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MAGAZINE



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By John T. Correll, Editor in Chief

Joint Fire Drill

WHEN a joint force engages the enemy, the battlefield will be divided by the Fire Support Coordination Line, located somewhere in front of our own ground troops. For good reasons—among them, the danger of hitting friendly forces—the delivery of ordnance, including air-to-ground munitions, inside that line must be cleared with the land force commander.

In the closing days of the Gulf War in 1991, the FSCL was drawn too far forward, letting Republican Guard forces fleeing from Kuwait escape. Army artillery fire couldn't reach them, and the Air Force wasn't allowed to.

Until recently, that was the best known example of the "joint fires" problem. Largely unnoticed by outsiders, it has been simmering in the Pentagon for almost 10 years. It reached the boiling point this spring when the Air Force formally objected to new joint doctrine that would have given the ground commander control of all "fires"—including Air Force counterair, strategic attack, interdiction, and electronic warfare—in an "area of operations" reaching well beyond the FSCL.

But that gets ahead of the story.

The sticking point was Joint Publication 3-09, "Doctrine for Joint Fire Support," on which work began in 1988. The Army was designated "lead agent" for this project and used the opportunity to strengthen its position at the expense of the Air Force.

The Goldwater-Nichols Act of 1986 gave theater commanders sweeping authority in "areas of responsibility" in which operations or conflict might occur. A change added later and without fanfare authorized the theater commander to assign "areas of operation" within the AOR to the land and sea component commanders. No provision was made for an air component AO.

Meanwhile, the draft of Joint Pub 3-09 was altering concepts and definitions. A new term, "joint fires," replaced the older one, "joint fire support," which had been understood to mean fires directly aiding the land forces. "Fires" were redefined to in-

clude all "lethal or nonlethal weapons effects."

The Army, supported by the Navy and the Marine Corps, held that the land or naval component commander had "primacy" over operations and control of fires within the area of operation. The Air Force argued alone that the AO is not an AOR and that the joint force commander's authority should not be supplanted. The

The Army wants the ground force commander to control all "fires"—whether they support the ground operation or not.

Army wanted the ground force commander to control all operations, whether they supported the ground operation or not. That would take in virtually all Air Force combat capability except for airlift, reconnaissance, and surveillance.

The size of an AO is not prescribed, but it extends beyond the Fire Support Coordination Line to a "forward boundary." Earlier assumptions set the FSCL about 20 miles in front of our ground forces. Recently, however, the Army has claimed the FSCL should be hundreds of kilometers ahead, with the forward boundary even more distant.

The joint fires issue was settled, supposedly, at a "tank" meeting of the Joint Chiefs of Staff May 12. Joint Pub 3-09 was adopted with some modifications. Among them was a stipulation sought by the Air Force that any commander so designated by the joint force commander has the "latitude" to plan and execute missions of theater-wide importance within land and naval AOs.

Within days, there was disagreement about the understanding reached. Joint Pub 3-09 had been haggled over and coordinated so much that various interpretations were possible. The next step in determining what it means will be how

it is put into practice and how battlespace control is allocated in joint operations and exercises.

Part of this is a power struggle, pure and simple. It makes no sense for the ground component commander to decide the targets, timing, and priorities for airpower in engagements unrelated to the ground battle.

This is not to disparage the value of ground forces. Nor is it to fault the land component commander for believing in his force. However, his concentration is on shaping the close battle. His perspective is essentially local and two-dimensional.

His priorities are inherently different from those of the joint force commander, who must think about objectives and targets of strategic importance. They are also different from those of the air component commander, whose perspective will be higher and deeper, and who will focus more on theater problems and possibilities than on linear movements of front-line maneuver elements.

Ground force partisans believe, as they did in the 1940s, that everything else—especially airpower—is subordinate to the land battle, and that airpower's role is to support them.

There was great consternation among those who thought that way in 1991 when Army Gen. H. Norman Schwarzkopf, commander of the allied coalition, began Operation Desert Storm with a strategic air campaign rather than with a ground offensive supported by airpower. There was even greater consternation when it worked.

Another surprise was the losses: 148 US battle deaths and 467 wounded. The forecast for a traditional campaign had been 20,000 casualties, including 7,000 killed in action. The ground forces were expected to absorb most of that.

The net effect of Joint Pub 3-09 is to undercut the flexibility of airpower—the component more likely than any of the others to amplify our advantage in theater battle.

That is to no one's benefit. It is just bad doctrine and it sets up strategy that is even worse. ■



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Design Is Lacking

As an Air Force Academy graduate and retired Air Force pilot, I am fully in favor of a memorial dedicated to the men and women of the Air Force, past and present. I am also very glad to hear that the proposed memorial will not encroach on the environs of the Iwo Jima Memorial. [See "Letters," May, p. 15.]

I am not so pleased with the design of the Air Force Memorial itself. From the artist sketches available thus far, the design does seem to be a triumph of concept over "kitsch," as the chairman of the Commission of Fine Arts might put it. Viewed from above, it is a very striking star design. Unfortunately, the view from the sides seems to be far less impressive. In fact, from a distance, to my uneducated eye, the two-dimensional side view resembles nothing so much as a futuristic ashtray or perhaps the lower part of a bomb casing with fins. I certainly hope that the reality will be better than what has been shown thus far, since visitors to the site will not have the advantage of an overhead view.

While I can understand that a Commission on Fine Arts, lacking any emotional attachment to the men and women of the Air Force, might not see the need for a more human connection, I am somewhat puzzled that the memorial leadership was not more sensitive to this requirement. At this point, I cannot imagine pointing out the memorial from ground level to my grandchildren and seeing in their eyes the visual impact that, for example, the Iwo Jima Memorial brings. Perhaps someday we can lovingly place a sculpture of a battle-damaged B-17 atop the "ashtray."

Maj. Mike Spehar,
USAF (Ret.)
Mascouah, Ill.

What Rope?

Regarding [retired Air Force Lt. Col. Douglas W. Schott's] letter ["Letters," May, p. 8] that stated, "If the Japanese had prevailed, [Gen. Curtis E.] LeMay would have swung at the end of a rope following his conviction for

war crimes ..."—if the Japanese had prevailed, with the leadership they had at the time, I find it hard to believe that there would have been many trials. Perhaps [there would have been] many firing squads and other atrocities like they committed on the Asian continent and in the Philippines.

Lt. Col. Tom Stanton,
USAF (Ret.)
Huntington Beach, Calif.

"Better Duck"

On p. 28 of the May [issue] is a photo of a recent monument commemorating the nation's first tornado prediction made by Maj. [Ernest J.] Fawbush and Capt. [Robert C.] Miller at Tinker AFB, Okla. On March 22, 1948, I was the airdrome officer on duty at Tinker. I was not too busy in the evening at about 10:20 p.m. when I heard many explosions. I saw a red glow from severe fires across the runway in the vicinity of the Douglas Building.

Those of us in base operations at that time were sure we were being bombed. Soon thereafter I received a call from the control tower operators that the glass in the tower had shattered and they were in need of medical attention. Debris was all over the place. I called Maj. Gen. [Fred S.] Borum who was at a party at the Officers Club and informed him that we were in a disaster mode. He said he knew there was a storm but it didn't seem too severe. The destruction was estimated at more than \$350 million. Airplanes were destroyed,

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some thrown up on top of the Douglas Building, some even wrapped around telephone poles. A clerk in the air freight terminal was operating a teletype machine when a 10-inch-diameter steam pipe crashed down from the roof and missed his head by an inch.

This storm was not predicted. Less than a week later we had some threatening clouds and a squall line was approaching very rapidly. I was in my apartment [in] Midwest City, not too far from the base, when I called and spoke to Bob Miller, Fawbush's assistant. I asked him if he thought we might have a tornado. He replied that he didn't think so, and instantly I saw one drop out of the clouds (it was still daylight). I said to him, "Well, Bob, you better duck; there is one right on top of your head!" He answered, "There is!!?" and left the phone dangling off the hook.

This second tornado was even more destructive than the first and dropped down almost at the same spot on the base. It rolled up quite a few B-29s that were parked on pierced steel planking in temporary storage on the base. It looked as if the steel planking [were] wrapped around every one of the B-29s. My car was parked behind base operations and it was totaled. All told, this second experience cost us more than the first.

I knew both Ernie Fawbush and Bob Miller quite well, having flown for years at Tinker, and knew them to be the best Air Force forecasters I have worked with. After these two disasters, they went on to do a great job in trying to predict tornadoes when many other forecasters said it couldn't be done.

Lt. Col. Walt Echwald,
USAF (Ret.)
Falls Church, Va.

No Screw Up

[In] the May issue, [the] p. 167 photo featuring Lockheed Martin's Paul Metz at the West Palm Beach Chapter meeting [has] pictured as a guest at the meeting retired Maj. Gen. Oscar Senter (so captioned).

I would hope my former boss didn't

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Letters

screw up in his final days on active duty, but I'm sure he retired as a lieutenant general.

Col. John K. Carney,
USAF (Ret.)
Springfield, Va.

■ *He did indeed retire as a lieutenant general. Our oversight.*—THE EDITORS

Naming Bases

Glad to see that Falcon AFB, Colo., got renamed to Schriever AFB [*Guide to Air Force Installations*, May, p. 123]. Great idea! Now, how long will it take for the name Doolittle to [be] used for an AFB? If any one person in the history of USAF deserves to have his name on a base, this man is one. I wrote to Gen. [Ronald R.] Fogleman about this several years ago, and he wrote back that he handed it off to the civil engineering area. To date, nothing. I feel that perhaps Eglin could become Eglin-Doolittle, or even Edwards [could] become Edwards-Doolittle. Perhaps other readers have better suggestions.

MSgt. David W. Menard,
USAF (Ret.)
Huber Heights, Ohio

Military Stores

I have read several times now the article "More Questions About Military Stores" [p. 66] in the April issue. I have spent more than eight years in advanced economic and financial analysis since I retired from active duty. I am skeptical of the analysis given in the article; I am even more skeptical of some of the numbers used to make the point of the article.

First, measuring the impact of DoD retail sales while ignoring the *total* financial impact of any military installation is sloppy and inappropriate analysis. The economic impact of any military installation on the region in which it is located is large and positive.

Second, the subsidy costs of DoD's 1995 retail activities in the US [p. 67] are highly suspect and smell of a naive *Consumer Reports*-style economic analysis. In short, it misstates the case and misses the point. Economically speaking, those [costs not paid by DoD] revenue items are forgone only in the sense that the investment made in military installations could have been spent on some other productive use, if the military investment decision had not been made.

The chart implies that, somehow, these regions' businesses and taxing authorities are being denied revenues to which they are entitled. That

is flatly wrong. These regions are merely the direct beneficiaries of investments made from the wealth of the entire US, and they reap the financial rewards of selling goods and services to the federal government; of additional civilian jobs (and income) that would not otherwise have been available; and the additional spending which military personnel assigned to these installations devote to the regional economies.

Third, the DoD retail systems are a substantial economic incentive for a large part of the force. According to the chart on p. 69, 86 percent of the force accounts for 78 percent of the retail sales; these are the enlisted folks. The point is that the DoD retail system is being used by the people who need it most and that, apparently, it offers the majority of the force an economically efficient way to spend their incomes. Taking away the DoD retail system and replacing it with a cash payment is, at best, only a partial solution to this perceived problem. A large number of the force[s] live on or near their installations; the DoD retail system certainly offers those folks a degree of efficiency not easily compensated for in cash.

Fourth, we have the military retired population living in the regions around these installations. The claim that retirees spend on high-markup luxury goods is specious and ignores the fact that most retirees live on relatively small and fixed incomes which are considerably reduced with each change to the system of military benefits. The retirees of today were induced to make their careers in the military service through the offer of benefits such as DoD retail stores. It probably will not be lost on the active duty force that they will be adversely affected when it comes time for them to retire.

While the accounting exercise presented in the article seems like a serious indictment of the DoD retail system, it is the case that the exercise is flawed and fails to consider relevant issues. If defense spending is to be reduced, it should be reduced by closing redundant bases. The savings from a few base closings dominates the savings from reducing or eliminating DoD retail stores while allowing a retention tool to continue to operate.

Lt. Col. Gerald P. Hanner,
USAF (Ret.)
Papillion, Neb.

It was heartwarming to read in the

April issue of *Air Force Magazine* that you are on top of the commissary situation. The commissary system is great for the morale of both the active duty and retirees who served our nation well. The commissaries should remain open!

One big way to ease the financial pain of \$936 million [in] appropriated funds would be to increase the surcharge from the current 5 percent to 13 percent. At first a 13 percent surcharge seems high, but consider no commissaries and then paying 8 percent sales tax "on the outside." So 13 percent is really 5 percent plus the 8 percent that would be tacked onto the food costs in civilian food stores.

For every 1 percent in surcharge, \$50 million flows into DeCA. Currently \$250 million is generated by the 5 percent surcharge. A 13 percent surcharge would bring in \$650 million, almost making the commissaries self-sufficient.

Allowing the National Guard and Reservists to utilize the commissaries without limitations would help, too, and it's the moral thing to do!

Dr. David Chigos
San Diego

I am continually mystified by the so-called "subject matter experts" in Congress when it comes to military affairs. The number of congressmen/women serving today who have ever actively served in any branch of the military service is, by published reports, at its lowest point ever. Their experience levels, or perhaps their interest, especially in terms of enlisted matters, appears to be much lower.

We didn't join the enlisted corps to get rich; we are professionals, held to a higher standard, who take great pride in standing on the front lines to defend the national interests of the United States. But as professionals, we don't expect to be spurned by the very people in Congress whose lives (and very lucrative livelihoods) we protect. Our pay has been, and will continue to be, much lower than the national index. One of the few ways we can compensate for this gap is by saving money at the commissary and exchange.

In the article, the CBO stated it's "not a cost-effective alternative to cash compensation." Congress claims that a pay (not allowance) increase would solve the problem. First, military pay is taxable (allowances are not), translating to a smaller than advertised pay increase and more taxes owed at the end of the year. We would, in effect, be subsidizing ourselves. Next, Congress wants the [active duty] and re-

tierees to shop downtown. These goods are also taxed, which means the military member is being taxed at both ends of the scale. And by the way, will retirees see this same increase in retired pay if Congress dissolves the benefit? You retirees know the answer to that. I suppose if I were as rich as the people in Congress, I might not object.

CBO states that a pool of \$500 million would be used to increase military basic pay about one-half of 1 percent. As a 24-year chief master sergeant, that equates to a whopping \$17 a month. Oh boy, steak every night. Do the math for a young airman or NCO. Oh, and that's before taxes.

Other issues regarding the commissary were misleading or incorrect. First, the surcharge is not a profit margin. Commissaries do not make one dime on its customers. There is no capital investment—all [surcharges are] used for utilities, supplies, equipment (to include refrigeration units, forklifts, cash registers, and checkout stands, etc.), and renovation or construction of new commissaries. Absolutely none of this is paid with taxpayer dollars but by the customers themselves through the surcharge.

Second, the subsidy cost chart of DoD retail activities in the US for 1995 is incorrect. These numbers are somewhat misleading. DoD gets more than a fair return on its military investment. The return on capital can be intangible, such as more productive troops who are more willing to take on the harsh environments and assignments of which civilians do not understand or appreciate. It helps professionals stay in service, knowing that, when they retire, these benefits will be available as deferred earnings for years of service and the associated hardships.

If we continue to allow this non-military Congress to decimate our benefits one by one, we will soon be the hollow force we hear so much about. Smaller retirement packages, longer deployments, more peace-keeping missions, more taxes, and less benefits. Is this the congressional wave of the future? Then I think I'll retire today, but before I do, I owe it to my professional troops to speak in their behalf. "Congress, for once, stop listening to the money of the lobbyists and start listening to the people who serve our country!"

CMSgt. Ronald R. McMasters,
Kadena AB, Japan

Guard Controversies

James Kitfield's sources have not



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done justice to either the Air Force or the Air National Guard. [See "Guard Controversies," April, p. 30.] It was neither 20 years ago nor the 1972 Total Force concept that saw the birth of the successful integration of the components. That began in the 1950s under Brig. Gen. Earl T. Ricks as deputy chief of the National Guard Bureau for Air and was brought to fruition in the 1960s by Maj. Gen. Winston P. Wilson as Ricks' successor and later chief of the bureau.

Application of the USAF Operational Readiness Inspection under standardized criteria [for] all components was central to that success. Likewise, continued rejection of the ORI concept by the Army is at the heart of its current problems.

The Army Guard's bitterness over treatment of the 48th Armored Brigade during the Gulf War derives from the fact that the Army's subjective rating system permitted the 48th to be judged at an inflated level of readiness when, in peacetime, it was politically convenient to do so and then downgraded when war blew away the political myths.

The Army War College's 1972 "Army Study of the Guard and Reserve" predicted in precise terms what would happen to the Guard combat brigades unless both the ORI concept was adopted and the Guard's regimental Officer Personnel Management System was replaced by a centralized system on the model of the Marine Corps Reserve.

The Marine system had opened up all units to returning Vietnam veteran officers. The Army Guard system largely excluded such veterans in favor of incumbents who had never served on extended active duty and would not do so until mobilized as field grade officers for the Gulf War. That is why the Marine Reserve successfully deployed armor units to the Gulf War and the Army Guard could not. As Kitfield indicates, the Army Guard leadership now supports the ORI concept, but it still fiercely defends the archaic regimental management system.

Beyond that is the question of why we go on maintaining duplicative state and federal reserve systems. The Congressional Budget Office estimates the waste from that arrangement at \$2.6 billion per year, enough to fund the F-22 program or the Army's desperately needed Comanche helicopter program.

Col. William V. Kennedy,
USA (Ret.)
Wiscasset, Maine

It is always a pleasure reading of the successes of the Air National Guard and the Air Force Reserve. Could someone consider preaching to the tone deaf in the Department of Veterans Affairs? Some 25 years after the inception of the Total Force, the VA still does not have a legal definition of what constitutes active duty in the National Guard. Title 38 of the US Code and the Code of Federal Regulations contains no definition. "Active duty for training" and "inactive duty for training" are defined but not "active duty." All definitions pre-date 1973.

The VA seems to be locked into a pre-1973 mind-set. They don't seem to understand that members of the Air National Guard, both as individuals and as units, are frequently placed on Title 10 active duty status under the direct control of National Command Authorities. As such, their legal status is exactly the same as their regular Air Force counterparts. The VA doesn't seem to understand that the Air National Guard doesn't issue DD 214s to members completing periods of active duty. Their active duty orders document their service.

There is an unfortunate flip side to this situation. Few members or retirees of the Air National Guard show much interest in the VA or in the continuation of its programs. The veteran population is declining and the power of veterans organizations is beginning to wane. This is one segment of the veteran population that is doing little to preserve the veterans programs that past generations have left to us.

Maj. Dave Broyles,
AFRES (Ret.)
Papaalooa, Hawaii

Enlisted Heroes

As a survivor of 100 combat missions in F-86 Sabre jets in Korea and 175 in the F-105 Thunderchief flying out of Takhli, Thailand, I am no stranger to the heroics of our rescue forces. [See "Crosses and Stripes," April, p. 58.]

