ability to do the same."

These new capabilities may mean that US forces will be able to deploy lighter, he added, noting that they might need fewer weapons platforms and fewer munitions.

"Realizing this vision will require such leap-ahead technologies as the F-22 Raptor," according to the Pentagon head. "We're going to need the Air Force's JSTARS and satellites and UAVs and even more," he said.

Nor can the Pentagon ignore the fact that much of the information necessary to RMA travels through, or is collected from, space.

Space and Air

"That's why it is so vitally important that the Air Force continue its evolution from an air and space force into a space and air force," said the Defense Secretary.

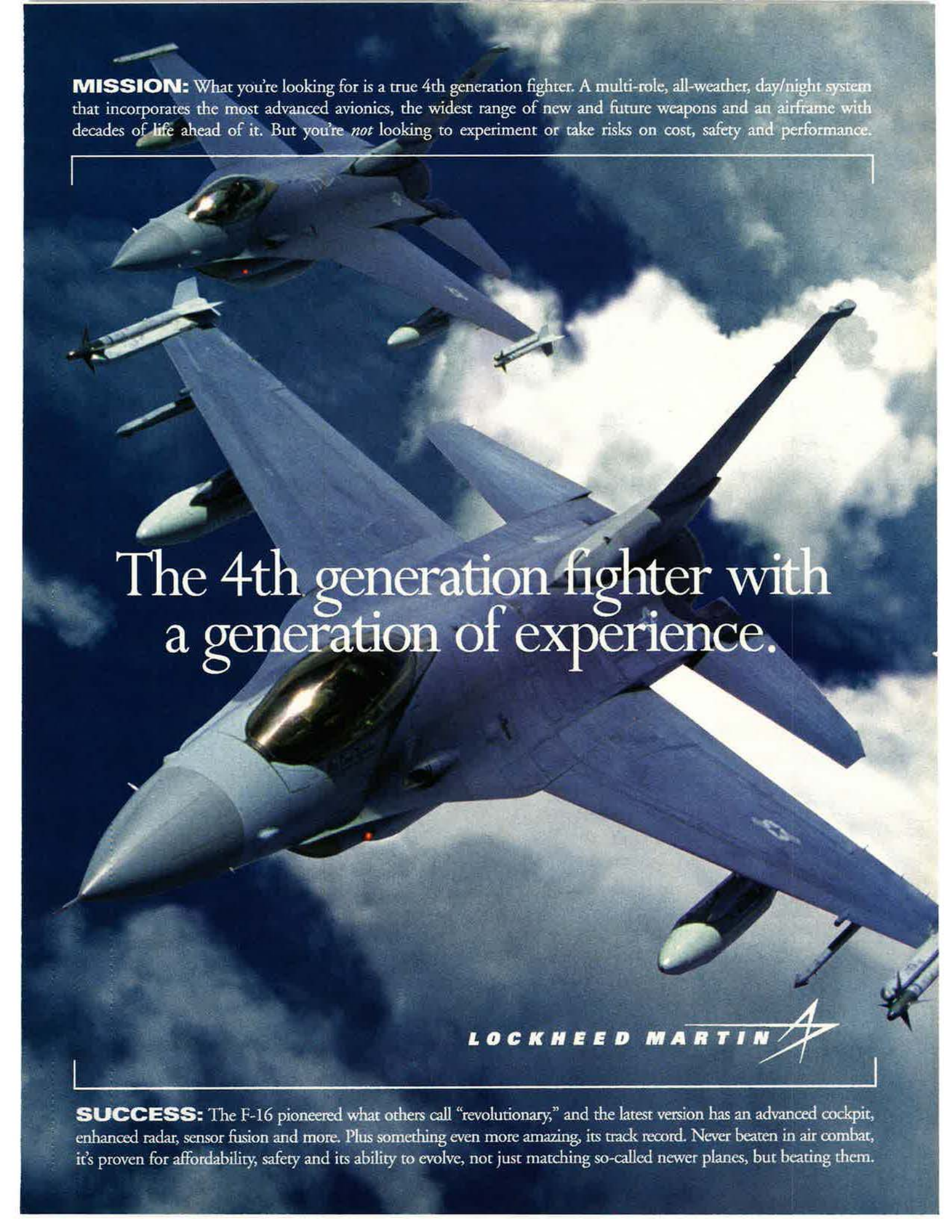
Cohen's speech contained high praise for Fogleman, whose retirement ceremony was held last month. The general left little doubt that he was leaving, in part, because of disagreements with the defense secretary over the disciplining of an Air Force general in regard to the Khobar Towers bombing that killed 19 airmen in Saudi Arabia in 1996.

Of Fogleman, Cohen said, "As the Air Force enters the new century, you can do so with confidence because of the vision that General Fogleman had as he charted a course that was both clear and bold. And he carried out his responsibilities with pride and principle, and we all owe him a great deal of thanks."

Cohen's comments about Fogleman sparked thunderous applause from convention attendees.