I first knew about A1C Charles D. King on Christmas morning 1968 but never knew his name until reading about his award in [the April] issue. The wounded pilot in this [article] is Capt. Dick Brownlee.

Brownlee was shot down in his F-105 late on Christmas Eve, but it wasn't possible to attempt a rescue until the next morning, Christmas Day. I was one of those flying cover for the effort. We briefed and took off very

early so as to arrive at the rescue site at "first light." As the [article] relates, the enemy had set up an ambush which resulted in a failure to complete the rescue. I won't go into detail as to what happened to those enemy forces—just note that it was a very bad decision on their part.

Relating this story to family and friends has been a very emotional experience for me. I know the same must be true [for] the family of Airman King. They had a very courageous son!

Col. Forist G. Dupree,
USAF (Ret.)
Sumter, S.C.

Remembering the actions and sacrifices of our Air Force heroes has never been more important than it is today, and your article nicely highlights individual ability and bravery while reminding us of the ultimate responsibilities involved in military service.

There seems to be a renewed interest in the human element of Air Force history, as evidenced by your recent articles on the Navy naming a ship *Capt. Steven L. Bennett* ["Aerospace World," January, p. 12] and [on] the C-17 being named *The Spirit of Sgt. John L. Levitow* ["Aerospace World," March, p. 14]. Those tributes are richly deserved and much appreciated.

However, perhaps it is time to go beyond occasional recognitions such as these and implement a formal program that honors all USAF Medal of Honor, Distinguished Service Cross, and Air Force Cross recipients.

My suggestion is to name our strategic airlift aircraft for Air Force heroes, similar to the way the Navy names ships. I propose strategic airlifters because they are literally "ships of the air," have long service lives, and would provide maximum exposure to USAF members and others via their daily, worldwide missions. [Since 1947] there have been approximately 240 MOHs, DSCs, and AFCs awarded—about the same number as the combined C-5 and C-17 fleet size. Paint a name on the outside of each airplane and put a plaque on the inside, and everyone who crews, works on, rides in, even sees these aircraft would become more aware of our Air Force history and heritage.

Such a program would serve to honor our heroes in an appropriate manner, increase individual knowledge and pride, and enhance overall

esprit de corps—all for a relatively low cost.

Col. Ron Thurlow,
USAF (Ret.)
Beavercreek, Ohio

Storm Stats Incomplete

In the April issue, in "Statistics From the Storm," [p. 42] there is a glaring error of omission. Nowhere in the article is the venerable HH/MH-3E Jolly Green Giant mentioned. The only US Air Force H-3 special operations unit, the 71st Special Operations Squadron (AFRES), was activated in late 1990. Although already equipped with a radar warning receiver system, an amazingly short period of aircraft modifications ensued, transforming their assigned HH-3Es to the only MH-3Es in the world.

These MH-3Es had one of the highest in-commission rates in theater and never missed a mission or Time Over Target. It is ironic that these Vietnam veterans served their country once more before being retired to the desert at Davis-Monthan AFB, Ariz.

In a final irony, these same helicopters (less one, #67-14703, which now resides in the Robins AFB Museum, Ga.) were withdrawn from [Davis-Monthan], refurbished by the 71st SOS and its direct descendant, the 305th Rescue Squadron, and sent to serve with the Tunisian Air Force in their air rescue units.

CMSgt. Craig B. Bergman,
AFRES
Tucson, Ariz.

Your article entitled "Statistics From the Storm" is a good summary of the air war, but it is time to correct an oversight in the historical data. My former squadron was not included in the final tally in an article you published several years ago after the war, and now our helicopters are not mentioned in the latest article.

But the citizen airmen of the 71st Special Operations Squadron (AFRES) answered the call. We were activated at Davis-Monthan AFB Dec. 15, 1990, and began a very interesting four-week spool-up. The "Ponies" deployed five Sikorsky H-3 Jolly Green Giants, support equipment, and approximately 150 people on five C-5s, arriving at King Fahd IAP, Saudi Arabia, on Jan. 12, 1991, just four days before the air war began.

The chart on p. 46, "US Air Order of Battle: Combat Support Aircraft," needs a line added: "MH-3—Special Operations—5." The Vietnam veteran HH-3s we flew were destined for a short hop across the ramp to the

[Aerospace Maintenance and Regeneration Center] when the wartime "money pipeline" opened in Tucson, [Ariz.]. A team from Warner Robins Air Logistics Center [in Georgia] opened a modification line in our hangar. In less than three weeks five of our helicopters were equipped with [upgraded avionics and navigation aids.] After a desert camouflage paint job, these five helicopters [were designated] as MH-3Es, the only five that ever existed.

A lot of great stories grew from this adventure. Engineers, maintenance troops, and aircrews tested and tweaked all the new systems without benefit of a formal test program.

Our outstanding maintenance crews improvised tools (their specialty equipment was stranded in Germany on an ill C-5) to rebuild the helicopters and had us on alert less than 24 hours after landing.

We integrated several volunteer pilots and flight engineers from active duty AMC rescue forces who helped us maintain full-time mission coverage and contributed to our 300-plus combat and combat support sorties. At times in the early stages of the war we had eight-man crews (including human flare dispensers!) until we learned how to run all the new equipment and made it NVG compatible.

The MH-3's amphibious capability was a hit with the [Navy] SEALs when we began flying missions with our MH-53J Pave Low brothers. Even our support staff showed the "Pony Pride" as two of our [intelligence] officers rumbled north with Army units during the ground war to send real-time intel support back to AFSOC, earning Bronze Stars for their actions.

The 71st SOS returned to Tucson and continued supporting AFSOC missions. We converted to the MH-60G in 1993 and the MH-3Es finally made that last hop across the ramp. The 71st SOS was deactivated in 1994 and reborn as the 305th Rescue Squadron, where they carry the torch today.

Maj. Bryan Bly,
AFRES
Beaver Falls, Pa.

Whose Shirt?

Please tell me whose shirt SrA. Jonathan Songer is wearing in the picture on p. 14 ["Aerospace World," April]. Or maybe that isn't SrA. Jonathan Songer.

CMSgt. Philip Currie,
USAF (Ret.)
Haskell, N.J.

■ *It isn't—not in front, anyway. We*

did not catch the error in the USAF photo caption. SrA. Jonathan Songer is the airman in the background. A1C Craig Southern is the airman in the foreground. The stripes, if not the partially visible name tag, should have been a giveaway, too.—THE EDITORS

Last Aviation Cadet?

The "News Note" on p. 21 of the April issue about the last aviation cadet is incorrect in that navigators were also trained under that program. I know, since I was a member of 52-14C in 1952 at Ellington [AFB, Texas,] and Mather [AFB, Calif.,] and we weren't the last. While you didn't need a degree to enter, many of us [had degrees], in my case because my college didn't get ROTC until the year after I graduated. As I remember OCS was never presented to us as an alternative method to a commission and it would have been longer if you wanted to fly.

Maj. Robert L. Etter,
USAF (Ret.)
Pittsburgh

More on POWs

I knew that someone would send you a correction [on the POW photo] ["Letters," "When the POWs Came Home," Ron Byrne, April, p. 6]. Unfortunately, as of the April issue, no one [has gotten] it right, yet. I contend that the photo is that of 1st Lt. Henry P. Fowler, who was captured March 26, 1967, and returned home Feb. 18, 1973.

I was captured June 11, 1967, and returned home March 4, 1973. I lived with Fowler for a brief period in Hanoi and if I have erred on this photo, I'll be most surprised and chagrined.

Col. Ronald J. Webb,
USAF (Ret.)
Niceville, Fla.

Let the Colonels Sweep

In your April issue, p. 77 ["Dissecting the Tempo Problem"], did you, by intent, show a black, female airman sweeping the floor or did you simply go brain dead? Were I a young, service-eligible civilian, who chanced to see that photo, it would be all I could do to restrain myself from rushing to volunteer for such fulfilling, technologically challenging, intellectually stimulating work.

Our servicemen and -women are patriots who do exciting, complicated, frequently very dangerous things—don't demean them. You could have portrayed any activity—"operation other than war," exercise, inspection—except sweeping the floor. Afterthought: Show a colonel sweeping the floor—leadership by example

(I did it). Might be good for morale.
Col. LeRoy V. Greene,
USAF (Ret.)
San Antonio

■ *The intent was to depict a view of the drudgery involved with many of today's frequent deployments—all adding to the increasing frustration level. Your afterthought has merit, though.*—THE EDITORS

Removing Darts

The ["Aerospace World" news item] "USAF Wants to Remove Darts, Restore Wilderness" [p. 17] in April was a bit of a shock. Those contemplating [removal via helicopter] should proceed with dispatch to Nellis AFB, Nev., where they will find a street named Riggs. Some history research will perhaps avert a catastrophe.

Lt. Ron Riggs and wife, Carolyn, lived on Jones Street on Nellis AFB almost 50 years ago. Riggs was a helicopter pilot and was sent to pick up dart targets from one of the Nellis AFB ranges as a cost cutting measure. In the process a cable attached to a dart target became entangled in [his] rotor blades. That resulted in a

flaming crash that took Riggs' life. A street was named in his honor, and helicopter retrieval of darts ended abruptly.

Col. Mark D. Cook,
USAF (Ret.)
Boulder City, Nev.

More Mustangs

Another former Mustang who is well-known in these parts is retired Maj. Gen. Jack Watkins. He was commander of the 1st Strategic Aerospace Division at Vandenberg AFB, Calif., for most of the 1980s. He enlisted in the Army during World War II. A picture of him as a private hung in the barber shop for many years.

Maj. Greg Ogletree
Vandenberg AFB, Calif.

■ *We have continued to receive additions to the Mustang roll ["Mustangs," March, p. 52, and "Letters," May, p. 6]. All names have been sent to the Air Force Enlisted Heritage Research Institute at Gunter Annex, Maxwell AFB, Ala. The latest submissions are Brig. Gen. Brian E. Barents, Brig. Gen. William J. Breck-*

ner, Brig. Gen. William R. Brooksher, Maj. Gen. Neil Eddins, Brig. Gen. Thomas M. Groome Jr., Brig. Gen. Theodore W. Lay II, Brig. Gen. Archie S. Mayes, Brig. Gen. John D. Peters, Maj. Gen. Henry B. Stelling Jr., Lt. Gen. Eugene F. Tighe Jr., and Brig. Gen. James W. Wold. This is the last list we will publish.—THE EDITORS

Corrections

In the May issue, the zip code and phone number for the 155th Air Refueling Wing (ANG) at Lincoln Municipal Airport, Neb., [p. 127] were listed incorrectly: 68524-1888 and (402) 458-1234 are correct. The F-16CJ, the version employing the HARM Targeting System in the SEAD role, is incorrectly identified [p. 142] as the CG-model.

Also in the May issue, the 320th Missile Squadron, winner of the 1997 Blanchard Trophy [p. 137] was misidentified. The 381st Training Group at Vandenberg AFB, Calif., [p. 124] was incorrectly listed.

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The Chart Page

By Tamar A. Mehuron, Associate Editor

New Flight Safety Record

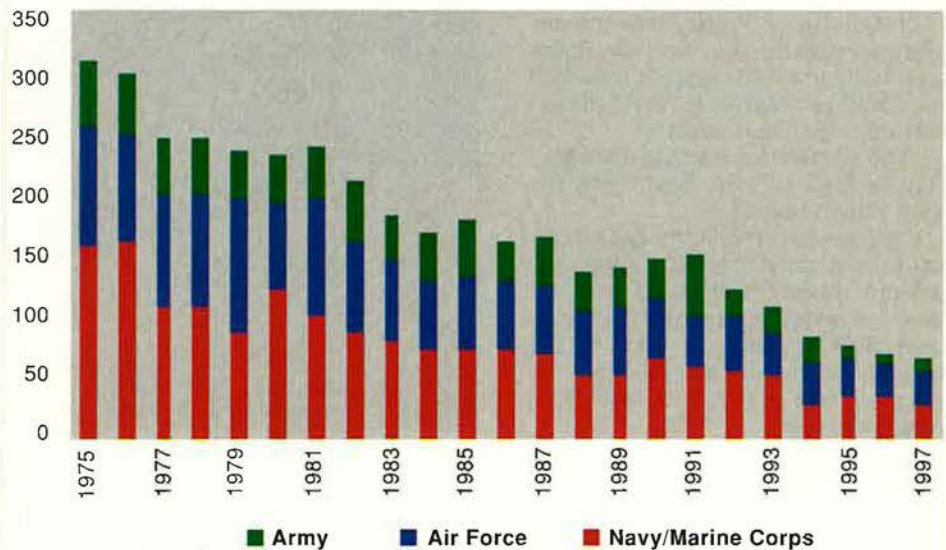
The number of Class A flight mishaps involving military aircraft hit an all-time low in 1997, capping a 22-year decline in such accidents. Over the years 1975–96, the annual number of Class A mishaps plummeted from 309 to 71, fewest ever at that time. That record low was quickly broken as the armed services reported only 68 Class A accidents in 1997.

Meanwhile, the accident rate—expressed as the number of Class A mishaps per 100,000 flying hours—has for the three most recent years stayed flat at about 1.5, down from a high in 1975 of about 4.3.

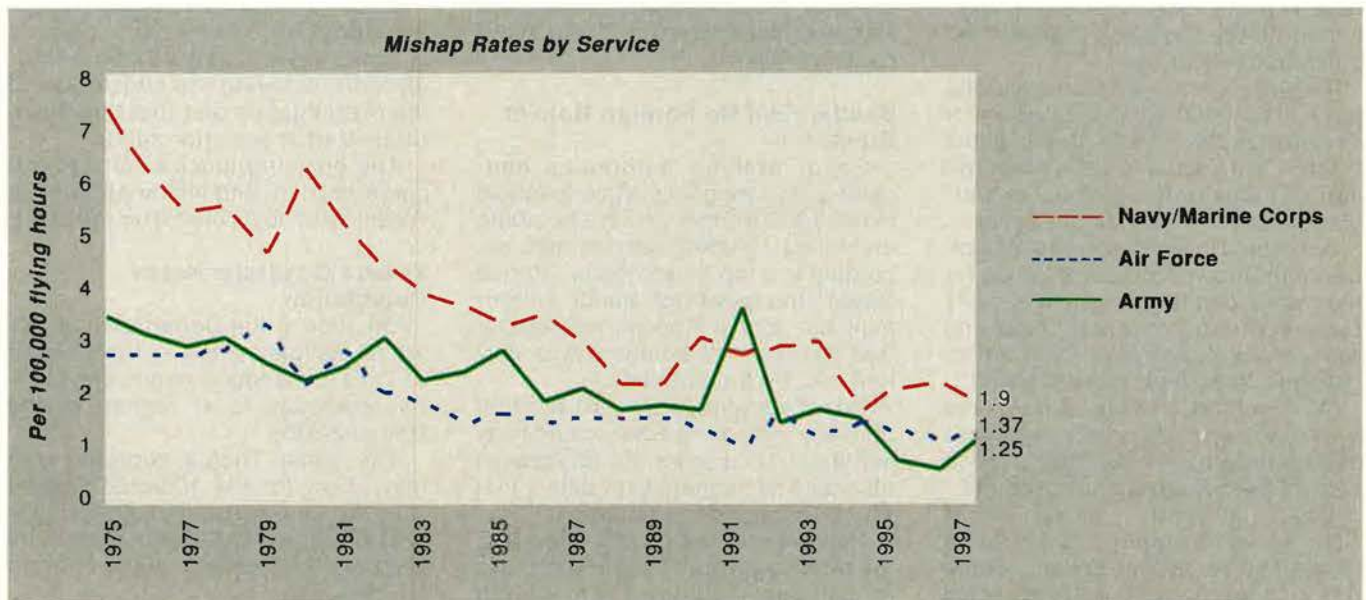
Among the services, the Navy/Marine Corps' record concerning the absolute number of mishaps improved the most, dropping from 158 in 1975 to 27 in 1997 with a corresponding decline in the mishap rate from 7.3 to 1.9. Army aviation's mishap rate, which came in at 0.7 in 1996, rose in 1997 to 1.25. The number of Air Force mishaps dropped from 99 in 1975 to 29 in 1997, while the service's mishap rate rose slightly from 1.26 in 1996 to 1.37 in 1997.

Source: GAO, "Military Aircraft Safety: Serious Accidents Remain at Historically Low Levels," March 1998.

The Drop in Class A Mishaps



Mishap Rates by Service



By Peter Grier

F-22 Returns to Skies

The Air Force's F-22 Raptor on May 17 began the formal flight test stage of its development with an 80-minute sortie at Edwards AFB, Calif.

Lt. Col. Steve Rainey flew the aircraft, becoming the first Air Force pilot to fly the F-22 since it rolled off the Lockheed Martin assembly line in Marietta, Ga., last summer.

"The aircraft handled like a dream," Rainey said. "It's the best flying aircraft I have flown."

Officials said the flight was undertaken to expand the flight envelope, assess speed brake handling qualities, and review formation flying qualities. Rainey said that each of the objectives was tested precisely as planned and that the overall flight was a success.

Raptor 01 is the first of three engineering and manufacturing development F-22s slated for Air Force use. The first Raptor, officially named Aircraft 4001, will engage in some 50 flights before it is joined by Aircraft 4002, probably in the fall.

Clinton Cuts Gulf Force

The United States announced May 26 that it will keep about 20,000 US troops in the Persian Gulf region, returning to a force level that it maintained before the early 1998 "crisis" buildup aimed at Iraq.

The move will significantly cut the force of 37,000 kept in the region for several months. The Pentagon plans to shift out of the area an aircraft carrier battle group, dozens of warplanes, and thousands of soldiers.

According to Pentagon spokesman Kenneth Bacon, DoD plans called for the reductions to take place in early summer. "Iraq has been complying with the UN mandates to allow inspectors to do their jobs," he said.

"We've made it very clear in the past that we're willing to respond to provocative action by Iraq," Bacon said. "That policy has not changed."

One aircraft carrier—USS *Stennis*—and about 1,200 Army troops will remain in Kuwait. Some Air Force warplanes also are expected



Lt. Col. Steve Rainey secured a spot in history when he became the first Air Force pilot to fly the F-22, the service's new air superiority fighter. "The aircraft handled like a dream," he said after the May 17 flight at Edwards AFB, Calif. Aircraft 4001 completed each of three test points—envelope expansion, speed brake handling, and formation flying—precisely as briefed, stated Rainey.

to remain, since they help patrol and monitor the skies over southern Iraq.

Bacon said dozens of Air Force aircraft in Bahrain are expected to leave in early June. He declined to specify, but the F-117 stealth fighters and B-52 bombers in the area were expected to return home in the coming weeks.

Saudis Find No Foreign Role in Blast

Saudi Arabian authorities concluded no foreigners were involved in the 1996 Khobar Towers bombing that killed 19 USAF servicemen, according to a top Saudi official. Prince Nayef, the powerful Saudi interior minister, told a Kuwaiti newspaper that the terrorist bombing was carried out "by Saudi hands."

Nayef's statements were the first officially indicating Saudi complicity in the deaths. Earlier, Saudi Arabian officials had suggested privately that Iran was behind the bombing.

However, in the recent interview, the prince was quoted as stating, "No foreign party had any role in it." Iran

has long denied taking any part in the operation.

Nayef's statement could give credence to opposition claims that Sunni Muslim dissidents were behind the attack.