"This week is a time when Americans reflect upon the enormous debt that our nation owes to the Air Force for five decades of courage and service," Cohen told the AFA group. From the C-54 crews in the Berlin Airlift to troops deployed today in support of operations around the world, "and to all airmen ... our debt is incalculable and our gratitude is immense." ■

Peter Grier, the Washington bureau chief of the Christian Science Monitor, is a longtime defense correspondent and regular contributor to Air Force Magazine. His most recent article, "The Materiel World," appeared in the October 1997 issue.



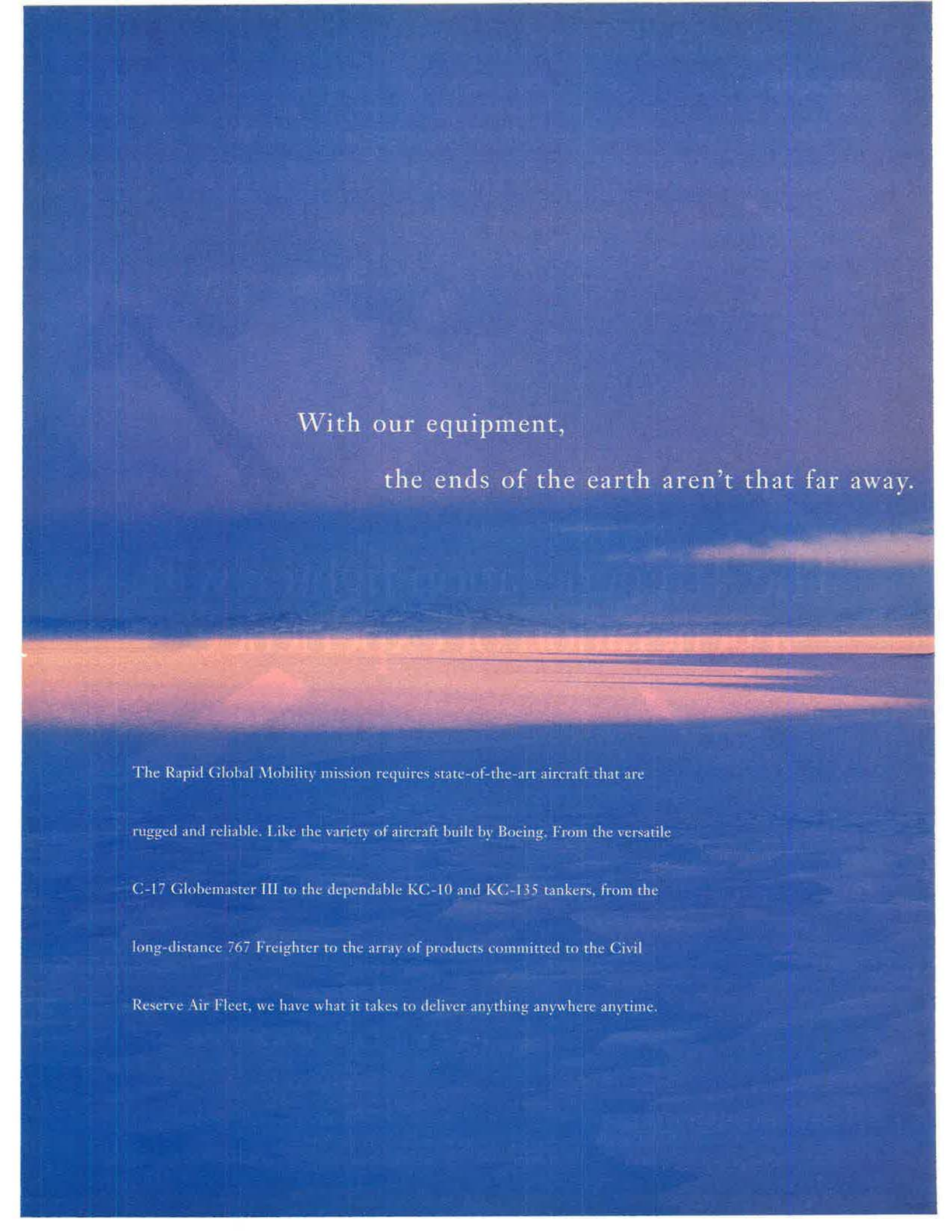
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AFA / AEF National Report

By Frances McKenney, Assistant Managing Editor

AFA Improves World Wide Web Site

Two years ago AFA's Internet World Wide Web site made its debut at the National Convention. Since then, the home page has undergone many refinements.

For AFA members and field leaders, one of the most significant changes—a private area—was unveiled at this year's convention. After further fine-tuning and a period of testing, this new private area will allow chapters to download their member lists.

Members can presently check and update their records through this site as well as access AFA's national newsletters such as "Crossfeed" and "Legislative Update." Soon other significant documents, such as field manuals and the AFA constitution, will be online.

With AFA National President Doyle E. Larson and Chairman of the Board Gene Smith actively promoting the association's web presence and use of e-mail, the Long-Range Planning Com-

mittee has been considering ways to use the system for improving communications between national headquarters and the field.

The AFA home page also underwent a face-lift this year, simplifying its structure and adding a search capability and more content. *Air Force Magazine's* section now includes a collection of articles it has published on military health care and 21st century air- and spacepower concepts. The magazine also recently posted on the site three features with historical information: "Aviation Hall of Fame," "Gallery of Classics," and the latest version of the annual "Space Almanac." The Aerospace Education Foundation's Eaker Institute for Aerospace Concepts now has its own spot within the AEF site. The Air Force Memorial Foundation added updated and more detailed information to its site.

AFA's Communications Department reported that the association's web site now pulls in 400 to 500 visitors each work day, numbers that surged to as many as 800 during Air Force Fifty.

Honors for "Red" Smith

In a high point of the North Carolina State Convention in August, National Director James E. "Red" Smith received an Air Force Scroll of Appreciation, an award for meritorious achievements as a civilian volunteer. The award was approved by then-Secretary of the Air Force Sheila E. Widnall, Gen. Ronald R. Fogleman, then-USAF Chief of Staff, and Gen. Richard E. Hawley, Air Combat Command commander.

Smith earned the honor because of 600 hours of volunteer time arranging ACC's three-day kickoff event for USAF's 50th anniversary. Those December 1996 festivities culminated in the naming of a B-2 as *Spirit of Kitty Hawk*. It was the only B-2 not named after a state, and the choice of name came about because of Smith's initiative.

In presenting the prestigious award to Smith at the state convention, Brig. Gen. (sel.) Randall K. Bigum, commander of the 4th Fighter Wing at Seymour Johnson AFB, N.C., noted that Smith had helped build a strong civilian-military relationship in the state's eastern region.

Rep. Walter Jones Jr. (R-N.C.) served as keynote speaker for the convention. He told the audience that "the military is confronting some of the most critical challenges and fundamental decisions since the end of World War II."

The **Scott Berkeley Chapter** hosted the convention, attended by members of eight chapters in the state and covered by the local newspaper.

In the Constitution State

With the **Flying Yankees Chapter** serving as host, Connecticut combined its convention in August with the state's annual Governor's Day celebration. This year, Governor's Day honored USAF's 50th anniversary.

Ronald E. Palmer, then-state president, said that AFA conventioners spent a day at Camp Rowland, Conn., where the Governor's Day activities began with a display of Army and Air National Guard



AFA National President Doyle Larson talked with AFA chapter members at Kadena AB, Japan (above), and met with members in Honolulu and at Misawa and Yokota ABs, Japan, while touring the Pacific region. He also met with USAF troops and discussed AFA activities with news media.



North Carolina Rep. Walter Jones Jr. (left) joined Brig. Gen. (sel.) Randall Bigum, 4th Fighter Wing commander, and John White (right), then-state president, in congratulating National Director James "Red" Smith (second from left) on his USAF civilian volunteer award at North Carolina's State Convention.

military equipment. Other events included an awards ceremony, sponsored by an Employer Support of the Guard and Reserve group, and a concert by the 102d Army Band.

The 118th Fighter Squadron from Bradley IAP, Conn., flew A-10s in a flyover that opened the parade. Members of Connecticut's Foot Guard and Horse Guard performed drills. The state's national guards conducted a pass in review—the 103d Air Control Squadron and 103d Fighter Wing, also from Bradley IAP, were the lead units. Marching in this first group was Palmer, a master sergeant in the ANG and the state ANG's senior enlisted adviser.

National Directors Joseph R. Falcone and Joseph A. Zaranka observed the parade on the reviewing stand with Gov. John G. Rowland and other special guests.

That evening, AFA members attended a reception to cap their convention. Palmer said that about 3,000 guests took part in the day's events, about 60 of them from AFA chapters in the Constitution State.

The 49th for the 50th

With USAF's Golden Anniversary as the focus, Pennsylvania's western region and the **Greater Pittsburgh Chapter** hosted the state's 49th annual AFA convention. At the evening's Aerospace Banquet, Brig. Gen. William J. Boardley, commander of the 171st Air Refueling Wing (ANG), Pittsburgh IAP, was guest speaker.

The Pittsburgh Chapter's SMSgt. Norman A. Marous received the Distinguished Pennsylvanian award in a surprise presentation at the awards luncheon. Though he is assigned to the D.C. area, Marous and his wife, Geraldine, also a chapter member, are active in Pittsburgh's AFA group. Marous was selected for the award because he has "always been there to help with state and chapter activities," said Jerome P. Ashman, Pennsylvania state president.

The Outstanding Chapter award went to **Mifflin County**, one of three original charter chapters in the Keystone State. The 121-member chapter, headed by George Rheam, recently completed an unusual project:

With help from other veterans organizations, it renovated a 60-year-old building to resemble a World War I-era French chalet. It is now used for meetings of several veterans organizations, including the chapter.

Lawrence N. Paper of the **Total Force Chapter** received the AFA-Pennsylvania Man of the Year award. Other awards went to TSgt. Robyn Burleyson, 311th Recruiting Squadron, Butler, Pa.; SrA. Amber J. Bradley, 913th Airlift Wing (AFRC), Willow Grove ARS, Pa.; SrA. Janet L. Watson, 171st ARW (ANG); Civil Air Patrol Cadet Jerry J. Ferdinand; AFROTC Cadet Charlyn K. Skriba; and AFJROTC Cadet Brian A. Wagner.