Secrecy has cloaked much of the investigation. American officials charged several times that the Saudis were delaying the conclusion of the investigation and that they have refused to share information.

The bombing touched off several congressional and military probes in Washington to fix blame for the blast.

Tricare Coverage Nears Completion

On June 1, the Department of Defense completed the establishment of Tricare managed health care system coverage to all regions of the United States.

The latest Tricare contract went into effect for the National Capital Area Region, which includes a large portion of the mid-Atlantic states. The program is already in place in other US regions.

Barry Goldwater Dies at 89

Sen. Barry Goldwater, the outspoken conservative Republican who ran unsuccessfully for President in 1964 but became a force in the Senate and in national defense, died May 29. He was 89.

He was known to many as "Mr. Conservative," but he was also "Mr. Airpower." From his World War II days as an Air Transport Command pilot flying supplies over the "Hump" to his long association with the Air Force Association and Aerospace Education Foundation, Goldwater was a tireless advocate for the Air Force.

Commissioned a second lieutenant in the Army Reserve in 1930, Goldwater went on active duty as a gunnery instructor in the Army Air Forces just before the attack on Pearl Harbor. Equipped with a commercial pilot's license, he soon became an AAF pilot, transporting supplies and aircraft across the Atlantic and in the China-Burma-India Theater.

After the war, he helped establish the Arizona Air National Guard and finished his military career in the Air Force Reserve, retiring as a major general in 1967.

He was elected to the Senate in 1952. Throughout his long career, he maintained the need for a strong military and was also an early proponent of spacepower. In 1962, he said, "Space superiority in all of its scientific, technological, and military aspects is fundamental to the future well-being, security, and prosperity of the United States. ... Our armed forces must pursue and prepare to conduct



The Arizona senator flew 160 different aircraft over his lifetime. ANG Brig. Gen. Clarence A. Shoop is at right.



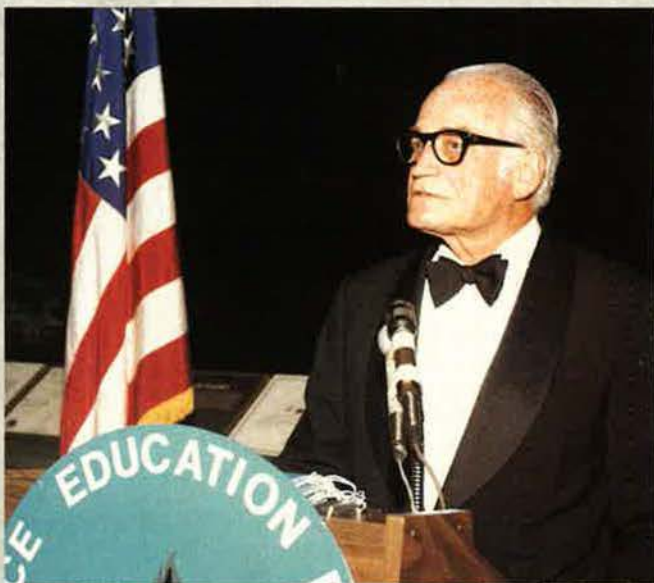
Goldwater with Gen. Jimmy Doolittle, AFA's first president.

military space missions as rapidly as these can be recognized and defined."

He was active in the Air Force Association for many years and was chairman of the AEF Board of Trustees from 1975-86. He also played a key role in the creation of the National Air and Space Museum.

He relinquished his Senate seat in 1964 to make what proved to be an unsuccessful presidential bid but was again elected to the Senate in 1974. He retired after choosing not to run for re-election in 1986.

AFA and AEF are accepting donations for a memorial education program being developed in his honor.



Barry Goldwater served as chairman of the AEF Board of Trustees for 11 years.

The Battle of Arlington Ridge

ARLINGTON, VA., June 7—Factions opposed to an Air Force memorial on Arlington Ridge, overlooking the Potomac River, continue to throw up new obstacles in their efforts to impede its construction.

Joined in the attempt to block the project are Marine veterans, their supporters in Congress, and a neighborhood group called the "Friends of Iwo Jima." Their claim is that the Air Force Memorial would encroach on the "sacred ground" of the Marine Corps Memorial, which occupies eight of the 25 acres on Arlington Ridge.

Objections to the Air Force Memorial did not arise until April 1997 when the Friends of Iwo Jima became active with concern that the new memorial might increase the number of cars and visitors coming to the area.

On May 15, Rep. Gerald B.H. Solomon (R-N.Y.)—a former Marine—introduced his third piece of legislation in this regard, an amendment to the defense authorization bill that would have:

- transferred Arlington Ridge from the Interior Department to the Army, with instructions that the land would be used for grave sites as an extension

of Arlington Cemetery, which is adjacent to the ridge.

- prohibited the construction of any more monuments or memorials on the ridge.

- reimbursed the Air Force Memorial Foundation (which would then be obliged to go elsewhere) for site-specific expenses prior to September 1997, when the site was formally dedicated.

The same day the Solomon amendment was introduced, Edward Timperlake, an aide for the House Rules Committee (whose chairman is Solomon), filed a legal brief in US District Court in Alexandria, Va., supporting a request for an injunction to permanently bar construction of the Air Force Memorial. This tagged on to a series of legal efforts and actions initiated by the Friends of Iwo Jima in the past year.

In a "Dear Colleague" letter on May 19, Rep. James A. Gibbons (R-Nev.) urged members of Congress to vote no on the Solomon amendment. He said that from 1993 on the Air Force Memorial Foundation had followed all of the elaborate rules prescribed for memorials

by the Commemorative Works Act of 1986.

"The process is designed to keep Congress from getting involved in what could be a politically charged process," he said. "Now is not the time to change the rules and penalize those who have followed the rules that the Congress established."

"I strongly urge you to reject the Solomon amendment. It is unfair to change the rules in the middle of the process, and it is unfair to the men and women who have served, are serving, and will serve in the United States Air Force."

Several members of the House met with Solomon to tell him they disagreed with his proposal.

"The men and women in the United States Air Force deserve a memorial for their sacrifices which have kept this nation free," said Rep. Sam Johnson (R-Texas), who was an Air Force pilot and a POW in Vietnam. "I look forward to the day when we will unveil this fitting tribute to all those who have served in the Air Force. It is long overdue."

Solomon withdrew his amendment May 20.

Aerospace World

Air Force officials said Tricare brings with it all of the old Civilian Health and Medical Program of the Uniformed Services benefits plus new options for thorough family medical care.

Access Seen as Key to AEF

Access to areas around the world will be the key to successful implementation of the Air Expeditionary Force concept, according to Gen. Ralph E. Eberhart, Air Force vice chief of staff.

Strong, friendly relations with allies—and the use of their bases and airspace—will be necessary for all kinds of future Air Force deployments, from combat operations to humanitarian responses. Recent experiences, from Desert Storm to the Air Force response to the tragic crash of a Korean airliner on Guam, have shown that to be the case, he said.

"We must build new relationships, nourish our friendships, build trust, and instill confidence through formal and informal agreements with other

nations," said Eberhart during a recent visit to Hickam AFB, Hawaii.

Because of the "tyranny of distance," access is doubly important in the Pacific region, according to the vice chief. So far, most AEFs have deployed from bases in the continental US. In the future, PACAF is likely to deploy AEFs, as well.

"We could take forces from one base or from several bases in the Pacific and move them forward to support an operation," said Eberhart. "We also plan to use bases like Andersen [Guam] for bedding AEFs down and launching their operations."

Carrier Goes Down—For Now

The United States Navy has decided to stick with what it knows and likes best—the giant 100,000-ton aircraft carrier—rather than rapidly pursue a newer and possibly smaller carrier concept.

The newer carrier, dubbed CVX, was to follow the next Nimitz-class deck, CVN-77, slated to be the last of

the line. However, the service in May decided to substantially slow the CVX project for the time being. It said that a lack of funding—the project would cost \$7 billion—compelled it to recast the project but that the Navy would try out some new technologies on the next carrier.

Rear Adm. Dennis V. McGinn, Navy director of air warfare, told reporters June 2 that the CVX is not dead but that the Navy will achieve total CVX goals "over two to three hulls, rather than in a single leap" from the last Nimitz carrier, CVN-77.

USACOM to Shepherd Joint Experiments

The Pentagon announced May 21 that it had designated the commander in chief of US Atlantic Command, Adm. Harold W. Gehman Jr., to be executive agent for joint warfighting experimentation within the Defense Department.

The designation becomes effective Oct. 1, 1998.

In his new capacity, Gehman and



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his command will explore, demonstrate, and evaluate joint warfighting concepts and capabilities required to implement Joint Vision 2010, the joint warfighting concept formulated by Army Gen. John M. Shalikashvili, the former JCS Chairman.

Army Gen. Henry H. Shelton, Shalikashvili's successor, said he recognized the importance of joint warfighting experimentation and that USACOM's work "will focus our efforts to implement our future warfare vision."

The individual services had expressed concern about the step, fearing that the command would take over their traditional powers to train and equip the forces.

Shelton observed, "The services have individually made great strides in modeling and simulation and other new techniques [concerning joint warfare]. Our challenge now is to integrate those efforts," which he evidently sees as the role of USACOM.

The command's role is defined by a Joint Warfighting Experimentation Charter approved by Defense Secretary William S. Cohen on May 15. According to Cohen, joint warfighting experimentation will facilitate the development of doctrine, organizations, training and education, materiel, people, and leadership to improve joint operations.

By July 15, CINCUSACOM will submit to the JCS Chairman a plan of implementation that specifies resources required to assume these new responsibilities.

AMC Gets More Flying Crew Chiefs

Gen. Michael E. Ryan, USAF Chief of Staff, approved an Air Mobility Com-



Some 42 years after flying from its home base at Malmstrom AFB, Mont., to Eielson AFB, Alaska, this KB-29P still resides in Alaska—as the "Lady in the Lake." This refueling version of the B-29 bomber landed at Eielson on April 17, 1956, but its landing gear buckled. A snowbank stopped it; however the removal crew damaged it further. Since a newer refueler, the KC-97, was already entering service, the KB-29 was salvaged for parts and removed to a gravel pit, where, over the years, a lake formed, submerging the aircraft.

mand request to authorize two flying crew chiefs for each AMC aircraft.

Command NCOs said the move, made April 1, is not a manpower increase. Instead, it will have the practical effect of boosting compensation for more sergeants who would have been flying out on the AMC airplanes anyway, by making them eligible for \$110 a month in Special Duty Assignment Pay.

"Individuals who have done this type of work are very deserving of this compensation," said SMSgt. Sue Norwood, AMC's flying crew chief program manager. "The increase will

benefit people who have been flying but have not been receiving the pay."

Flying crew chiefs are normally staff or technical sergeants. They accompany their airplanes worldwide to provide maintenance, inspection, and servicing in places where no such capabilities exist. They are trained on such specific tasks as engine runs, door and ramp operations, fueling supervision, and powered and non-powered ground equipment operations.

The authorization increases the number of AMC's flying crew chiefs from 657 to 1,192. To qualify for special duty pay, these chiefs must fly at least three missions per quarter to off-line locations where no maintenance capability exists for their aircraft.

Two Space Squadrons Merge

The 2d and 4th Space Launch squadrons at Vandenberg AFB, Calif., merged May 18.

The new unit—which keeps the 2d Space Launch Squadron's name—will be responsible for overseeing orbital launch operations at Vandenberg.

The reason for the merger was that the two units performed similar missions for their assigned families of missiles. The old 2d handled Atlas rockets, while the 4th dealt with Titans.

The 45th Space Wing at Patrick AFB, Fla., will soon follow Vandenberg's lead and conduct similar mergers. At Patrick, the 1st, 3d, and 5th

USAF photo by SSgt. Andrew N. Dunaway

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Space Launch squadrons plan to consolidate into a new 1st Space Launch Squadron over the next two years.

Boeing Wins NMD Contract

On April 30, the Pentagon selected Boeing to oversee development, integration, testing, and possible deployment of a national system to defend all 50 states against a limited ballistic missile attack. The contract could be worth upwards of \$5.2 billion and might continue for as long as seven years.

Pentagon officials said Boeing was a clear winner in the National Missile Defense race. Its bid was lower than that of its competition, a joint venture of Lockheed Martin, Raytheon, and TRW, and was also strong technically.

Boeing officials suggested additional flight tests, for instance—something US officials saw as a good way to help lower program risk.

"Boeing's approach was very comprehensive," Army Brig. Gen. Joseph M. Cosumano Jr., NMD program manager, told reporters.

Some in Congress accuse the Clinton Administration of being a less-than-strong backer of the NMD concept. Secretary of Defense William S. Cohen rejected that charge, saying that Clinton officials remain committed to a 3+3 strategy that calls for three years of research and development, then a go or no-go decision, followed by deployment three years later.

"I believe it's a challenge that we can, in fact, measure up to," Cohen said.

Still to come are DoD decisions about whether to use Minuteman III boosters, or a commercial alternative, for NMD's ground-based interceptor and a contract award for the kill vehicle that will mount on the interceptor's nose.

UCAV Program Advances

The US Air Force and the Defense Advanced Research Projects Agency are forging ahead with an Unmanned Combat Aerial Vehicle advanced technology demonstration program. Four contractors—Lockheed Martin, Northrop Grumman, Raytheon, and Boeing—received \$4 million each for a preliminary design effort on April 16.

The goal of the DARPA-USAF program is to demonstrate the feasibility of using unmanned aircraft to suppress enemy air defenses and conduct strike missions. If the 10-month preliminary design phase goes well, the Pentagon will pick one of the four competing firms to build and flight test two vehicles in a 42-month, \$110 million second phase.

Meanwhile, the Air Force is planning to test nonlethal Suppression of Enemy Air Defenses via UAV on its own. If all goes as scheduled, early next year service officials will outfit a UAV with an electronics warfare suite which will allow it to loiter over a target, identify adversary emitters, and then switch to a jamming mode when manned strike aircraft arrive.

Location of the test has yet to be determined, though Mountain Home AFB, Idaho, is one possible site.

THAAD System Fails Again

On May 12, the Army's Theater High Altitude Area Defense missile failed to hit an incoming target for the fifth time in a row. It was an embarrassing failure for a system which is one of the Pentagon's top development priorities.

Neither defense officials nor contractors were able to immediately explain why the THAAD booster misfired seconds after launch, necessitating its destruction. The missile's previous four miscues had been due to four different problems, and prime contractor Lockheed Martin had thought all program glitches were finally fixed.

THAAD is intended to protect concentrations of US troops from tactical ballistic missiles, such as the Scuds they faced during the Gulf War. It is based on the so-called "bullet-to-bullet" concept, meaning it races into the sky and knocks incoming missiles aside, as if it were a bullet hitting a bullet.

The same basic concept is the core of the ambitious National Missile Defense system currently under development by Boeing.

"We will continue to test the program until we get it right," vowed Pentagon spokesman Kenneth Bacon.

Upgraded AWACS Ready to Go

On May 8, the 552d Air Control Wing, Tinker AFB, Okla., declared that the latest E-3 Sentry upgrade has reached initial operational capability.

The new Block 30/35 modification package contains four important improvements, said Lt. Col. Melvin Fitzpatrick, chief of operational requirements for the 552d ACW: the Global Positioning System, upgraded computers, new electronic support measures system, and the Joint Tactical Information Distribution System Class 2H terminal.

The GPS upgrade incorporates space-based precision location information into the E-3's navigation and mission crew computers, allowing crews to more accurately figure out where they are and where their targets are. The new computer gives the airplane the microchip horsepower needed to run its new systems. The electronic support measures upgrade passively detects signals from all kinds of electronic emitters, augmenting current onboard sensors. The Class 2H JTIDS terminal allows secure communications with everything from USAF fighters to ground-based units.

The 552d now has 10 airplanes equipped with these modifications.

"The Block 30/35 upgrade is the

USAF photo by SSgt. Angela Stafford



Amn. Jason K. Scales pauses for a moment as he and other Air Force Honor Guard members took time early one recent Sunday morning to clean the Vietnam Memorial Wall. Armed with buckets, soap, and long-handled brushes, the airmen gathered at the wall for the eighth consecutive year. They clean the memorial once each month during spring and summer.

cornerstone of the E-3 modernization program," said Brig. Gen. James W. Morehouse, 552d ACW commander.

Guard and Reserve Get JCS Posts

The chief of the Air Force Reserve, Maj. Gen. Robert A. McIntosh, was named the first Reserve assistant to the Chairman of the Joint Chiefs of Staff. Plans called for him to assume his new duties last month.

Replacing McIntosh, who had served as Reserve chief since 1994, is Maj. Gen. James E. Sherrard III, who was 22d Air Force commander. Sherrard was to assume command pending confirmation by the Senate.

Maj. Gen. Michael W. Davidson of the Army National Guard was named the first Guard JCS advisor. Both JCS positions were created by the Fiscal 1998 National Defense Authorization Act in an attempt by lawmakers to increase the clout of part-time soldiers, sailors, and airmen.

Vance Modifies Syllabus

Vance AFB, Okla., recently became the first pilot training base to modify its Specialized Undergraduate Pilot Training, Phase 1, in anticipation of the arrival of the Joint Primary Aircraft Training System.

The Air Force and Navy will both use JPATS starting after the turn of the century, and a number of things have been added to Vance's syllabus, and some things discarded, in order to "dovetail" the two services' training efforts, said Capt. Thomas Kublie, preflight officer at the 8th Flying Training Squadron.

The biggest change is the addition of swimming training and a swimming survival test. The test is a rigorous one, consisting of a mile-long swim in flight gear, in no more than 80 minutes, and then 25 yards of freestyle, backstroke, breaststroke, and sidestroke.

Preflight courseware has also been changed to more closely mirror the Navy's way of doing things. That means less T-37-specific information and more general aerodynamics and general engine systems information at the beginning of flight school.

All aerospace physiology training, including parasail training, is now given at the beginning of Phase 1. That way, no students fly ejection-seat aircraft without parasail experience.

A day of officer development has been dropped from the syllabus. Still, the schedule is now much busier. The first four weeks of training are solid 10- to 12-hour days.

The added workload is not such a bad thing, said Kublie.

"Before, Phase 1 students only worked seven- or eight-hour days," he said. "When they hit the flight line (for Phase 2 training), with its solid 12-hour days, it was somewhat of a shock to them. So now when they hit the flight line, it won't be such a big transition."

GPS, JDAM Upgrade Ready for B-1B

Two modification kits that give the B-1B bomber the ability to carry Global Positioning System-directed Joint Direct Attack Munitions have been delivered to Tinker AFB, Okla., for installation. Current plans now call for Air Combat Command to have seven JDAM-capable Lancers by January 1999—18 months ahead of schedule.

The B-1B upgrade program is intended to configure the airplane to carry out its role as the primary Air Force heavy bomber for conventional warfare. JDAM-capable B-1Bs will be able to carry up to 24 of the accurate guided munitions at once, with eight loaded in each of its three weapon bays.

Ongoing B-1B JDAM flight tests continue to produce better than expected accuracy, say Air Force officials. "B-1 JDAM development test scores are the best to date for horizontal targets, like low bunkers and aircraft on the ground, and are tied for first place for vertical targets, like

tall buildings," said Lou Cerrato, chief of the weapons development team, JDAM Joint Program Office in the B-1B System Program Office.