Mississippi Membership Awards

Gen. Ronald R. Fogleman served as keynote speaker for the Mississippi State Convention in July, just two days before announcing his retirement as USAF Chief of Staff. He spoke at the convention's awards banquet, held at the Keesler AFB Officers' Club, to an audience of more than 200 people, reported Quentin C. Smith, president of the host **John C. Stennis Chapter**.

As part of the awards presentations, it was announced that the Stennis Chapter would receive the Arthur C. Storz Sr. Membership Award, for producing the highest number of new members as a percentage of total membership, and a Jack Gross Award for membership under the extra-large chapter category—both to be presented at AFA's National Convention.

Smith credited Elia T. Vasilopoulos, chapter vice president for membership, with helping the chapter earn the two national level honors. Keesler's chief of civilian personnel, Vasilopoulos wrote letters to key USAF leaders on base and to potential Community Partners, urging them to attend the chapter's membership kickoff drive. Throughout the year she visited local businesses to promote the Community Partners program and continually reminded chapter members to recruit newcomers.

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AFA/AEF National Report

Smith described Vasilopoulos as a "dynamic, go-getting membership chairman."

Hawkeye State Winner

Newly commissioned 2d Lt. Benjamin C. Romick of the **Lancer (Iowa) Chapter** has garnered the Hawkeye State's first Dr. Theodore von Karman Graduate Scholarship.

In fall 1996, when Romick was a cadet AFA member at AFROTC Det. 255 at the University of Iowa, Iowa City, he attended a reception to celebrate the 50th anniversary of the Air Force Reserve Officers Training Corps. As part of the event, William Klein, Lancer Chapter's secretary and vice president for aerospace education, gave a comprehensive presentation on the Aerospace Education Foundation's scholarship and award opportunities. Klein said the 30 cadets at the event asked him many questions, and Romick followed up by applying for one of AEF's \$5,000 von Karman scholarships.

Frank Gonzales, chapter president, and Klein wrote the letter of recommendation for the cadet, citing his 3.8 grade point average as a premed student, leadership in the AFROTC

detachment, and work experience at the University's hospital and neurology department.

Romick, who became a regular chapter member after receiving his commission, is now a first-year medical student at the University of Iowa. He plans to become a career USAF flight surgeon. The chapter will present him with a Certificate of Achievement at the next annual Cadet Night.

The View From Maui

In June, **Maui (Hawaii) Chapter** members toured the Maui Space Surveillance Complex, run by Air Force Space Command on Haleakala, a dormant volcano on Maui. It is the site of the largest telescope in DoD—one of the largest in the world.

Called the Advanced Electro-Optical System, it will view and track satellites passing overhead in low orbit and was expected to collect its first pictures of space at the end of September. The 120-ton telescope's primary mirror is nearly 13 feet in diameter.

According to Chapter President John Wilt, his group was the first to be given a tour of the new telescope's facility, which at the time was not

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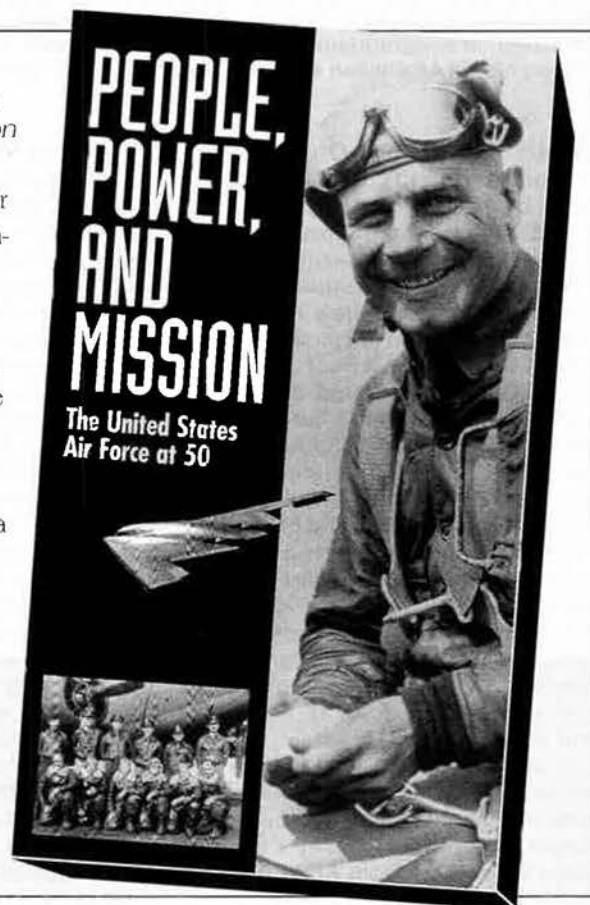
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even completed. He said he had announced in the local newspaper that the chapter would be visiting the site, and several people who read the item phoned to ask if they could join the tour. At least two also asked for AFA membership material, Wilt said, adding that a couple of callers had been association members years ago in other locations.

The chapter ended up renting two vans to transport six chapter members and seven guests to the site. For chapter member Rita C. Silva, the most memorable moment came when the visitors were raised on a platform that allowed them to look into the mirror of one of the several operational telescopes at the facility.

How To, Where To

Several members of the **Huron (Mich.) Chapter** have helped reestablish the Retirees Activities Office at the former Wurtsmith AFB, Mich.

Once a tactical fighter and bomber training facility and home of the 379th Bomb Wing, the base closed in June 1993. This stranded the area's retirees, said Kenneth W. Ratliff, chapter vice president for government relations. He pointed out that the nearest Air Force facility is Wright-Patterson AFB, Ohio, 350 miles away.

After the base closure, the hospital on Wurtsmith, which housed the original RAO, became the Oscoda Community Health Center. But thanks to Ratliff's initiative, the health center gave back some office space, and modest funding from several sources—including USAF, the Huron Chapter, and local businesses—allowed the activities office to reopen for a one-year trial run. It is officially a satellite office of the Retirees Activities Office at Wright-Patterson AFB.

"We are a how-to, what-to, where-to-go referral agency," explained Ratliff. He and Chapter Vice President Norman Degenhardt, member Richard DeYoung, and Earl T. O'Loughlin of the **Wright Memorial Chapter** are among the AFAers who volunteer at the office.

It is open three days a week, and Ratliff says someone visits or phones every day. The office fields questions from veterans or retirees from all services. Most of their inquiries are about Tricare, identification card renewal, and survivor assistance, in that order, Ratliff said.

Always Friends

When Gen. Lloyd W. Newton, Air Education and Training Command commander, visited Vance AFB, Okla., in July, the **Enid Chapter**



Lt. Gen. (sel.) Stewart Cranston (second from left) received the Jerry Waterman Award at the Florida State Convention from (l-r) State President Robert Patterson, AFA Chairman of the Board Gene Smith, and AEF Chairman of the Board Thomas McKee.

planned a reception so that he and his wife, Elouise, could visit with friends from the base. The Newtons were stationed at Vance from 1988 to 1990.

"We thought he would like to get back and renew acquaintances," said

Oscar Curtis, chapter secretary and organizer of the event. It was held at a local country club in Enid.

He reported that more than 70 guests attended—virtually everyone who received an invitation. Many of them were civilian employees of the

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base where Newton was commander of the 71st Flying Training Wing.

Florida State Convention

Hosted by the **Panama City Chapter**, the Florida State Convention at Tyndall AFB in July brought together representatives from 19 of the state's 26 chapters.

Brig. Gen. Gary Rubus, 325th Fighter Wing commander, delivered the welcoming remarks.

Lt. Gen. (sel.) Stewart E. Cranston, then-Air Force Development Test Center commander, spoke to the luncheon audience on quality in the Air Force. AFDTCC had received the Secretary of the Air Force Unit Quality Award earlier this year. Cranston was later presented with the Jerry Waterman Award, the highest Florida AFA honor for an active duty USAF service member.

At the luncheon, Outstanding Chapter awards were presented to the **Central Florida, Hurlburt, Brig. Gen. James R. McCarthy, and Pensacola chapters**. The Central Florida, Pensacola, **Cape Canaveral, On Wings of Eagles, Col. H.M. "Bud" West, and Peace River chapters** received state-level Exceptional Service awards.

Maj. Gen. Philip G. Killey, 1st Air Force commander, welcomed 175 guests to the evening banquet, where AFA Chairman of the Board Gene Smith was guest speaker. Smith described his experience as a POW during the Vietnam War and, during the awards portion of the banquet, was honored with a state Special Citation—the highest state-level award for service.

Craig R. McKinley, then-national vice president (Southeast Region), and Clifford H. Long of the **Eglin Chapter** also received Special Citations.

William Dyess, technical director for the Munitions Division, 46th Test Wing, Eglin AFB, received the Lt. Gen. Lewis H. Brereton Award for outstanding civilian contributions to aerospace progress.

State-level Presidential Citations went to Gerald P. Chernoff of the **Florida Gulf Coast Chapter**; David R. Cummock, who also received the state's Member of the Year Award; Robert F. Cutler from the **Gen. Nathan F. Twining Chapter**; Marvin T. Hicks of the **Eglin Chapter**; Ronald N. Hoelzer of the **Jerry Waterman Chapter**; Richard A. Ortega, Florida state vice president

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for aerospace education; Jack Rose; William L. Sparks of the McCarthy Chapter; and Raymond Turczynski from the Hurlburt Chapter.

Robert E. Ceruti, National Directors Martin H. Harris and Tommy G. Harrison, and James S. and Mary G. Speese, all from the Central Florida Chapter, also received Florida State Presidential Citations.

More Chapter News

Grissom Memorial (Ind.) Chapter President Mike Moran called it a "day of fun and fund-raising." It also served as the chapter's salute to USAF's 50th anniversary. The day began with a golf tournament, with 41 players taking part. That night, 115 chapter members and guests danced to big band-style music at their fourth annual dinner dance, held at the consolidated Grissom Club on Grissom ARB. Among the special guests were Harold F. Henneke, national director, Ted O. Eaton, outgoing state president, and James E. Fultz of the **Southern Indiana Chapter**, who is the new state president.