Instead, Air Force officials would like to add wings to the guided munition to increase its range from about 15 nautical miles to 40-60 nautical miles. Such an extension could make it easier for all JDAM-capable aircraft, not just the B-1B, to use it for attack missions.

Making such a wing reliable and affordable enough to marry to JDAM is a key to the upgrade, officials said.

Guard Pilots Return Medals

In a protest against what they claim was Pentagon retribution for flunking an unqualified female pilot, a group of New York Air National Guard pilots came to Washington in May and returned their medals to Congress.

The F-16 pilots seek a new review of what they called a bungled military investigation that grounded their unit and careers after Maj. Jacquelyn Parker complained of sexual discrimination. They said she was not qualified.

Rep. Roscoe G. Bartlett (R-Md.) offered an amendment to the defense authorization bill calling for a new investigation by the Pentagon inspector general. Additionally, Reps. Henry Hyde (R-Ill.) and Gerald Solomon (R-N.Y.) have asked Defense Secretary William S. Cohen to review the case.

It dates from 1995 when New York Guard officials concluded that members of the 174th Fighter Wing, Syra-



During the annual Memorial Day retreat ceremony at Misawa AB, Japan, (from left) SSgt. Tim Hoch, SrA. Robert McNeill, SSgt. Ken Blair, SSgt. Lisa Weinfurter, SSgt. Jaquetta Belton, and A1C Avis Connelley—all members of 35th Fighter Wing squadrons—fold the colors.

USAF photo by SrA. Marcel Mercer

cuse Hancock IAP, N.Y., had delayed Parker's F-16 training and that of a second woman, Capt. Sue Hart Lilly. Parker resigned from the 174th. Lilly completed her training and remains with the unit.

There have been two investigations of various allegations, including sexual improprieties on both sides of the issue. A two-year investigation by the New York inspector general did find flaws in the Guard investigation but upheld the basic finding that the Parker's training was unduly drawn out. In all, 12 pilots were fired or transferred.

Some C-130s to Be Eyes in Sky

A shortage of Predator Unmanned Aerial Vehicles has prompted US Air Forces in Europe to plan to equip some C-130E aircraft with surveillance equipment.

The added capability will allow the theater airlifters to bolster US reconnaissance efforts over Bosnia. The C-130s will not necessarily be dedicated to surveillance flights per se, said Maj. Gen. Kenneth R. Israel, director of the Defense Airborne Reconnaissance Office, during a May symposium. Instead, the airplanes will gather imagery in the course of their transport duties and provide information to help com-



The Boeing Standoff Land Attack Missile—Expanded Response scored a direct hit on a moving ship, after traveling more than 40 nautical miles, during its fifth and final development test. The SLAM-ER had to distinguish a particular ship in a complex coastal environment, stated company officials. It had previously "proved its versatility by successfully attacking a variety of land targets."

manders improve situational awareness.

The Air Force plans to buy two sensor suites to carry out the plan, which is part of the service's "Big Safari" reconnaissance acquisition effort. C-130E eyes in the sky could

be aloft by November, according to the Air Force.

Airborne Laser Passes Design Milestone

The Air Force has told Boeing to proceed with work on the Airborne

Senior Staff Changes

RETIREMENTS: Lt. Gen. Richard C. Bethurem, Lt. Gen. Carl E. Franklin, Brig. Gen. Karen S. Rankin, Brig. Gen. Philip G. Stowell, Brig. Gen. Donald A. Streater, Maj. Gen. John L. Welde.

NOMINATIONS: To be General: Charles T. Robertson Jr. To be Lieutenant General: Walter S. Hogle Jr., Gregory S. Martin, John L. Woodward Jr.

CHANGES: Brig. Gen. John R. Baker, from Cmdr., 18th Wg., PACAF, Kadena AB, Japan, to Cmdr., AIA, Kelly AFB, Texas ... Brig. Gen. John L. Barry, from Dir., P&P, USAFE, Ramstein AB, Germany, to Cmdr., 56th FW, AETC, Luke AFB, Ariz. ... Brig. Gen. (sel.) Anthony W. Bell Jr., from Dir., Systems, AFCIC, Pentagon, to Vice Cmdr., AFCIC, Pentagon.

Maj. Gen. Claude M. Bolton Jr., from Dir., Rqmts., AFMC, Wright-Patterson AFB, Ohio, to PEO, Fighter & Bomber Prgms., AF Prgm. Exec. Office, Pentagon ... Brig. Gen. Robert P. Bongiovi, from Vice Cmdr., ASC, AFMC, Wright-Patterson AFB, Ohio, to Dir., Rqmts., AFMC, Wright-Patterson AFB, Ohio ... Brig. Gen. Roger A. Brady, from Dir., Log., USAFE, Ramstein AB, Germany, to Dir., P&P, USAFE, Ramstein AB, Germany ... Maj. Gen. (sel.) John W. Brooks, from Cmdr., 86th AW, USAFE, Ramstein AB, Germany, to Vice Dir., Log., Jt. Staff, Pentagon.

Brig. Gen. Carrol H. Chandler, from Cmdr., 56th FW, AETC, Luke AFB, Ariz., to C/S, Allied Air Forces Southern Europe, NATO, Naples, Italy ... Maj. Gen. John R. Dallager, from Cmdr., 13th AF, PACAF, Andersen AFB, Guam, to Asst. C/S, Ops. & Log., SHAPE, Belgium ... Maj. Gen. Richard L. Engel, from Cmdr., AF Flight Test Ctr., AFMC, Edwards AFB, Calif., to Cmdt., ICAF, NDU, Ft. McNair, D.C.

Brig. Gen. (sel.) Terry L. Gabreski, from C-5 Systems Prgm. Dir., San Antonio ALC, AFMC, Kelly AFB, Texas, to Dir., Log., USAFE, Ramstein AB, Germany ... Maj. Gen. John D. Hopper

Jr., from Vice Dir., Log., Jt. Staff, Pentagon, to Dir., Ops., AMC, Scott AFB, Ill. ... Maj. Gen. (sel.) David F. MacGhee Jr., from IG, ACC, Langley AFB, Va., to Dir., Air & Space Ops., ACC, Langley AFB, Va.

Maj. Gen. Michael J. McCarthy, from Dir., Plans & Policy, USEUCOM, Stuttgart-Vaihingen, Germany, to Asst. DCS, Air & Space Ops., USAF, Pentagon ... Lt. Gen. (sel.) Donald L. Peterson, from Asst. DCS, Air & Space Ops., USAF, Pentagon, to DCS, Personnel, USAF, Pentagon ... Brig. Gen. Richard V. Reynolds, from PEO, Airlift & Trainers, AF Prgm. Exec. Office, Pentagon, to Cmdr., AF Flight Test Ctr., AFMC, Edwards AFB, Calif. ... Brig. Gen. (sel.) James G. Roudebush, from Cmd. Surgeon, PACAF, Hickam AFB, Hawaii, to Cmdr., 89th Medical Gp., AMC, Andrews AFB, Md.

Maj. Gen. James E. Sherrard III, from Cmdr., 22d AF, AFRC, Dobbins ARB, Ga., to Chief of AFR, USAF, Pentagon ... Brig. Gen. (sel.) James B. Smith, from Vice Dir., Ops., NORAD, Peterson AFB, Colo., to Cmdr., 18th Wg., PACAF, Kadena AFB, Japan ... Brig. Gen. Scott P. Vancleef, from Dep. Cmdr., 16th AF, USAFE, Vicenza, Italy, to Cmdr., 52d FW, USAFE, Spangdahlem AB, Germany ... Maj. Gen. Gary A. Voellger, from Dir., Ops., AMC, Scott AFB, Ill., to Cmdr., NATO Airborne Early Warning Force, Geilenkirchen, Germany.

Maj. Gen. Thomas C. Waskow, C/S, Allied Air Forces Southern Europe, NATO, Naples, Italy, to Cmdr., 13th AF, PACAF, Andersen AFB, Guam ... Brig. Gen. Michael W. Wooley, from Vice Cmdr., AFSOC, Hurlburt Field, Fla., to Cmdr., 86th AW, USAFE, Ramstein AB, Germany.

SENIOR EXECUTIVE SERVICE RETIREMENT: Frank F. Colson.

SES CHANGE: Neil R. Planzer, to Associate Dir., Civil Aviation, Ops. & Tng., Air & Space Ops., USAF, Pentagon. ■

Laser following a week-long intensive study of the program in early May.

Air Force officials said that with the successful completion of its preliminary design review, the ABL program is on schedule and moving toward a scheduled demonstration in 2002, when it will attempt to shoot down a theater ballistic missile.

If that test goes well, the Boeing-TRW-Lockheed Martin team will likely be awarded a \$4.5 billion contract to produce a seven-aircraft ABL fleet by 2008.

"We're exactly on track a year and a half into our six-year design schedule—a good-news story for acquisition reform initiatives," said Col. Mi-

chael W. Booen, director of the Airborne Laser System Program Office at Kirtland AFB, N.M.

Computerized design software is key to the current success of the program, said officials. Each ABL component is loaded into a central computer design system that shows where equipment from one sub-

Congressional News

Compared to past years, congressional debate over Fiscal 1999 defense authorization bills has been restrained. That is because the parameters of defense spending largely are set. The 1997 balanced budget law capped the overall amount of money Congress can spend on the US military, while the disappearance of large budget deficits has removed much of the pressure that led to big cuts from the mid-1980s through most of the 1990s.

Still, in keeping with the balanced budget pact, the \$271 billion defense bills now wending their way through the House and Senate represent a 1.1 percent decline, in real terms, from the previous year. This worries lawmakers on both sides of the Hill.

The Senate Armed Services Committee, in its report on the 1999 defense bill, stated; "While the budget agreement protects our military forces from unrealistic and unwise cuts in defense, the Committee remains concerned that the funding levels for defense may not [be] sufficient ... to adequately sustain, over time, the personnel, quality of life, readiness, and modernization programs critical to our military services."

Concern led the Senate panel to tinker with elements of the Administration's budget request. Readiness accounts in all armed services received a few extra dollars, for instance, with the Air Force getting a \$16.4 million increase over Clinton's request.

F-22 Stays on Track

In dealing with an item of particular concern to the Air Force, the Senate Armed Services Committee expressed unhappiness with the slow pace of the F-22 test program. In its version of the 1999 defense bill, SASC called on the Secretary of Defense to ensure that F-22 flight testing reaches 433 hours (10 percent of planned total) before releasing advance procurement funds for a second procurement lot. The Sec-

retary may waive that requirement if he certifies that tests have been sufficient.

The panel left the overall F-22 budget request unchanged, however, at \$785 million for procurement of two aircraft and \$1.6 billion for engineering and manufacturing development in the coming year.

Senate panel members also were critical of USAF's Airborne Laser program. They axed \$97 million from the ABL budget request, lowering it to \$195 million and directed the Defense Secretary to conduct an independent review of the technical operational viability of the program.

Other major changes included an addition of \$72 million to E-8 Joint STARS accounts, for use in either future production or program termination, and an addition of \$381.7 million for four C-130J aircraft. The Senate also added \$50 million for F-15 engine upgrades, \$15 million to accelerate alternative engine development for the Joint Strike Fighter, and \$56 million to re-engine two RC-135 aircraft.

More C-17 Airlifters

The Senate would approve the full \$2.9 billion Air Force request for acquisition and development of another 13 C-17s under a multiyear program. Committee members voted to terminate the Dark Star Unmanned Aerial Vehicle program and use some funds thus freed up to buy extra Global Hawk long-range UAVs.

On the other side of Capitol Hill, the House National Security Committee wrapped up its 1999 defense bill in early May. The full House then approved the measure on May 20, taking the opportunity to attach amendments banning the launch of US satellites on Chinese rockets.

The House and Senate are in general agreement on most matters. On aircraft programs, the House voted full funding for the F-22 and the C-17. It supported the President's request of \$456 million for Air Force Joint

Strike Fighter development and \$463 million for the Navy JSF.

The House voted to add \$60 million to the Pentagon budget for the purchase of two additional F-16C aircraft, "in an effort to reduce the Air Force's anticipated shortfall of 40 F-16C aircraft for attrition reserve," according to the bill's committee report. It recommended \$285.2 million for purchase of five C-130J aircraft for the Guard and Reserve not requested by the Administration. The House added \$72 million for advance procurement of two Joint STARS aircraft.

The Future Bomber

Building on the recommendations of the Panel to Review Long Range Airpower, it directed the Secretary of the Air Force to report to Congress by March 1, 1999, on planned upgrades to the current bomber fleet, a funding profile for those upgrades, and a timeline for consideration of a follow-on bomber. Apparently, no such timeline currently exists.

On health care, the House bill directs the Secretary of Defense to submit a report to Congress by March 1, 1999, on how DoD will ensure adequate health coverage for retirees. The House ordered DoD to consider options ranging from expansion of Tricare eligibility to opening up the Federal Employees Health Benefits Program to military retirees.

Reconciliation of the House and Senate positions could not begin until the Senate has passed its version of the bill, after which a conference committee could have to hammer out remaining differences. On two matters, however, there was pure unanimity: Both chambers agreed that active duty military personnel deserve a pay raise, and both agreed not to approve any new base closure authority this year.

If recent history is any guide, late summer would be the most likely time for completion of a final defense bill. ■

system might interfere with that of another. This allows potentially expensive trouble spots to be avoided ahead of time.

However, the Senate Armed Services Committee has charged that USAF has failed to justify a \$6 billion-plus investment in the ABL program, particularly in light of the number of US theater missile defense development efforts.

In its Fiscal 1999 defense authorization report, the panel concluded the Secretary of Defense should establish an independent review of the program.

C-17 PLSR on Track

The Air Force has finished operational testing of a precision landing system for the C-17 and has begun to field the system.

All C-17s now in service should be retrofitted with a Precision Landing System Receiver by the end of August. New Globemasters will come outfitted with PLSR as they roll off the assembly line.

The Air Force flew 220 missions at airports all over the world to test the new AN/ARN-155 PLSR. The system is now certified for Instrument Landing System approaches to a 100-foot ceiling and 0.25-mile visibility and, in the Microwave Landing System mode, to 200-foot ceilings and 0.5-mile visibility.

Installation of the system on the entire C-17 fleet will cost about \$55 million, according to Air Force estimates.

News Notes

■ President Bill Clinton dubbed a new USAF C-17 *The Spirit of Berlin* during a May 14 ceremony at Tempelhof, Germany. The dedication was part of ceremonies marking the 50th anniversary of the start of the Berlin Airlift, the historic humanitarian effort that defeated the Soviet blockade of the German city.

■ NATO marked five years of combined air operations over Bosnia on April 15. The Combined Air Operations Center at Vicenza, Italy, now houses more than 450 personnel from 14 allied nations, all managing 50 aircraft enforcing a no-fly zone over the Balkans.

■ The Air Force Women's Volleyball Team won the 1998 Armed Forces Volleyball Championship at Port Hueneme, Calif., during a tournament held May 5-9. The Air Force team beat the Navy and the Marine Corps teams twice, and the Army once, during the double round-robin contest.

■ The Air Force Men's Volleyball

Team took home second place from the same tournament. While the Air Force men bested the Army and Marine Corps, they could not get by Navy, which defeated them twice and took the gold.

■ On April 22, an Army demolition team toppled the Air Force's 1,218-foot LORAN tower at the Forestport, N.Y., Research Facility. LORAN, developed during World War II, used low-frequency radio stations to guide bombers. The skyscraping tower had been employed for a variety of Air Force communication missions since LORAN became obsolete in the mid-1950s.

■ TSgt. John T. Hartman, a 315th Training Squadron instructor at Goodfellow AFB, Texas, has been named Department of Defense General Intelligence Training System's 1997 Instructor of the Year.

■ Three Air Force bases have won White House "Closing the Circle" awards for environmental programs. Brooks AFB, Texas, was recognized for its role in the Texas Pollution-Prevention Partnership. McClellan AFB, Calif., won for its hazardous waste prevention. Wright-Patterson AFB, Ohio, took its award based on its radioactive material recovery and recycling program.

■ The Secretary of Defense has approved the Humanitarian Service Medal for Air Force personnel who were assigned to a forest fire relief effort in Indonesia from Oct. 17 through Dec. 4, 1997. Only those service members who were assigned to the relief effort and provided direct humanitarian assistance are eligible.

■ On May 6, the Air Force Research Laboratory, Wright-Patterson AFB, Ohio, announced that it has chosen Kenneth E. Harwell as its new chief scientist. Harwell has served as senior vice president for research and associate provost at the University of Alabama for nearly 10 years.

■ The United Arab Emirates ordered 80 F-16 fighters from Lockheed Martin on May 12. The big purchase will cost \$7 billion and extend production of the airplane until at least 2004.

■ The 319th Air Refueling Wing at Grand Forks AFB, N.D., is the winner of the 1998 Verne Orr Award. Sponsored by the Air Force Association, the award is presented annually to the unit which effectively uses human resources to accomplish its mission.

■ The Air Force has officially accepted the first of two C-38A aircraft from prime contractor Tracor Inc. The C-38A will replace the C-21 and be operated by the 201st Airlift Squadron, Andrews AFB, Md.

■ A Lockheed Martin C-130J set

an unofficial record May 12 for the longest unrefueled, nonstop flight by a Hercules aircraft without external fuel tanks. The 3,935-nautical mile jaunt from Honolulu to Marietta, Ga., lasted 10 hours, 52 minutes.

■ An Air Force A-10 from the 355th Wing, Davis-Monthan AFB, Ariz., crashed May 14 near Kitt Peak, an Arizona mountain range. Capt. Christopher Hamilton ejected from the aircraft and suffered minor injuries.

■ The Air National Guard welcomed its Guardsmen of the Year to the Washington, D.C., area May 12. Designated as the premier personnel among the Guard's 98,313 enlisted members were SrA. Andre Walker, a communications specialist with the 239th Combat Communications Squadron in St. Louis; SSgt. Arthur Thompson, an aerospace ground equipment journeyman with the 146th Airlift Wing, Channel Islands ANGB, Calif.; MSgt. Steve Hanneman, first sergeant for the 152d Civil Engineer Squadron, in Reno, Nev.; and SMSgt. Holly Morris, an aeromedical evacuation technician with the 142d Aeromedical Evacuation Squadron, in New Castle, Del.

■ A Titan II booster successfully launched a payload from Vandenberg AFB, Calif., on May 13. The Titan carried a National Oceanographic and Atmospheric Administration weather satellite into polar orbit.

■ NORAD turned 40 on May 12. The US-Canada North American Aerospace Defense Command has long been entrusted with the air defense of North America.

■ Remains of two US servicemen killed during the Korean War were turned over to UN officials. North Korea, following a 10-day refusal to proceed with an agreement to release the remains, turned over two metal caskets.

■ President Clinton chose a West Point graduate to be the next Secretary of the Army. He is California legislator Louis Caldera, who, if approved by the Senate, will replace Togo West. West now heads the Department of Veterans Affairs.

■ President Clinton on May 21 signed the legislative measure permitting the expansion of NATO to include Poland, Hungary, and the Czech Republic. The Senate approved the measure by a wide margin.