It took 52 years, but AFA member Reginald H. Thayer Jr. finally received a Distinguished Flying Cross for his 79 World War II combat missions. Thayer flew as a B-17 bomber



Attending a lecture by Air Force Secretary Sheila Widnall (third from right) at the University of Pittsburgh were (l-r) National Directors Robert Carr and John Brosky; Wesley Posvar; Carolyn Ban, dean of the Graduate School of Public and International Affairs; and Rodney Coleman, assistant secretary of the Air Force for manpower, reserve affairs, installations, and environment.

with the 97th Bomb Group, based in North Africa, and with the 306th Bomb Group, based in the UK. He had been recommended for the DFC before the war ended but heard nothing about it until 1995, when he

was interviewed by a newspaper reporter. Thayer mentioned the DFC, and the reporter set in motion an investigation that two years later resulted in a Special Order officially awarding Thayer the medal. ■

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Kurt C. Helphinstine
(ex officio)
National Commander
Arnold Air Society
Portland, Ore.

Bulletin Board

Seeking patches, USAF, ANG, or AFRC. Contact: Karl Guzzo, 112 Encanto Dr., Holbrook, AZ 86025.

Seeking contact with a fighter pilot, possibly named Lieutenant O'Neil, with the 332d Fighter Group, who was shot down near Trets, France, and saved by French Resistance. Contact: Herve Brun, Service Historique de l'Armee de l'Air, Chateau de Vincennes, BP 110-00481, Armees-France.

Seeking Bob Johnson and Bill Pryor, Munitions Specialist Course, Lowry TTC, CO, and members of 400th MMS and Susan Biggs, Kadena AB, Japan, 1965-66, 415th MMS, MacDill AFB, FL, 1966-67, and 421st MMS, Phu Cat, Vietnam, 1967-68. Contact: Bill Herrick, 2274 Patriot Dr., Murfreesboro, TN 37130-4031.

Seeking information on Maj. Franklin L. Robinson, 48th FS, 14th FG, 15th AF, killed in Six Fours, France. Contact: Claude Majastre, La Font de Fillol, 588 rue Curet-Bas, 83140 Six Fours, les Plages, France.

Seeking personnel of 8th and 9th AF, Northern Ireland, Langford Lodge, Cluntee, Toome, Greencastle, Mullaghmore, Nutts Corner, or Maghaberry, WWII. Contact: Ulster Aviation Society, c/o Ernie Cromie, 27 Woodview Crescent, Lisburn, Northern Ireland, BT28 1LF.

Seeking patches of the 86th BS, WWII—era (RAF Horham or North Africa) or postwar—era (RAFs Sculthorpe or Alconbury). Contact: John Miller, 14974 Bramblewood Dr., Houston, TX 77079-6335.

Seeking Christianson, nickname Christy, who served in Norfolk or Suffolk, UK, 1950-53. Contact: David Harvey, 41 Sweetacres, Hemsby, Gt. Yarmouth, Norfolk NR29 4NL, UK.

Seeking anyone who attended HQ USAF Safety (Reliability) Conference in 1952 or 1953, chaired by General Irvine. Contact: Ray D. Harwood, 1559 S. Pinebark Ln., Charleston, SC 29407.

Seeking members of 1246th AACS Sq, January-September 1958, and 1094th Support Sq, Manzano AB, Albuquerque, NM, October 1958-May 1960. Contact: Robert A. Wilson, 6206 Carters Ln., Riverdale, MD 20737.

Seeking Colonel Sullivan, USAAF pilot, 6 ft., medium build, blue eyes, curly hair, and freckles, shot down in WWII, who had a leg injury and was still on active duty in 1963. Contact: Richard S. Johnson, PO Box 340081, Ft. Sam Houston, TX 78234.

Seeking members of the 514th FS, Bien Hoa, Vietnam, under the command of Maj. James W. Greene, Nov. 28, 1965, to Dec. 23, 1966. Contact: Rhea or Tom Greene, 1909 N. Cameo Ave., Loveland, CO 80538 (tmg@rmi.net).

Seeking Harry J. Anglum, navigator/bombardier in WWII, UK, graduate of LaSalle University, Philadelphia, 1942. Contact: Edward J. Sullivan, 1440 Water Pipit Ln., Orange Park, FL 32073-7238.

Seeking information on, photos, memoirs, or survivors of crash over Czechoslovakia, 1944-45. Contact: Jiri Rajlich, Lázenská 6, 118 00 Praha 1, Czech Republic.

Seeking US airmen who flew actions against Blechhammer, Dwory, and Auschwitz, 1944, and Posen, Gdynia, Danzig, and Marienburg, 1943. Contact: Wojciech Krajewski, ul. Kukulki 3, 02-807 Warsaw, Poland.

Seeking members of A-26/B-26 Air Commando Ops, Vietnam. Contact: Warren E. Thompson, 7201 Stamford Cove, Germantown, TN 38138.