■ Members of the congressional Depot Caucus supported a recommendation to remove the Air Force from the source selection process to award millions of dollars in maintenance work at McClellan AFB, Calif. The caucus believes Clinton Administration political meddling will keep USAF from fairly handling the measure. ■

Washington Watch

By Robert S. Dudley, Executive Editor

The New Space Plan

Our dependence on space, already considerable, is about to rise enormously. That makes it an area of vital national interest that must be protected.



In recent reports, US military space planners have noted that 550 satellites today are in Earth orbit, performing numerous critical defense and civil functions.

Nearly half of them belong to the US, and half of those are commercial. US space investment now exceeds \$100 billion, and the stakes are about to go higher.

Expectations are that the US and the world's other spacefaring nations, over the next five years, will pump another \$500 billion into space. They will launch at least 1,000, and possibly 1,500, new satellites. Most will be commercial systems. Many will have military significance.

"We'll see commercial use of space go out of sight," said USAF's Chief of Staff, Gen. Michael E. Ryan.

To support this gold rush in space, 1,100 firms worldwide are developing, manufacturing, and operating space systems. Space industries in the United States are growing at a blistering rate of 20 percent a year. Commercial space revenues exceed outlays on military space, which is still a growth area in defense.

The explosion in space has created a new dimension in national security planning. More and more, military and civilian tasks are migrating to space, where they can be performed faster, cheaper, and better. However, there is a down side. Warns US Space Command: "Our nation's increasing dependence upon space capabilities ... produces a related vulnerability that will not go unnoticed by adversaries."

By that, Space Command means that a foe could deal the US economy

or military forces a blow by interfering with vital space systems, which are essentially defenseless, or by making use of the systems himself to strengthen and sharpen his attacks.

Last May, the world got a startling glimpse of what space disruption might look like. The malfunctioning of a single commercial satellite parked 22,500 miles above Kansas caused the blackout of most of the nation's 45 million personal pagers and wiped out the communications used by thousands of retailers and news organizations.

Hostile action did not cause the problem, but attacks that cause similar difficulties now seem virtually inevitable.

"Center of Gravity"

Such prospects cause deep concern for Gen. Howell M. Estes III, the commander in chief of US Space Command and commander, Air Force Space Command, Peterson AFB, Colo. He sums up matters in this way: "The time has come to address, among warfighters and national policy makers, the emergence of space as a center of gravity for DoD and the nation."

He adds, "We must commit enough planning and resources to protect and enhance our access to, and use of, space."

At Estes' direction, USSPACECOM has produced a game plan aimed at doing just that. The so-called "Long Range Plan," made public April 7, is the first of its kind for the command. It lays out a comprehensive set of roadmaps for constructing, by 2020, a robust space warfighting system able to protect US national and commercial interests and for exploiting space to the fullest.

The LRP maintains that the arena of space will become a "vital national interest" for the US—like Western Europe or the Persian Gulf—around 2005, when the next round of space expansion is completed. Potential enemies "clearly understand" that this will happen, the LRP states.

The plan goes on to identify war-

fighting capabilities, concepts of operations, organizations, and partnerships that will be needed to meet any potential challenge.

The operational missions of the joint-service US Space Command are performed largely by 14th Air Force, the Air Force component. The Air Force provides most of the money and force structure and launches and operates more than 90 percent of all Department of Defense space assets.

In its plan, US Space Command does not prescribe specific systems for 2020, only desired capabilities. However, planners refer to linchpin programs such as the Space-Based Infrared System, Milstar communications system, Global Positioning System, and the Evolved Expendable Launch Vehicle.

According to the LRP, future US spacepower will hinge on four operational concepts—space control, global engagement, full force integration, and global partnerships.

Nothing gets greater emphasis in the LRP than space control—that is, the ability of the US and its allies to reach space and operate there freely, while denying an adversary the ability to do the same thing.

Some refer to this condition as "space superiority." Control of space is, in fact, "a complex mission that casts [the head of US Space Command] in a classic warfighter role," according to the LRP.

Cheek by Jowl

The plan warns that, in decades ahead, foreign national military forces, paramilitary units, terrorists, and other potential adversaries will share the high ground of space with the United States and its allies. The US should expect to find "counterspace" weapons aimed against US systems and prepare accordingly.

The enemy's hostile capabilities may include kinetic, electronic, nuclear, and directed-energy systems to negate US satellites. An enemy may also use deception and information operations.

In the face of this danger, US

Space Command declared that it has five interrelated objectives to be met by 2020:

Assured access. This will require reliable, quick-turnaround launch systems, space operations vehicles, a global space traffic-control system, and a space-based relay network to provide access to any satellite, regardless of its position.

"A major thrust ... is to lower launch costs," said the plan. "This is the key to the affordable use of space. We must work this as a No. 1 priority."

The goal is to lower the cost to put a satellite in low Earth orbit from thousands of dollars per pound to hundreds of dollars per pound by 2015.

The US will require a mix of reusable launch vehicles, expendable launch vehicles, space operations vehicles, and space tugs to deploy and sustain its space systems. Use of Atlas, Delta, and Titan launch vehicles will do for the near term.

US Space Command says that, in 2002, the Evolved Expendable Launch Vehicle will come on stream and start to reduce costs by up to 50 percent and lift medium-size payloads within 45 days. EELV heavy lift, with a response time of within 90 days, will come on line in 2003. The currently planned Space Operations Vehicle, formerly known as the Military Spaceplane, should begin to fly around 2012.

By 2006, commercial services will launch most of the Defense Department's routine payloads, according to US Space Command.

Surveillance of space. US military forces, the LRP declares, will need to field systems to quickly track, identify, characterize, and catalog space objects with great precision. Now being sought are much more capable ground- and space-based sensors, which will provide detailed situational understanding of space in near real time.

Protection of critical space systems. US Space Command said American and allied spacecraft need to be adequately shielded from interference or attack. This will require warning of possible threats to US and allied space systems, instantaneous reports of possible attacks against satellites, cross-cueing with owners or operators or other satellites, and directing forces to respond to a threat.

Space systems must have onboard sensors to detect attacks and quickly report anomalies or suspicious events.

The core of the protection effort, according to the LRP, will be de-

ployment of robust "battle managers" that receive, process, correlate, and distribute critical information reliably, unambiguously, and rapidly to various spacecraft.

According to Ryan, the Air Force is working on ways that would allow satellites to "actively defend" themselves when under attack, but much work remains to be done.

Prevention of unauthorized access to, and exploitation of, either US or allied space systems. The LRP maintains that enemies will try to make use of US systems. Prevention would deny, at least temporarily, an adversary's ability to exploit US systems or allied space capabilities.

The main tools would be political, diplomatic, informational, or economic—all of which fall well short of using force. US Space Command's main role will be to provide the command, control, and communication architecture necessary to detect and report any unauthorized use and to assess its impact.

Negation, or the direct disabling of an adversary's space-related capabilities. Such action might range from conventional attacks on a vulnerable ground station, disruption or destruction of ground-to-space links, or a precision strike against a foe's own satellites or those from which it receives data.

Commercial satellite companies already sell intelligence photos, communications, and weather data to national militaries. Minor military powers have access to information of striking military value. "The space 'playing field' is leveling rapidly," said US Space Command.

Space-based jammers and lasers as well as high-power microwave weapons are among options US Space Command said are being considered for the task of degrading or killing a satellite, either temporarily or permanently.

Negation raises the prospect of weapons in space and so is politically sensitive. The LRP maintains that developments will follow an evolutionary path, giving everyone plenty of time to study the problem and reach workable solutions.

"Negation will evolve from current concepts, which emphasize terrestrial attacks on an adversary's ground nodes, to a full range of flexible and discriminate techniques against the most appropriate node," it said.

Negation will require a wide variety of weapons effects—ranging from temporary to permanent, from devastating to merely disruptive.

That is because friends and foes may be using the same systems at the same time. The US will need to be able to discriminate in the level and type of attack it mounts so as to deny a foe the information without similarly denying an ally or friendly nation.

In any event, said the LRP, "The United States will need to develop national policies supporting space warfare, weapons development and employment, and rules of engagement."

Strikes From Space

Space control isn't the LRP's only sensitive topic. In an equally controversial step, US Space Command has proposed that the US start preparing now to use space-based systems for direct military effect on Earth.

The LRP calls this operational concept "global engagement."

Global engagement would require the United States to put together a far-reaching space-based surveillance capability that would give commanders "worldwide situational awareness." Systems would also be produced for airtight ballistic missile defense and "a limited ability to apply force from space against high-value, time-sensitive targets," according to the LRP.

US Space Command said any future missile defense would be based on ground-based interceptors, space operations vehicles, space-based platforms and lasers, and high-power microwaves.

The tools for applying force on Earth could spin off from such missile defense systems. Some planners envision precision strikes from spacecraft, though force-application missions might also be flown by "aerospace planes" that take off from Earth, enter space, and return to Earth.

Today, the region of space contains no such force-application assets. When and if they arrive, said the plan, they would provide the United States "effective forward presence in space" as forward basing of terrestrial forces decreases.

US Space Command planners are only too aware of the political sensitivity of this concept, often decried by arms controllers and other critics as "militarization of the heavens."

In the LRP, space planners highlighted these words: "At present, the notion of weapons in space is not consistent with US National Policy." They added that the document calls only for "planning for this possibil-

ity" so that the US will have a capability if needed.

The LRP said space operations vehicles and space-based platforms could support force application by offering increased responsiveness and versatility that will provide better coverage of targets. Somewhere in the period 2008–12, said the report, the US should be able to carry out much but not all of this mission, if current development programs stay on track.

The LRP maintains that everything would depend on having a high-quality, integrated system for surveillance of space, air, and surface areas, with the blending of systems for surveillance, warning, and command and control.

Data would move through automated battle managers that permit combatant commands to respond rapidly to threats such as the readying of ballistic missiles for launch.

Space AWACS?

Space planners believe that many surveillance capabilities currently delivered by surface and air platforms will migrate to space. One would be a system analogous to the AWACS for missile and air surveillance and another analogous to the Joint STARS for mobile and fixed surface targets.

The surveillance system would be expected to provide instantaneous target identification and characterization for 100 percent of a missile defense target set and a "finite" number of high interest targets for force application.

One space officer said that such advanced space systems will be able to detect the location of individual artillery flashes on Earth or an enemy fighter's afterburner plumes.

Capabilities under development right now should support all of these missions by 2020, said the report.

Much less controversial are US Space Command's final two operational concepts—what it calls "full force integration" and "global partnerships."

Essentially, full force integration means the dispersion of space forces and information throughout the national military structure.

The LRP maintains that space-based systems for navigation, weather, meteorology, missile warning, Intelligence, Surveillance, and Reconnaissance, and communications have become so powerful that no operational commander would consider fighting without them. How-

ever, because each of these sectors evolved separately over many years, their management is spread among many agencies and this often inhibits their full use.

US Space Command prescribes educating soldiers, sailors, and airmen about space capabilities early in their careers. It wants to establish new policies and doctrines. Also pledged are more extensive exercises and modeling and simulation.

US Space Command even foresees something resembling the Civil Reserve Air Fleet for space so that it will be sure to have access to commercial services when needed.

The concept of global partnerships stems directly from the explosive growth of commercial and international space.

The idea, in brief, calls for the US military space establishment to join forces with many other federal agencies, commercial firms, and international concerns in order to augment the power and reduce the cost of military space capabilities.

Down to the Core

The Defense Department would identify and continue to provide for its core military space capabilities—for example, missile launch detection. However, it might well contract out much of the rest, such as navigation and weather reporting.

"GPS operations, traditionally considered a core military function, may be a worthy candidate for transition to commercial management," US Space Command planners wrote.

The global partnerships plan, said the LRP, is based on simple fiscal realities—the Pentagon cannot afford to fund its out-year warfighting requirements, and the commercial space segment is booming.

The armed forces already make extensive use of commercial communications satellites. The military mapping community is the leading customer of the commercial Landsat remote sensing system.

Space planners suggest that the military space establishment might have to share some of its technologies and know-how as an inducement for full cooperation from the civilian and commercial communities, but there will be no letup in military space.

"Partnering doesn't mean reduced vigilance for defense," said the LRP. "It's not a goal in itself, nor is it a naive attempt to provide peace and harmony by trading away our sophis-

ticated technologies. Instead, it recognizes what the United States can gain by adding to our prowess in space."

US Space Command's plan does not enjoy universal support. Some Defense Department analysts are not convinced that the US will face a serious threat in space for quite a while. The assessment is echoed by a few private space commentators. They say the Soviet (now Russian) military space program may at one time have posed a potential threat but does not now do so.

Predictably, opponents of anti-satellite weapons argue that US interests in space would be best served by seeking to limit or block the development of anti-satellite weapons and maintaining space as a sanctuary free of weapons.

The Clinton Administration has given mixed signals. On one hand, space officers were heartened this January when President Clinton approved significant changes in the Unified Command Plan, giving the command high-level backing to plan for space control and global engagement operations.

On the other hand, the President used his line-item veto authority last fall to eliminate appropriations for three space programs that, pursued to their fullest, would add to US space control capabilities.

It will be a while before the US fully thrashes out such questions. For one thing, US Space Command doesn't have authority to decide many issues critical to the success or failure of its preferred course. The LRP contains a section, called "Out of Our Lane," listing 19 policies, treaties, and agreements that it said Washington needs to review and either alter or eliminate. These include the 1972 ABM Treaty and International Space Sovereignty Policy. "These concerns are urgent and critical," said the LRP.

US Space Command did not estimate the cost of executing its Long Range Plan. However, Estes and other space officials state explicitly that the United States has no real alternative to moving out in space now, even if that requires taking funds from other more-traditional defense areas or coming up with creative ways to finance the effort.

The LRP declares, "Flourishing businesses and nations recognize basic realities, make the best choices, and find the resources." ■

Straight Up and Down



Two Ryan X-13 Vertijet research aircraft were built for the Air Force in the mid-1950s, expanding upon a 1947 Navy request to study a vertical takeoff and landing fighter that could operate from small ships. By the time Ryan test pilot Pete Girard demonstrated this pioneer VTOL aircraft (shown here) near the Pentagon in 1957, the small jet had made several successful flight tests. The X-13 had two

small bumper skids on the fuselage, along with a small retractable nose hook. The hook supported the entire aircraft from a short section of cable suspended between two mechanical arms on a flatbed trailer. The X-13 rose vertically a few inches, hovered away from the trailer, then accelerated vertically. As airspeed and altitude increased, it began a pitchover to horizontal flight. The pilot re-

versed the process to return to the flatbed. Despite impressive demonstrations, the X-13's payload capacity was limited and USAF canceled the program.

Airborne Early Warning and Control

Air-to-Ground Surveillance

Submarine Propulsion

Combat Radars

Unmanned Systems

Aircraft Integration

Missile Launch Systems

Aerostructures

Image Recognition Systems

Airborne Countermeasures

Surveillance Radars

Weapons Integration

Precision Sensors

Electronic Warfare

Information Technology

Radar Jamming Systems

Integrated Logistics Support

The right technologies. Right now.

Mine Detection Systems

Airspace Management


Electronics Integration

Stealth Technology

Infrared Countermeasures

*We develop technologies for
next-generation uninhabited
combat and reconnaissance air vehicles.*

NORTHROP GRUMMAN



This would be a dangerous mission for a pilot.

If there was a pilot.

The long range airpower panel says we should upgrade the B-2 to its full potential—and start planning for the next bomber.

The B-2 and Beyond

By John T. Correll, Editor in Chief

THE B-2 bomber was no stranger to controversy when the first airplane rolled out of the plant in Palmdale, Calif., in November 1988.

The existence of the B-2 program had been revealed to the public almost eight years previously by means of a news leak during the election campaign of 1980. "Some Air Force enthusiasts have nicknamed this new bomber 'Stealth' because of its ghost-like qualities," the *Washington Post* reported.

The Carter Administration—under criticism for having canceled the B-1 bomber—followed up right away with a press conference to confirm that a new bomber with "so-called stealth technology" was in the works, representing "a major technological advance of great military significance."

Republicans accused the Administration of engineering the leak to make the B-1 decision look better and with taking the cover off a national security program for political advantage.

When the Reagan Administration subsequently restored the B-1, defense critics attacked the overlap of two bomber programs as excessive. Agitation about the B-2 has

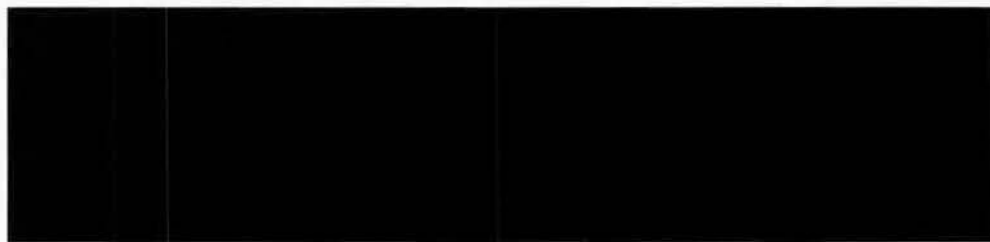


Photo by Erik Hillebrandt





The long range airpower review panel recommends upgrading the existing B-2 fleet. Here, A1C Ryan Hill, 509th Maintenance Squadron, Whiteman AFB, Mo., prepares a B-2's surface for painting during an October 1997 exercise.

been a staple of the defense debate ever since. The B-2 was still in flight testing when the Cold War ended and the economies of the 1990s went into effect.

The Major Aircraft Review of 1990 reduced the planned B-2 fleet from 132 aircraft to 75. In 1992, the Air Force's Bomber Roadmap cut it further, to 20. (The number edged up slightly in 1996 with a decision to upgrade the first test aircraft to operational configuration, setting the total at 21.)

B-2 backers in Congress and elsewhere have waged a long-running campaign to get the total increased. In 1995, seven former Secretaries of Defense wrote to the President, asking him to consider the purchase of more B-2s. However, B-2 supporters could not overcome the opposition, which included the White House, the Department of Defense, and the Air Force.

The last major subassemblies were completed in 1994, and the 21st aircraft was delivered to the Air Force in 1997. The subcontractor team has dispersed, but Northrop Grumman, the prime contractor, said it would be possible—if expensive—to reconstitute the production line and a supplier base.

Last year, in what even some of the staunchest B-2 advocates said was the "last stand" on the production issue, Congress established the Panel to Review Long Range Airpower and told it to study a list of

questions, the pivotal one being whether \$331 million appropriated for the B-2 program should be applied to "further low-rate production" or be spent on improvements to the baseline program.

That panel was chaired by Gen. Larry D. Welch, former Air Force Chief of Staff and now president of the Institute for Defense Analyses.

A Recommendation—and a Warning

The panel's report to the Administration and Congress in March said that all of the money should be used for upgrades to improve the deployability, survivability, and maintainability of the existing fleet.

In fact, Welch told the House National Security subcommittee on Military Procurement April 1, "Doing anything to disrupt the upgrades would be *very* ill-advised. It was our strong feeling that it would really be a very bad decision to not do the work needed to make these 21 airplanes reach their full potential. Because if the work is not done, they clearly will not serve the purpose that you will hope they will serve."

It will take several years of upgrades to make the B-2 fleet all it can be, he said. "As it stands today, the B-2 is a valuable asset, but it has nothing like the value that it ought to have," Welch said.

Among other things, he said, "The sortie rates as of now do not meet the

original expectations. The CINCs [theater commanders in chief] won't be happy with the current sortie rates. Plans assume rates higher than now available."

Upgrades and improvements, especially those that make the B-2's "low observable" (stealth) features easier and less time-consuming to maintain, will go a long way toward solving the problem.

"If you believe that you need more B-2s, what you really mean is you want more B-2 sorties," Welch told the subcommittee. "The way to get more B-2s over targets is to fix the sortie rate to what you want to have. The way to get the capability is to bring these airplanes to their full potential."

"Can you double the sortie rate with the investments you recommend?" asked Rep. Norman Sisisky (D-Va.).

"We can more than double it," Welch replied.

The report said that "from an investment perspective, increasing the efficiency of the bomber force is more cost effective than procurement of additional aircraft."

Welch said the report reflected a "common understanding" and "was not a compromise." He said that not "even the most avid B-2 supporters" on the panel favored a concept, advanced by Northrop Grumman, that would have reopened the line to produce nine more B-2s at a cost of \$14 billion.

The other members of the panel were Samuel D. Adcock of Daimler-Benz Corp., former Sen. James J. Exon of Nebraska, John S. Foster Jr. of TRW, Inc., Frederick L. Frostic of Booz•Allen & Hamilton, Inc., former Air Force Chief of Staff Gen. Merrill A. McPeak, Walter E. Morrow Jr. of MIT Laboratory, former Secretary of the Air Force Donald B. Rice, and retired Air Force Gen. Robert L. Rutherford.

What Plan?

The panel's report said, with considerable understatement, that "current plans do not adequately address the long-term future of the bomber force." More to the point, there wasn't any plan until very recently.

"This bomber force, given that you make smart upgrades and do the things that Air Combat Command wants to do to it and that we think should be done, this is a pretty good

bomber force for at least the next 15 years," Welch said in an interview with *Air Force Magazine*.

"But we couldn't find a long-range plan. The Air Force acknowledged [that] it had been in the 'too hard' pile for them for some time because of the B-2 issue. This whole B-2 [additional production] issue that's been dragging on for so long—it's really been an inhibitor for a lot of things. So now they are embarked on developing a long-range plan."

The need for such planning is driven not only by anticipated changes in technology but also by the inevitability of attrition. The Air Force's total inventory of bombers consists of 94 B-52Hs, 94 B-1Bs, and 21 B-2s.

Attrition occurs both in combat—15 B-52s were lost in 10 days during Operation Linebacker II in December 1972, for example—and in peacetime. The B-52 force has experienced losses of about one aircraft per year over its 40-year service life. B-1B losses have been approximately one aircraft about every two years. The B-2 loss rate is yet to be seen.

There will be an ample reserve of B-52s. The Defense Department intends to retire another 23 of them in 1999. Losses over the next 15 years will hit hardest at the newest bombers in the fleet, especially the B-2s, which are in the shortest supply of all.

The Bottom-Up Review of 1993

said 100 heavy bombers would be required per Major Regional Conflict, but projected a total of 184 operational bombers for the two-conflict strategy.

The difference, it was said, lay in having the bombers "swing" their attention from one conflict to the other. The requirement is further offset by increasing capability. The B-2, for example, has demonstrated that it can strike 16 separate targets on a single sortie.

Of the present fleet of 209 bombers, 121 are in operational (Primary Aircraft Inventory) status.

The Next Bomber

Among the alternatives for the long-term future of the bomber force, the panel report said, are "a variant of the B-2, incorporating upgrades suggested in this report and those that will emerge in the future" and "development of more advanced technologies that might lead to a better solution for the next generation aircraft."

Although the report did not specifically say so, the options other than the B-2 variant might include an all-new manned bomber, which some in the press have dubbed the "B-3" or the "B-X," and an Unmanned Aerial Vehicle.

At present, the panel said, there is not enough information to make a choice from these alternatives, nor is there yet any need to choose. "A continuing program to demonstrate advanced technologies in support of

long range airpower should be given high priority," the report said.

Welch said that UAVs may be part of the solution but that "it's very difficult for me to believe that you won't always want a large, high-payload, long-range, manned platform."

The panel also examined the value of stealth—low observables technology to reduce the radar signature—to bomber aircraft at some length.

"Today, after 15 years of stealth aircraft operation, the most modern air defense systems on the international arms market have increasing capability against current levels of deployed stealth," the report said. "Even so, most targets can be attacked with minimum external support other than air refueling."

The Russian-built SA-10 surface to air missile is the best-known example of a weapon system that has some effectiveness against stealthy aircraft.

"It was expected and it occurred that air defense systems have evolved over these 15 years, so that stealth is not an adequate stand-alone survivability feature," Welch said.

"On the other hand," he said, "stealth technology has not stood still." Developments in the next few years could affect the decision on the next bomber.

"Given the evolution of stealth technology, there could be a next step where you could have a level of stealth that changes the game again," Welch said.

Making the B-2 Better

The panel found "compelling arguments for measures to leverage the [B-2] investment by adequately supporting and upgrading the existing force."

Welch left no doubt about the importance of the upgrades. "If you had asked me two years ago where we would be in 1998 with deployability and maintainability of this airplane, I would have been an awful lot more optimistic than would have been warranted," he said.

He was equally emphatic about the results if the improvements are made.

"Once they are upgraded and the maintainability problems are addressed so that you can fly these airplanes at the kind of sortie rates which you should expect to be able to fly them—once you do that, these



The panel believes there will always be a need for a large, high-payload manned platform, but the future bomber force might include Unmanned Combat Aerial Vehicles like this Northrop Grumman concept.

21 airplanes are a *very* high leverage force.”

Some of the improvements were already scheduled as the B-2s progress from the initial Block 10 configuration, through the interim Block 20, to the eventual Block 30. Thus far, six of the aircraft have reached the Block 30 configuration.

The prescribed upgrades and improvements are of four kinds.

Low observables. The panel reported that “significant improvements are needed on low observables maintainability.” Welch added that “given the maintenance man-hours that it takes to maintain the stealth characteristics, we are only able at the present time to get a very low sortie rate out of these airplanes.”

However, he said, “When all the airplanes are upgraded to Block 30, for example, just that step, which is ongoing through about 2001, just that alone significantly improves maintainability, and that step alone will just about double the sortie rates. But there are other initiatives that we regarded as mature enough for very serious consideration—in fact, mature enough to fund—[that] go well beyond that and really make low observables maintainability a fairly routine matter.”

Deployability. “Second, if you really are going to get the weight of effort from these airplanes that you need in a major contingency, they have to be forward deployed,” Welch said. “You can do small scale opera-

tions from the CONUS [continental United States], but a 36-hour round-trip flight by itself tells you that’s not the best way to operate if you’re trying to focus a lot of weight of effort.”

The panel report said that “while bombers can operate from the continental United States, they must be deployed forward to generate the sustained high sortie rates needed in major contingencies.”

That means having at selected forward locations the equipment, materials, munitions, and facilities needed to maintain and sustain the B-2s at combat tempo. The most likely bases are on Guam and on Diego Garcia, the British-owned island in the Indian Ocean.

(Two B-2s deployed from Whiteman AFB, Mo., to Guam for a 10-day exercise in March and April. They achieved a 100 percent sortie success rate, flying almost 90 hours during the exercise. Because of recent damage to hangars at the base, one of the B-2s had to be left outside, exposed to the weather, which included driving rainstorms. The Air Force said that most maintenance, including that of low observables coatings, was performed outdoors. A spokesman for the 509th Bomb Wing said this “shot a hole” in the wild news reports last year that the B-2’s stealthy coatings melt away in the rain.)

The panel said that the much-discussed “lockout” problem, in which

US forces are denied the use of foreign bases, must be overcome. “The concept that says I can’t deploy tactical air to a forward base because I’m going to get locked out by chemical or biological attacks—we have to deal with that,” Welch said. “Neither one of those ought to be in the ‘too hard’ pile anymore. They were in the too hard pile for a long time, but now we’ve done enough work and we have approaches that those things ought not to be in the too hard pile anymore.”

Mission planning. “A third category is the mission planning system,” Welch said. “You have to be able to change the target on the fly, and have a command-and-control structure that can support that. So the mission planning system is far, far more important than people are used to thinking about a mission planning system.”

Survivability. “The other upgrade issue has to do with survivability features,” he said. “There are some important improvements that can be made to the basic survivability features. And I really can’t say much more about that, but they’re significant.”

As a separate action to improve capabilities of the bomber force, the panel suggested that the planned procurement of the Joint Air to Surface Standoff Missile should be “substantially increased.” It said that “the addition of enough standoff precision guided munitions and other survivability features can make this force effective throughout the life of the aircraft.”

The Production Issue

Whether B-2 production should go beyond 21 aircraft has been a matter of fierce contention in Congress, the defense community, and the news media. For its part, the Pentagon acknowledges the value of more B-2s but opposes further production as a matter of budget priorities.

In 1995, the Defense Department’s Heavy Bomber Force Study, in which the Institute for Defense Analyses was a leading participant, confirmed the earlier decision to end the production at 20 aircraft (actually 21, counting the test aircraft that was later upgraded to operational configuration).

It said more B-2s would be useful but that the strategic bomber require-

USAF photo by SSgt. David L. Wilcoxson



Precision guided munitions such as this Air Launched Cruise Missile being loaded by munitions personnel at 2d Bomb Wing, Barksdale AFB, La., fundamentally alter the role of bombers, noted the panel.

ment could be covered adequately and less expensively by force upgrades and additional precision guided munitions. Cost estimates for 20 additional B-2s, the number then proposed, ranged from \$14.8 billion to \$24.5 billion, depending on what was included.

In 1997, the Quadrennial Defense Review, drawing on the recently completed Deep Attack Weapons Mix Study, said additional B-2s would improve US ability to halt an enemy's advance in early days of Major Theater War, especially in cases of little or no warning, but the QDR rejected the option to produce more B-2s because it would take money from other priorities.

The QDR finding was lambasted by an independent commission headed by Brent Scowcroft, former national security advisor, which said the decision "does not appear to have been made on sound strategic grounds. Instead, it seems to have been driven primarily by a rare service consensus that further B-2 production would jeopardize other, more favored modernization programs within all services."

The question put to Welch's long range airpower panel by Congress, however, was not whether additional B-2 production was desirable but whether the appropriated \$331 million would be better spent on "continued low-rate production of the B-2 or for upgrades to improve its deployability, survivability, and maintainability."

Furthermore, the phrase "continued low-rate production" was a misnomer since the line closed in 1997. The final assembly plant in Palmdale is empty except for upgrade work.

"We had a whole complex flow of information on which we based our decision, and only one of the factors was that there is no production line," Welch said.

Even so, the production issue hung palpably over the panel's work.

"Should the Department decide to reestablish production, the current estimate, not supported by a firm commitment from major sub-assembly contractors and the array of essential vendors, would deliver the first additional B-2 in 2005," the report said. "The only cost proposal available to the panel was based on a recent Northrop proposal, about \$14 billion for nine additional



Photo by Erik Hildebrandt

Upgrades and improvements in the B-2's low observables maintainability, deployability, mission planning, survivability, and sortie rate will turn USAF's 21 stealth bombers into a high leverage force.

aircraft. When start-up time for sub-assemblies, requalifying vendors, and fabrication and checkout time after delivery of subassemblies are considered, 2005 is probably optimistic."

Welch told the Military Procurement subcommittee that "no member of this panel—even the most avid B-2 supporters—thought that you ought to spend \$14 billion for nine more."

In his mark on May 5 to the Fiscal 1999 defense appropriations bill, the subcommittee chairman, Duncan Hunter (R-Calif.), added \$86 million—on top of the money voted last year—for post-production support and enhancement of the B-2.

The mark also directed the Secretary of the Air Force to provide a "long-term bomber force structure plan" to the congressional defense committees by March 1, 1999.

Long Range Airpower

Most of the panel's findings responded directly to questions about the B-2, but one section of the report emphasized that "long range airpower is an increasingly important element of US military capability" in operations ranging from a show of force to Major Theater War.

"The ability to strike from longer range reduces some of the constraints associated with basing restrictions and reduces the force's vulnerability to attack," the report said. "Long-range bombers provide a rapid ini-

tial response to threats. With the assistance of aerial refueling, long range airpower can strike targets anywhere on Earth. Such capability, if properly supported, would give long range airpower the virtual presence cited by its proponents. This ability to operate from beyond the immediate area of operations also enables long-range aircraft to influence a region of interest while remaining distant enough to keep diplomatic tensions low.

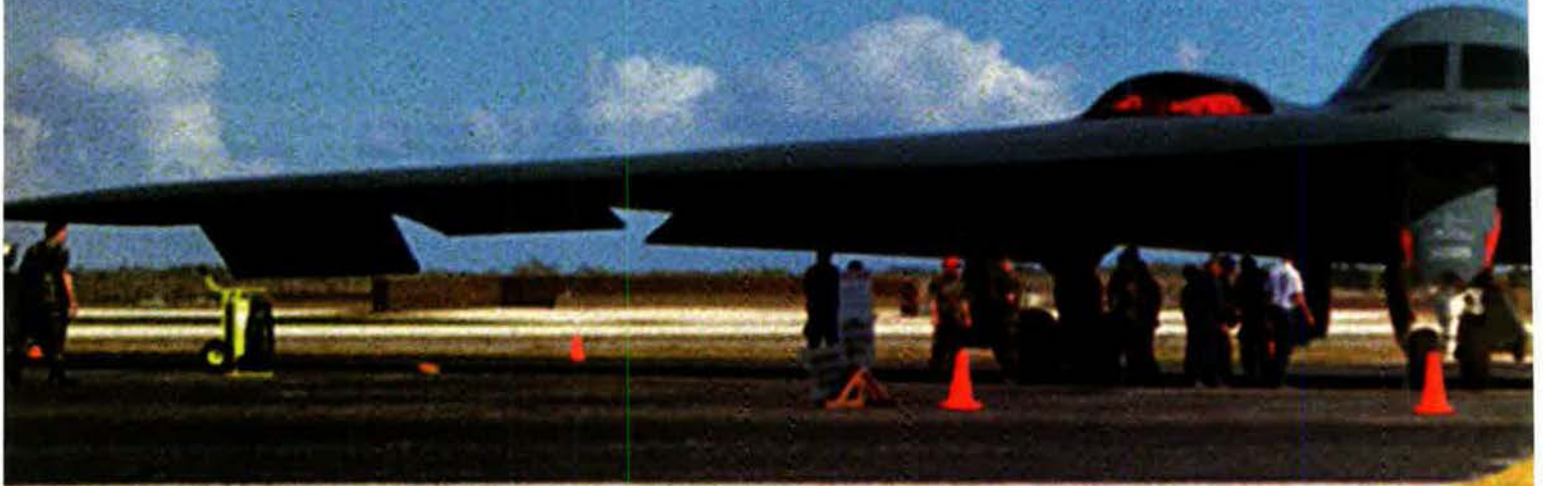
"The potential of the bomber force is multiplied by the addition of precision guided munitions, both direct delivery and standoff. Precision guided munitions extend the capabilities of all bombers in the force and should dramatically alter and strengthen their role.

"While bombers have been used heavily in virtually every major conflict to include Vietnam and the Gulf War, they have been employed as 'aerial trucks' delivering large payloads of unguided munitions against areas of interest.

"With the addition of precision guided munitions, this force can now attack multiple, discrete targets with high effectiveness, fundamentally altering the role of bombers. Because these capabilities are just emerging, existing plans for supporting and employing bombers do not fully exploit their capabilities. The panel believes that more attention is needed to exploit this expanded capability of the bomber force." ■

Its first forward deployment was a huge success. All that melted away in the torrential Pacific rains were some news media myths.

The B-2 Pro



By Robert Wall

THE two stealth bombers had just arrived in Guam on the B-2's maiden overseas deployment when a giant storm hit the island. The down-pour produced an interesting scene: There, parked in the open, stood one of the sleek new bombers, totally exposed to the elements and pounded for hours by thunderous rain. Nearby, in an open-air hangar, stood the other B-2, undergoing the full range of maintenance.

So much for the news media myth that the B-2's stealthiness "melts in the rain." And so much for the charge that B-2 maintenance requires special, fabulously sophisticated repair facilities.

The Guam training deployment did more than dispel a few outlandish B-2 news media myths. The 11-day excursion to Andersen AFB in March and April gave the Air Force a chance to gather valuable information about

ves a Point

the awesome capabilities—and limitations—of its newest operational aircraft and to chart a course for the future of the B-2 fleet.

The deployment, dubbed Island Spirit, was designed to answer important questions about the B-2. Front and center in the minds of USAF planners—and of Gen. Michael E. Ryan, Air Force Chief of Staff—was whether the B-2 could effectively operate for long periods

away from its home at Whiteman AFB, Mo. As Ryan said in the days before the two Spirits left for the Pacific: “We know this is a great plane; now we want to know if we can forward deploy it.”

Task No. 1

Air Force officials knew that, in their effort to make that determination, the single most important task would be to find out if the bomber's

low observable features could be maintained over a prolonged period at a forward operating base.

Officials at the 509th Bomb Wing, which operates the B-2 fleet, had other questions of their own. They wanted to know what such a forward deployment would require in numbers of support personnel and types of equipment that would have to accompany the bombers. The wing commander, Brig. Gen. Thomas B.



USAF photo by A1C Carl Frestia

B-2 in Brief

Operator: Air Combat Command.

First Flight: July 17, 1989.

Delivered: December 1993–present.

IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 21.

Ceiling: 50,000 ft.

Unit Location: Whiteman AFB, Mo.

Contractor: Northrop Grumman, with Boeing, LTV, and General Electric as key members of the development team.

Power Plant: four General Electric F118-GE-100 turbofans; each 17,300 lb thrust.

Accommodation: two, mission commander and pilot, on zero/zero ejection seats.

Dimensions: span 172 ft, length 69 ft, height 17 ft.

Weights: empty 150,000–160,000 lb, gross 350,000 lb.

Performance: minimum approach speed 161 mph, typical estimated unrefueled range for a hi-lo-hi mission with 16 B61 nuclear free-fall bombs 5,000 miles, with one aerial refueling more than 10,000 miles.

Armament: in a nuclear role: up to 16 nuclear weapons. In a conventional role: 16 Mk 84 2,000-lb bombs or 16 2,000-lb GAMs. Various other conventional weapons.

Goslin Jr., repeatedly drove home that point, urging his staff to take extensive notes to capture all possible lessons.

For example, Goslin had no doubt that the 200-person party that accompanied the stealth bombers this time was too large and didn't necessarily contain the right mix of capabilities. More important, he said, was to learn who and what was and wasn't needed in the future.

Why Guam? For one thing, explained Air Force officials, Andersen has no permanently assigned combat forces. That offered wing officials freedom to exercise in a relatively unrestricted fashion, without their having to be concerned about interrupting other flight operations. In addition, Guam offered a "strategic location" for future operations. "From Anderson we can reach most places in the Pacific" theater, Goslin pointed out.