Seeking Col. Benton Remmers Baldwin, USAF (Ret.), who attended UCLA and is the father of John Scott Baldwin. Contact: Ruth Haddock, 906 Santa Clara Ave., St. Augustine, FL 32086-7317.

Seeking SSgt. William Edmund Harris, who knew Lois Iva Dodsworth, in England, 1944. Contact: Michael Roger Harris, 27 Greenvale, Northfield, Birmingham B31 1PQ, UK.

Seeking information and stories on the game of darts as a pastime during service. Contact: Patrick Chaplin, 50 Norfolk Rd., Maldon, Essex CM9 6AT, UK.

Seeking A1C Richard James Graham, 3919th, RAF Fairford, UK. Contact: D.J. Pullin, 11 Fairfax Ave., East Ewell, Surrey KT17 2QN, UK.

If you need information on an individual, unit, or aircraft or want to collect, donate, or trade USAF-related items, write to "Bulletin Board," Air Force Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Items submitted by AFA members have first priority; others will run on a space-available basis. If an item has not run within six months, the sender should resubmit an updated version. Letters must be signed. Items or services for sale, or otherwise intended to bring in money, and photographs will not be used or returned.—THE EDITORS

Seeking information on Lt. Andrew L. Jackson, pilot of a P-38 that crashed at Banstead Downs Golf Club, Surrey, UK, May 31, 1944. Also seeking TSgt. Glendon Bryan. Contact: F. David Crump, 1 Cuddacombe, Treburley, Launceston, Cornwall PL15 9NS, UK.

Seeking USAFA graduate Lt. Lee Hollingsworth, of St. Peter, MN, stationed at Nellis AFB, NV, 1960s. Contact: Judi Watts, 1405 Hillside Pl., Las Vegas, NV 89104.

Seeking photos of the 13 volunteers sworn into the Women's Air Force, in front of the Liberty Bell, July 8, 1957, Philadelphia. Contact: Robert L. Giannini III, Associate Curator, Independence National Historical Park, 313 Walnut St., Philadelphia, PA 19106.

Seeking Daniel Rodriguez and Ulton Russel, stationed in Biarritz, France, 1944. Contact: Marie-Danièle Rodrigo, 63 rue Anatole France, 42300 Mably, France.

Seeking Melvin Alfred Whitehead, wife Brenda, and family, stationed at Camp New Amsterdam or Huister Heide, Netherlands, 1976-79. Contact: Martin Pfaff (pfamor@worldaccess.nl).

Seeking "Wally" Fairance or Ferenc, RAF Warmwell, UK, spring 1944, who knew Geneitta Isobel Bartlett. Contact: H. Lee, 103 Frosthole Crescent, Fareham, Hampshire PO15 6AY, UK.

Seeking information concerning Lt. Duane E. Wetter, 316th FS, Nancy, France, January-August 1945, and photos or movies taken during that period. Contact: Bervyn D. Wetter, 201 Stock Farm Rd., South Paris, ME 04281.

Seeking 1st Lt. Lawrence C. Bracken, 78th FS, who flew P-47 #238, rescued Nov. 29, 1944, San Bernardino Strait, CA. Contact: Nick Robolino, 416 Birkdale Way, Bakersfield, CA 93309-2804.

Seeking P-47 pilots Ed Howard, Bob Hubbard, Kit Kitowski, and others from the 64th FS, 57th FG, 12th TAF. Contact: Henry Harmon Diers, 795 Bridge Rd., Eastham, MA 02642 (hdiers@capecod.net).

Seeking "Yogi" Ralph Fernandez, in 1957 flight training at Moore AFB, TX, and Nellis AFB, NV, and stationed at RAF Wethersfield, UK, 1963-64. Contact: Mabel Theison, 254 McGehee Dr., Baton Rouge, LA 70815.

Seeking personnel stationed at RAF Manston, UK, 1956-57, who knew Louis Edward John. Contact: F.L.P. Feast, 13 Shaw Rd., Downham, Bromley, Kent, UK.

Seeking Joe Bradshaw, possibly from Corpus Christi, TX, stationed at Burtonwood AB, UK, 1955-57. Contact: D. Corbett, 4 Norwood Rd., Cheltenham GL50 2BW, UK.

Seeking crew members shot down over Greece near Mt. Pateras, shortly before Christmas 1943, rescued by Demetrios (Jimmy) Palaskas. Contact: Robert M. Johnson, Box 27, Sarasota, FL 34230.

Seeking information on and survivors of the crash of B-17F Yankee Gal, piloted by 2d Lt. William Kopf, at Desford, UK, Oct. 10, 1943. Contact: John Collier, Forest Lodge, 188 Station Rd., Cropston, Leicestershire, LE7 7HF, UK.

Seeking information on and survivors of B-17 G #42-31880, 366th BS, 305th BG, 8th AF, that crashed during a raid over Mannheim, Germany. Contact: Ludwig Faust, Weinstrasse Nord 21, 67098 Bad Dürkheim, Germany.

Seeking information on and photos of the H-6, L-4, L-5, L-13, L-20, UC-64, or LC-126 with the Air Rescue Service, 1948-66. Contact: Nicholas M. Williams, 1002 Ridgewood Blvd., Waverly, IA 50677-1114.