USAF officials have long noted that B-2s can strike any target by flying "Global Power" missions from Whiteman. However, for sustained combat operations, deployments to forward locations are criti-

cal. If the B-2s are tasked to halt an advancing enemy in the early phase of a Major Regional Conflict, the bombers would have to fly to a closer location such as Guam in order to generate a large number of sorties in rapid succession.

By operating out of Guam instead of Whiteman, officials note, B-2s cut by more than half the time it takes to engage some targets—for example, any targets in Korea—and return. Similarly, the flight time to Southwest Asia is much shorter from Guam. The British facility at Diego Garcia in the Indian Ocean would make an even better forward staging base for operations against Gulf targets.

With the eyes of the Air Force—and many others—on them, officials from the 509th didn't need to be told how important the Guam excursion would be.

The two aircraft selected for the mission were *Spirit of Louisiana* and *Spirit of Pennsylvania*. They left Whiteman on March 23 and began a 20-hour, nonstop, "employ-deploy" mission to Guam. They landed at Andersen late on March 24, after

having dropped live 500-pound Mk 82 bombs on a range in the Northern Marianas, north of Guam.

Both of the bombers sent to Guam were Block 30 versions, which are the most modern configuration the Air Force is fielding. It includes several enhancements over the Block 20 bombers that provided USAF with an initial operational B-2 capability in April 1997. Island Spirit would show that the Block 30 provides nothing short of a major leap forward, particularly in the area of low observable maintenance.

Largely as a result of maintenance shortcomings, the B-2 fleet drew fire last year from critics, particularly the General Accounting Office, a congressional watchdog agency. The critics included even USAF's own test organization, Air Force Operational Test and Evaluation Center. Much of the criticism was based on the performance of Block 20 bombers, Air Force officials note.

Maximum Drop

During the course of the 11-day deployment, each of the two B-2s

would fly two more sorties to the range near Guam. On one mission, *Spirit of Pennsylvania* dropped its maximum load of 80 unguided Mk 82s on a tiny island, Farallon de Medinilla, an uninhabited spit located 120 nautical miles northeast of Guam. The island, measuring 500 feet by 2,400 feet, is part of the range complex. All of the bombs hit their targets.

The deployment ended April 2 when the B-2s flew to Edwards AFB, Calif. There, USAF technicians went to work to determine in detail how well the B-2's low observable characteristics held up in the adverse weather conditions in the Pacific and after a total of almost 90 flight hours for each airplane.

On this score, Air Force officials were more than pleased with what they learned. The service has classified the precise figures concerning the bombers' radar cross section. However, Ryan said the B-2 had clearly demonstrated that it has "a very robust low observable capability."

Just a few weeks after he had announced that he wanted to know whether the B-2's stealth could be maintained, Ryan now said confidently, "With the attention we can give them in a deployed location, we can maintain the [stealth] signature."

This determination has a significant operational impact. Lt. Gen. Patrick K. Gamble, deputy chief of staff, air and space operations, said some weeks after the end of the deployment, "We have enough confidence in [the B-2] now to be able to offer it up to a joint planner, and will do so, and have done so."

On the maintenance side, the Block 30 bombers held up far better than earlier models during long missions. USAF projected that the introduction of the newest B-2 configuration would cut low observable maintenance by 27 percent. In Guam, however, the actual results were even better than that.

At the end of the 20-hour mission to Guam, one B-2 landed with 12 LO maintenance write-ups and the other with three. That compares to an average of approximately 40 LO maintenance write-ups that older B-2s usually experience. One maintainer pointed out that Block 30 low observable characteristics are much more robust, though nicks in the LO material take a little longer to fix than they did on the Block 20s.

Guam didn't present the friendliest environment to fix the low observable discrepancies. Thanks to Supertyphoon Paka, which in December struck Guam with more than 230 mph winds, maintenance facilities at Andersen weren't in pristine condition. As a result, most of the maintenance on the bombers was done outside.

The sole hangar available for sheltered B-2 maintenance provided little more than a roof and no relief from 90-degree heat and sweltering humidity. The lack of climate control, however, didn't have any impact on the curing of the LO materials used to make LO repairs, according to maintainers.

Changes in Store

Despite the improvements in low observable maintenance, USAF is

continuing to look for ways to further improve how to sustain the bombers. One of the planned upgrades is designed to allow the B-2's maintainers to work on components inside the wing without afterwards having to reapply large amounts of radar-absorbent material. In this change, the tape that smooths the B-2's surfaces will be replaced with panels; workers easily can remove them for access to the wing and quickly replace them after completion of repairs.

In addition to the maintenance improvements, the B-2 will receive a host of capabilities upgrades over its lifetime. USAF knows that the bomber has superior performance characteristics, but Ryan noted, "You always have to work on it." With the B-2 representing the backbone of the Air Force's first-day-of-the-war operations, Ryan added, "You've got to always keep on the leading edge with the B-2 as best you can."

The B-2 deployment wasn't completely free of glitches. The most notable problem emerged during the mission from Whiteman to Guam. During the bombing mission, eight bombs in the right bay of *Spirit of Louisiana* failed to drop. Goslin, who had been piloting the aircraft, said he flew a second pass over the range and jettisoned the bombs for safety reasons. A bad sector on the mission planning tape was identified as causing the hang-ups.

The question then was whether to continue to use the bomb bay as planned, dispense only inert bombs, or leave it empty. One option that was looked at was flying exactly the same



The extended forward deployment of two B-2s to Andersen AFB, Guam, for *Island Spirit*, proved not only that the bombers could withstand torrential rains but that they did not require special maintenance facilities.

USAF photo by S/A. Cecilio M. Ricardo



The Block 30 B-2s used in the 11-day deployment to Guam far exceeded USAF expectations for low observables maintenance requirements. The next test is the bomber's first nuclear Operational Readiness Inspection later this year.

mission tape over the range to see if the bombs would drop this time.

The debate over how to handle the bomb-drop problem showed that people at the 509th Wing are very aware that, with only 21 B-2s, each bomber is a capital asset and can't be jeopardized unnecessarily. Not surprisingly, therefore, the decision was made to leave the bay empty for the remainder of the deployment and undergo a thorough analysis back at Whiteman. In a real combat operation, bombs would have been loaded, one officer said.

Dropping the Mk 82s was not critical to the deployment. USAF used them because it has a large inventory of these bombs, many of which were available because they were about to run out of service life. In an operational scenario, however, the B-2 is unlikely to drop 500-pound dumb bombs, given that it can drop with near-precision accuracy 2,000-pound Joint Direct Attack Munitions and 4,700-pound GBU-37s.

Dress Rehearsal

The Guam deployment served as a dress rehearsal for the B-2's first nuclear Operational Readiness Inspection later this year. That will be followed a year later by the wing's conventional ORI. As part of the inspection, independent auditors come to the wing to observe and critique the procedures to carry out

either the nuclear or conventional missions. One intriguing aspect of these ORIs, said Goslin, is that the assessment will be made by independent officials. He said this procedure will give "credibility to the system."

Wing officials expect the nuclear ORI this year to be slightly more extensive than the conventional review, in large part because of special inspection requirements linked to the handling of nuclear weapons. B-2s will be brought to alert status and later stood down while inspectors monitor all aspects of getting the B-2s ready. As part of the drill, B-2 crews will fly representative nuclear mission profiles and simulated nuclear strike missions.

In the conventional ORI, the B-2s will, in effect, simulate a deployment by moving equipment and bombers to an area cordoned off from the rest of the Whiteman complex. Crews will fly several missions in conventional sortie profiles. During the inspection, the wing will be instructed to carry out some operations in an environment simulated to look like one contaminated by chemical and biological weapons.

In addition to preparing for these readiness inspections, Air Force personnel are trying to focus on integrating the B-2s into the regular combat forces. Ryan said that, in an operational scenario, the Air Force will "always" package aircraft hav-

ing LO capabilities with "aluminum airplanes." Ryan noted, "We need to continue to work on the tactics, training, and procedures that allow these forces to interact."

To operationalize the B-2, the Air Force plans to conduct a whole series of further deployments and experiments. For example, Block 30 B-2s are expected to start participating in USAF's Red Flag series of operational exercises.

In addition, plans call for B-2s, within 12 months, to forward deploy on at least two more occasions. The sites for the deployments haven't been selected, but one will be in the United States and the other will be overseas. The US deployment will feature about eight bombers, in both the Block 20 and Block 30 configuration. USAF only has six Block 30s and four Block 20s available. The rest are being built up into Block 30 aircraft.

The two deployments are supposed to help smooth the way for the conventional ORI. The idea, said Gamble, is to "push the envelope out a little bit farther [operationally], continue to expand it, and explore the tactical possibilities" of using the B-2s in combat.

USAF wants the B-2 in the not-too-distant future to reach another critical milestone: operate as part of an international exercise. Interest in doing that stems largely from the belief that any future operations will be conducted only with allies. At the same time, however, the Air Force is trying to figure out how it can integrate B-2s into such an exercise and still preserve secrets associated with the bomber's stealthiness. ■

Robert Wall is the Pentagon reporter for Aerospace Daily, a Washington-based defense and commercial aviation periodical. Wall's most recent article for Air Force Magazine, "The Devastating Impact of Sensor Fuzed Weapons," appeared in the March 1998 issue.

By John L. Frisbee, Contributing Editor

The Valley of Death

Maj. Bernard Fisher won a rare distinction in the bloody battle to defend an outpost at A Shau.

In early 1966, the US held an outpost in the A Shau Valley at the extreme northwest of South Vietnam, near the border of Laos. It was lightly defended by 17 US Army Special Forces advisors and fewer than 400 South Vietnamese irregulars and Chinese Hmong mercenaries. For the North Vietnamese, however, this was a piece of high value real estate since it was adjacent to the Ho Chi Minh Trail and could provide a valuable spur to the trail.

On March 9, 1966, the outpost was attacked by a regiment-sized force of North Vietnamese regulars. They had picked a time when the valley habitually was covered by low clouds masking the surrounding 1,500-foot hills and higher peaks. The narrow valley was flanked by many enemy anti-aircraft guns and automatic weapons.

Defending the outpost under these extreme conditions was a job for the air commando units that had been reestablished in Vietnam after a lapse of several years. They were equipped with older aircraft such as the A-1E of late World War II vintage and the venerable C-47 in its gunship version. Their activities ranged from single aircraft night missions behind enemy lines to supporting air rescues and ground forces in areas where the fast movers could not be used.

On the first day of the battle for A Shau an air commando AC-47 gunship had found its way under a 400-foot overcast and attacked the enemy force, only to be shot down by ground fire. [See "Valor," *January 1988*, p. 116.] Responding to the gunship's distress call, Maj. Bernard F. Fisher of the 1st Air Commando Squadron, flying an A-1E Skyraider, was one of the first to reach the scene. He called out targets for the A-1Es that followed him, then flew cover for two C-123s that were delivering supplies to A Shau's increas-

ingly desperate defenders. Low on fuel, Fisher had to return to his base at Pleiku, South Vietnam.

On the morning of March 10, Fisher was diverted from another mission to return to A Shau. From his experience of the previous day he knew that the chance of emerging safely a second time from the Vietnamese shooting gallery was not high, but as another Air Force hero, Col. Robinson Risner, said, "A fighter pilot thinks less about risk than about his objective." Fisher found a hole in the clouds and, followed by other A-1Es, attacked the enemy force.

During the engagement another A-1E pilot, Maj. D. Wayne "Jump" Myers of the 602d Air Commando Squadron, was hit by enemy fire and called for help. His aircraft was burning but he was too low to bail out. He had no choice but to belly in on the badly damaged runway, now controlled by the enemy. Fisher talked Myers, who was blinded by smoke and flames, to a crash landing.

Myers was not able to release his belly tank, which exploded when he hit the runway. Fisher saw Myers jump from his burning aircraft and run to a bordering ditch. The rescue helicopter that he called for would take at least 20 minutes to reach the scene. Fisher decided to attempt to rescue Myers himself. In an outstanding display of airmanship, he landed on the runway that was littered with oil barrels, rocket casings, and fragments of aircraft and was pocked by holes from mortar fire. He skidded to a stop at the end of the runway, then, bracketed by enemy fire, turned his aircraft around and taxied back toward Myers' burning plane.

As he passed the downed aircraft he saw Myers jump up from the ditch and run toward him. Myers could not climb up on the wing because of prop wash, so Fisher throttled back, reached out to grasp Myers, and pulled him into the cockpit headfirst. Without taking time to buckle up, he once more turned his aircraft around, fire-walled the throttle, and took off, again avoiding the impediments on the runway. With 19 bullet holes in



Maj. Bernard Fisher (left) poses with Maj. "Jump" Myers after the rescue.

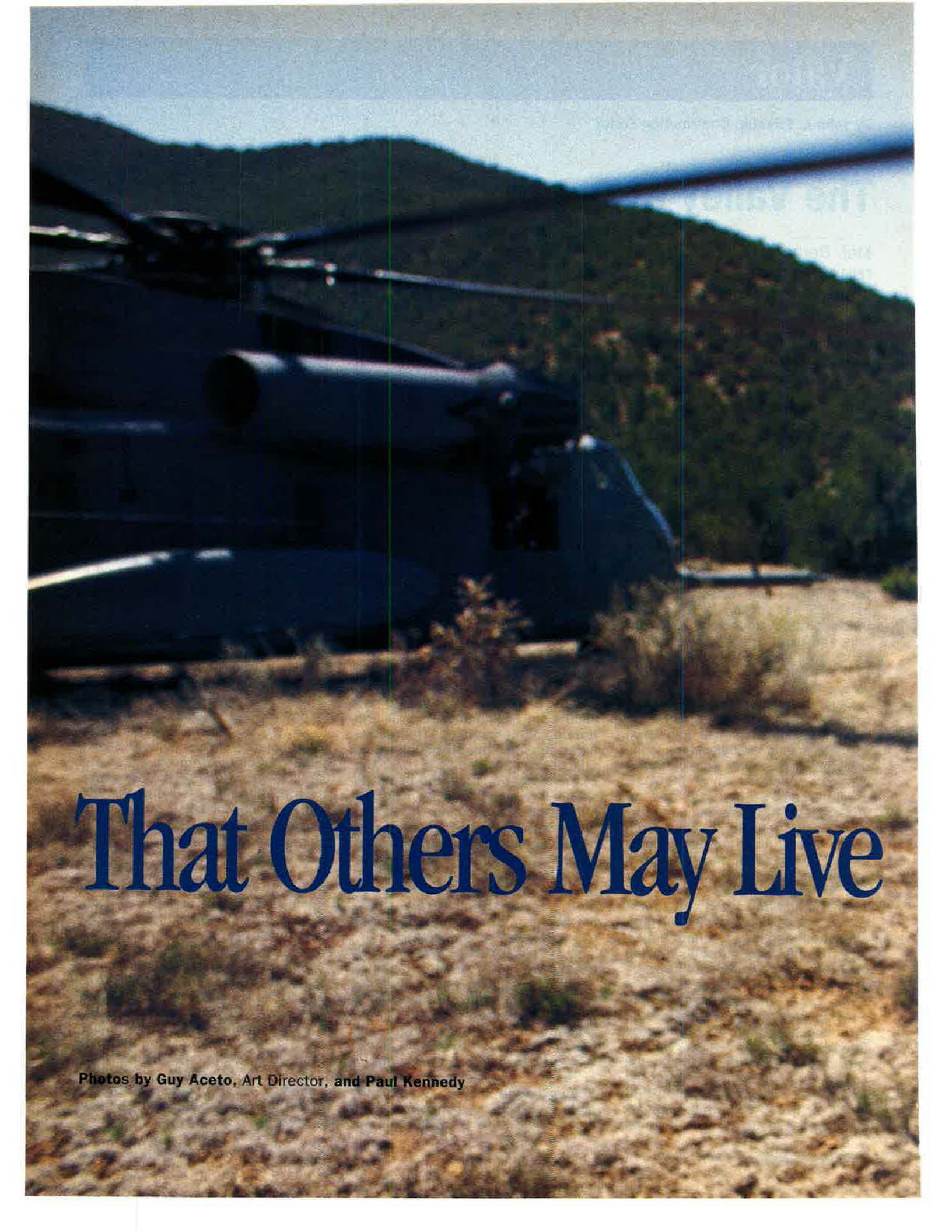
the aircraft, they cleared the mountains and made it safely to Pleiku.

At the end of the second day, the outpost had to be abandoned to the vastly superior enemy force. Rescue helicopters supported by strike aircraft evacuated the survivors. Five of the 17 US Army Special Forces men had been killed and all others wounded. Half of the South Vietnamese and Hmong defenders were lost. It was two years before the allies retook A Shau Valley.

Army Gen. William C. Westmoreland, head of the US Military Assistance Command, Vietnam, called the support provided by the air commando units, led by Fisher and his daring rescue of Myers, one of the most courageous displays of airmanship in the history of aviation.

In the course of the war 12 Medals of Honor, the nation's highest decoration for valor, were awarded to Air Force men, five of them to air commandos who comprised less than 10 percent of Air Force strength in the war. Among those five was Maj. Bernard Fisher, the very first airman of that war to be so honored. On Jan. 19, 1967, his medal was presented by President Lyndon B. Johnson.

After completing his Air Force career, Colonel Fisher retired at Kuna, Idaho. He divides his time between farming, public service, and a continued interest in aviation, which had been the core of his distinguished military service. ■



That Others May Live

Photos by Guy Aceto, Art Director, and Paul Kennedy

An individual needs skill and determination to get through pararescue training. If you need help, that's the kind of person you're looking for.

Pararescue instructor, SSgt. Kenneth C. Fournier keeps an eye on his students during a rescue exercise in the desert hills near Kirtland AFB, N.M. Fournier has been a PJ, or Pararescue Jumper, for almost eight years.





You're cold, hurt, hungry, and lost—maybe even behind enemy lines. Then you make out the shape of a large helicopter coming over the horizon. Suddenly a figure emerges from the aircraft and descends to your position to administer aid. In virtually no time, you're stabilized and you are transported by helicopter to safety and more complete medical attention. And the person you have to thank: an Air Force pararescuer.

Personnel accepted into the pararescue field come from other services, from within the Air Force itself, and through an active recruiting effort by pararescue instructors at Lackland AFB, Texas, who select from the latest crop of basic trainees. Each candidate for the USAF Pararescue School at Kirtland must undergo a 10-week indoctrination course that makes basic training feel like a walk in the park.



Each stage of training is designed to weed out those candidates who lack the necessary dedication to complete the grueling program. In fact, it takes more than 45 weeks of training in various specialties like parachuting, scuba diving, and survival training just to prepare them for arrival at the Pararescue School. There, they take part in an intensive 21-week course that will earn the few graduates the coveted maroon beret and badge. Trainees go through a specially designed confidence course that combines scaling a four-story structure (above), rappelling from it, using a rifle to fire from a series of preset stations, vaulting a barbed wire topped fence (left), dragging a 185-pound sled, and finally demonstrating proficiency with a 9 mm pistol. All of this is done in under four minutes and sometimes, as shown here, in the middle of a snow squall.



Above and at right, trainees wait for the signal to board a TH-53 from Kirtland's 58th Special Operations Wing. These helicopters are modified, former Marine CH-53s used by the school as an alternative to the more sophisticated USAF MH-53 Pave Low special operations helicopter.