Seeking Daniel Weston of Massachusetts, stationed at Offutt AFB, NE, 1942-47. Contact: Darla Harms, 1901 East Manor Dr., Lincoln, NE 68506.

Seeking information, patches, pilot scarves, and stickers of squadrons, groups, and wings of PACAF to trade for patches and photos of the Royal Netherlands AF. Contact: Fulco van't Holt, Simon Stevinlaan 74, 3769 VJ Soesterberg, Netherlands.

Seeking 450th Fighter day patch, Foster AFB, TX, 1956; 1st Lt. Herbert L. Lankershiem and TSgt. Jim Miles; and graduation album of the 3700th BMTS F1t967 (1955), Lackland AFB, TX. Contact: Charleston Guthrie, 227 East 9th St., San Bernardino, CA 92410.

Seeking Leo E. Lamelin, in USAF in 1955, former chief master sergeant, possibly a CWO. Contact: Francis J. Thibeault, 112 Short St., Garden City, MO 64747-8232.

Seeking TSgt. Edward Welch or Walsh of New Jersey, who was at Norfolk AB, UK, 1942-45, and has a sister Evelyne and a niece, Ruth. Contact: Ruth M. Sewell, 48 Hotblack Rd., Norwich, Norfolk NR2 4HG, UK.

Seeking Capt. John King (and Wanda King), unit supply officer, 1st MAPS, Dyess AFB, TX, 1984-85. Contact: Randy E. Thomas, 57 Wedmans Ln., Rotherwick, Hook, Hampshire RG27 9BN, UK.

Seeking the family or friends of Capt. L.A. Carpenter, pilot shot down over Orzech near Prague, April 16, 1945. Contact: Zdenek Karas, Roháčova 38/266, Praha 3-Zizkov, CZ 130 00, Czech Republic.

Seeking MSgt. Lawrence Allison, born Feb. 29, 1932, stationed at Mactan AB, Philippines, 1968-70. Contact: Darrel Lawrence Allison, PO Box 770, Cebu City, PI 6000.

Seeking Talbot Mayo Wallace, of Pennsylvania, an engineer at RAF Alconbury, UK, 1966-68. Contact: Paul Featherstone, 122 Mantilla Rd., Tooting, London SW17 8DU, UK.

Seeking information on and photos of EOD at Nellis AFB, NV, or anywhere. Contact: Kyle McArthur, 3975 N. Nellis Blvd. #1112, Las Vegas, NV 89115.

Seeking Capt. Ronald L. Bewley, Torrejon AB, Spain, 1968-72. Attended navigator training Harlingen, TX, and UPT, Enid, OK. Contact: Brian or Elizabeth Loewecke, 433 Mariin Ln., Keller, TX 76248-3902 (bcl@flash.net).

Seeking information about Lts. John K. Elam and Everett G. Stenman and SSgt. Virgil R. Brown, USAF WWII. Contact: David C. Williams, 2237 Brookhollow Dr., Abilene, TX 79605.

Seeking Sgt. or SSgt. Thomas Thomas, who was at Wethersfield, UK, 1953-55, and who knew Gertrude Ussat. Contact: Michael T. Westall, King Richard School, Dhekelia, BFPO 58, London, UK.

Seeking Christina Byrne Fagiola, wife of Anthony Fagiola, stationed at Bournemouth, UK, 1959. Contact: Anne Mulreid, 143 Sperrin Rd., Drimnagh, Dublin 12, Ireland.

Seeking photos of F-101Bs and information on and patches from 322d FIS and 408th FG, Kingsley Field, OR. Contact: Stan Lawrence, 1936 N. Arriba Way, Santa Maria, CA 93454.

Seeking patch and unit history of 56th FIS Wright-Patterson AFB. Contact: Tom Grabowski, 3276 Fenceline Rd., Franksville, WI 53126.

Seeking members of 11th BG, BW, SAW, ARW, and SG, to join 11th BG Assn. Contact: Robert E. May, PO Box 637, Seffner, FL 33583-0637.

Seeking photos and information from pilots who ejected and about ejection seats, escape capsules/modules, and parachute extraction systems. Contact: Mike Bennett, Eshcolbrook, 106 Main St., Clifton Campville, Tamworth, Staffordshire B79 0AP, UK.

Pieces of History

Photography by Paul Kennedy

The Mighty Eighth



Activated initially in February 1942 as 8th Bomber Command, 8th Air Force became perhaps USAAF's most famous World War II unit. Under leaders such as generals Carl A. Spaatz, Ira C. Eaker, and Jimmy Doolittle, the 200,000-strong fighting force flew more than 600,000 sorties, dropped over 700,000 tons of bombs on the Nazi war-making machine, and

destroyed more than 15,000 German aircraft—exceeding any other American air force in Europe or North Africa. These and other artifacts at the Mighty Eighth Air Force Heritage Museum, Savannah, Ga., as well as the 8th Air Force Museum, Barksdale AFB, La., home to the 8th's namesake, bring the memories to life today.

Memorabilia courtesy the Mighty Eighth Air Force Heritage Museum, Savannah, Ga.



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