Realism during the training period is key. The exercise today has been scripted to include the status of a "downed pilot" as well as a fictitious political climate of the region. The team of trainees will be inserted into the area, then navigate over land to the pilot, who is being played by another trainee. The pilot will have specific injuries that the PJs have to diagnose and treat. When the survivor has been removed from the area, the team will proceed to a pick-up point where they will be extracted by a TH-53. Briefing for the exercise is very detailed, complete with a rundown of possible aggressor forces (played by the instructors) that may be in the area.



Kirtland provides the perfect backdrop for such intensive training. Each trainee must be in the proper frame of mind and physical condition to survive the rugged climate and conditions of the New Mexico desert. Training is extremely taxing on all individuals, and while a class can start with as many as 24 men, a graduating class has been known to consist of only a single person.

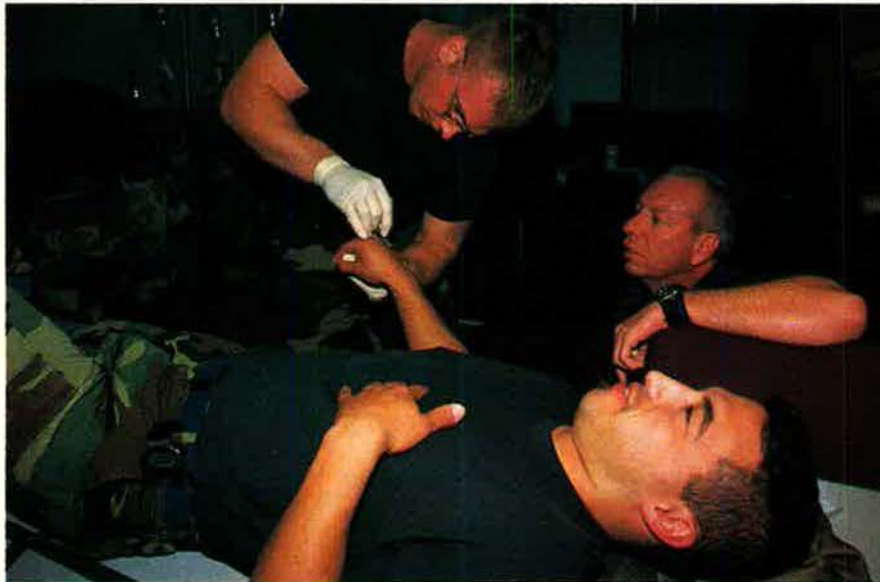
At right, A1C Robert L. Sanders steam cleans his personal weapon. After 12 to 14 hours in the New Mexico hinterland, it needs cleaning. PJs are introduced to a variety of weapons and equipment during their training. Even more specialized training will take place, depending on what unit they are assigned to after graduation.



Photos by Paul Kennedy



Staff photo by Guy Aceto



At left, another class goes through a portion of their medical training. This group is practicing how to start an intravenous line. They will learn to be as adept at starting an IV as they are at using an assault rifle. Under the watchful eye of instructor Capt. Jim McMahon, SrA. Duwane Goodwin starts an IV on SrA. Dave Goodale. After he is finished it will be Goodale's turn to work on his classmate.

Trainees receive extensive medical training and will become registered Emergency Medical Technicians by the time they finish school. They will even spend time in the local community hospital emergency rooms where they will put the skills they have learned at pararescue school to the test against real-life cases.

The "para" part of pararescue is learned at the US Army basic jump school at Ft. Benning, Ga. After that Air Force PJs will undergo a four-week free-fall class, first at Ft. Bragg, N.C., then at US Army Yuma Proving Ground, Ariz. Scuba and survival training come next. Each candidate must complete all four courses prior to his entrance into USAF Pararescue School.

At right, PJs assemble in the rear of a TH-53, preparing to "fast rope" into the drop zone. This action requires them to quickly make their way down a single heavy rope suspended from the TH-53. This commonly used method of insertion for special forces is quick; thus the helicopter will spend less time exposed to any external threats.



Staff photo by Guy Aceto

Staff photo by Guy Aceto



Staff photo by Guy Aceto



Photo by Paul Kennedy



The exit from the hovering helicopter, even with each trainee carrying a heavy pack, is quick. Once on the ground, trainees immediately take up defensive positions, lingering for only a few

moments to get their bearings, then proceed to locate the downed pilot. Above, Sanders checks the terrain before moving off.



Photo by Paul Kennedy

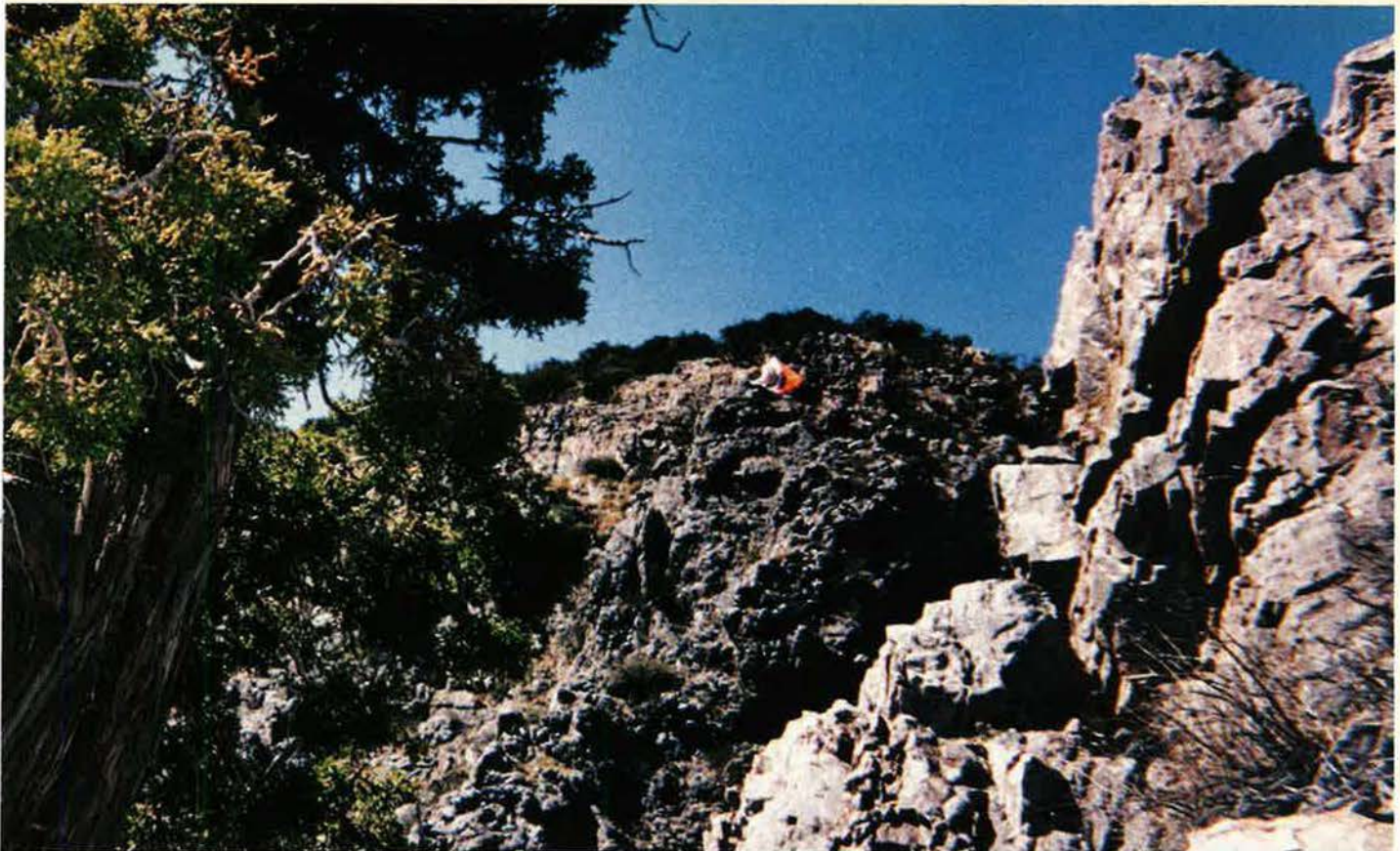


After completing training, each PJ can be assigned to either a rescue squadron or special operations squadron. The squadron will expand upon the PJ's skills depending on its mission. With SOF units, the PJ will work closely with USAF combat controllers. Some in rescue squadrons will be assigned to support NASA shuttle missions. Above, instructor Fournier climbs aboard the TH-53 after making sure the trainees have everything they will need for the exercise.

At right, Sanders discusses with fellow trainee SrA. Dennis Hay (right) the best way to proceed to the rescue site.



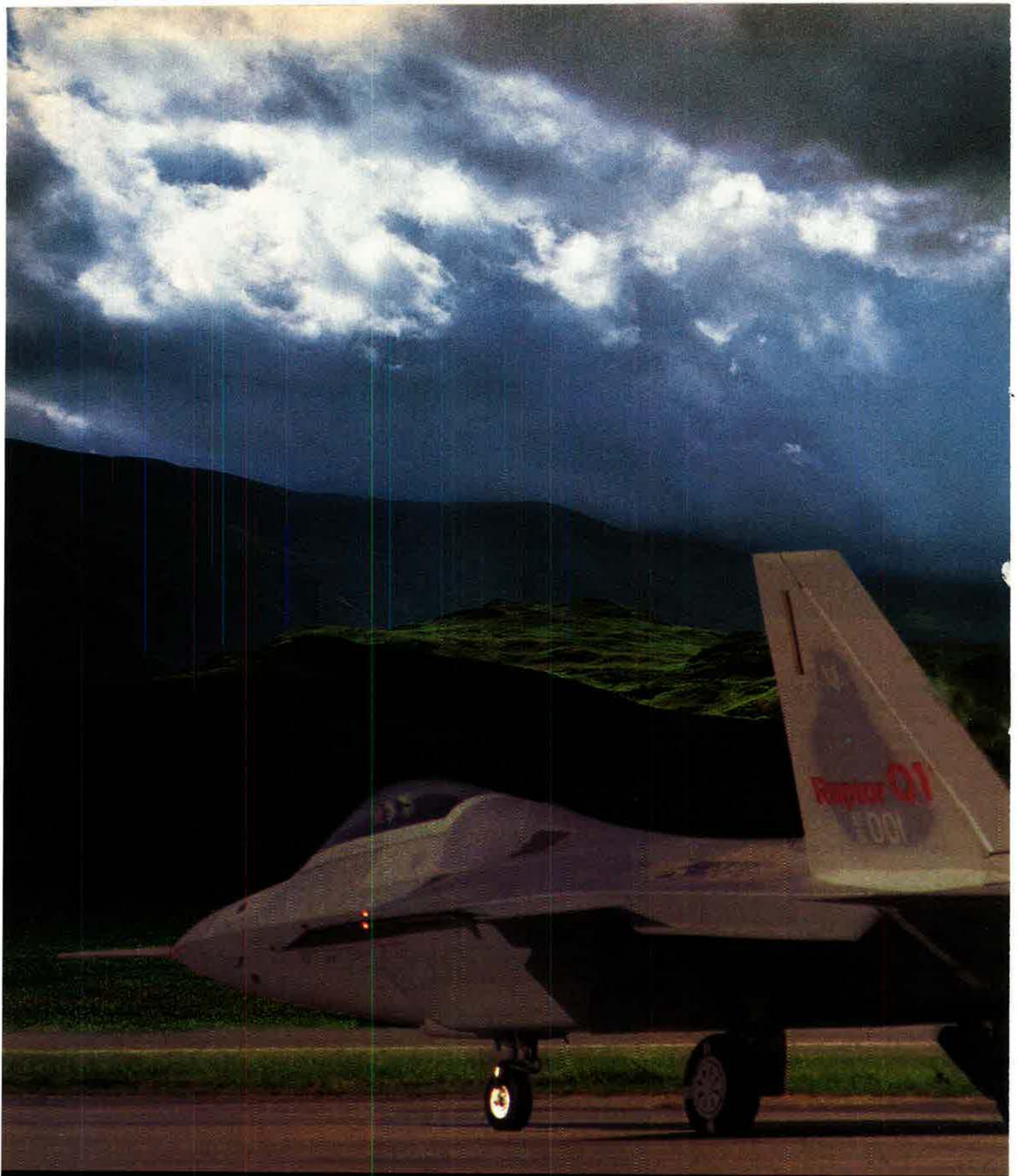
At left, A1C Jack Hamilton maintains a defensive position as the team moves out. They will work their way carefully to the pilot, with due regard for any surprises the instructor-aggressors may have in store for them along the way. During this portion of the exercise the trainees use many of the skills learned during the ground operations portion of their training. Navigation skills, basic mountaineering, small team tactics, weapons training, and survival all come into play.



Above, the survivor is still hanging in his parachute harness against an almost sheer rock face (beneath the orange and white paracnute). The trainees will find the best way to scale the cliff and assess the survivor's injuries before stabilizing him and bringing him down the mountain. At right, they are under constant watch of the instructors. To add even more to the realism, an exercise such as this is normally done at night.

Once they graduate from Pararescue School, PJs can expect to deploy anywhere in the world as many as 250 days a year on temporary duty. There are fewer than 300 active duty members in the career field, yet Air Force pararescuemen have deployed in every contingency involving US armed forces from Europe to the Middle East to Asia. ■





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Sizing Up the Air



Photo by Paul Kennedy

Maj. Gen. Paul A. Weaver Jr. (left), director of the Air National Guard, talks with Brig. Gen. Craig R. McKinley, ANG deputy director, in the Pentagon courtyard.

Guard



By James Kitfield

TODAY'S Air Force—the Total Air Force—is busier than it ever has been in peacetime. As a result, Air National Guardsmen are now being deployed around the world side by side with their active duty counterparts, shouldering an increasing portion of the burden of contingency operations and deployments.

In the 1990s, ANG units have taken part in numerous operations—Northern and Southern Watch over Iraq; Joint Guard, Deny Flight, and Provide Promise in Bosnia; and Coronet Nighthawk and Coronet Oak in Latin America. The most recent example of the Air Guard's mounting contribution came with the buildup of US forces in the Persian Gulf region in February in response to Iraqi President Saddam Hussein's obstruction of UN weapons inspectors. The Air Guard sent four fighter units to the Gulf. In addition, its members were instrumental in helping to execute the rapid strategic airlift of ground forces.

"During the height of that deployment, the commander of Air Mobility Command [Gen. Walter Kross] called just to let me know how proud he was of our Total Air Force," said

Maj. Gen. Paul A. Weaver Jr., ANG's director, in an interview with *Air Force Magazine*. "He had expected to fill 25 percent of his extra personnel requirements with Guard and Reserve volunteers, and instead they filled 55 percent of his requirement."

Weaver added, "While the Air Guard is close to being fully tasked right now, we're exploring ways we can do even more to relieve the active Air Force's optempo."

In stark contrast with the experience of other services, senior Air Force leaders have shown that they won't hesitate to call on the ANG for operations across the spectrum of missions, from tactical airlift and aerial refueling to combat air patrol and operations involving bombers. What makes the close partnership possible, say service officials, is trust. Over the decades, ANG leaders have been at the table on important Air Force decisions and know they are regarded as members of the first team.

Turning Point

Many believe that the 1991 Persian Gulf War cemented that already strong bond and turned any remaining skeptics into true believers. The Army decided not to activate Army National Guard brigades to "round out" two combat divisions for desert duty; it was a fateful step that has poisoned relations between the Army and its Guard component ever since. In contrast, the Air Guard's proved its ability to rapidly deploy and fight alongside active duty units, thereby putting to rest any lingering doubts about the actual capabilities of ANG units.

Brig. Gen. Craig R. McKinley, ANG's deputy director, argues that



the desert war was a pivotal event. "I do believe Desert Shield and Desert Storm were a turning point," said McKinley. "The active duty forces saw firsthand what we could bring to the table. That broke down any myths about us just being 'weekend warriors,' and we've been helping to reduce the active Air Force's optempo ever since."

McKinley is a past national vice president, national director, and state president in the Air Force Association and a former member of its Executive Committee.

Not long ago, Gen. Michael E. Ryan, USAF's Chief of Staff, stepped off an airplane at Incirlik AB, Turkey, and encountered an unusual scene. What began years earlier as a "temporary" mission to enforce a no-fly zone over northern Iraq had become an open-ended commitment placing major strain on Air Force units. On any given day, more than 2,000 USAF men and women were working at Incirlik, most on temporary duty, and the Air Force has flown more sorties over northern Iraq than it had during the entire Korean War. Yet Ryan's first sight at Incirlik was an airman who walked up and placed a lei over his head. "It turned out that a Hawaiian Air National Guard unit was on temporary assignment at Incirlik, flying F-15s over northern Iraq," said Ryan.

The event underscored the beneficial effect of such deployments on badly stretched active duty USAF units. "Right now," said the Chief of Staff, "the ... Guard and Reserve are absorbing roughly 8 to 10 percent of our operational tempo, which relieves the optempo on our active duty forces. That's pretty good."

The exhausting pace of Air Force operations, coupled with increased time away from families, is considered the No. 1 cause for a troubling exodus of active duty pilots in recent years. In a survey of pilots leaving service last year, some 19 percent cited optempo as the primary reason, followed by quality-of-life concerns and recruitment by civilian airlines. A major survey of 206,000 Air Force military and civilian personnel released in March also indicated that all troops are feeling the effect of rising optempo.

Rising Indicators

Of those personnel who went on

TDY during the 12 months preceding the survey, for instance, enlisted personnel averaged 60 days away from home while officers reported 56. Pilots were away from home by far the longest, with an average of 83 days. Each of those indicators has risen in recent years.

Air Force leaders are thus studying reorganization options that might lower operations tempo and spread the strain of deployments across a broader array of units. The Air National Guard features prominently in those studies.

Options under consideration would give the Air Guard more flexibility in filling a mission requirement. One calls for the "rainbowing" of personnel from different units that operate similar equipment and rotating in units and personnel in shorter intervals. The plan would reduce the time Air Guardsmen and -women spend away from their own families and civilian jobs.

"Flexibility is the key," McKinley said. "If we're free to schedule and rotate people for two-, four-, or six-week temporary duty assignments, then we can help alleviate the optempo that is troubling the active duty units and still maintain our credibility with our two primary constituents—families and employers." McKinley added that, as Guard units become more familiar with various mission assignments, they don't need as much time for preparation.

"When we first began augmenting operations," McKinley recalled, "on-site commanders wanted people there for longer periods of time to familiarize them with the area. Now some of these units are going back for the second, third, or even fourth time, and they can adapt to the mission with a shorter work up. The types of flying and missions we're conducting are also very much in line with the training back home."

However, with select Air National Guard crews already away from home for more than 100 days annually in some cases, and 6,000 Air Guard personnel presently on deployment, Guard leaders know that they may be approaching the practical limits of a part-time force.

"We're already well beyond the days when the Air Guard trained one weekend a month plus two weeks a year," said Weaver. "We are stretching the limits. When people ask me

how I manage these competing demands, I joke that when a guy's wife, employer, and Guard boss are all mad at me equally, I probably have it about right. We all question, however, how much we can stress this crown jewel without damaging it."

The 111,633 men and women and 1,200 aircraft of the Air National Guard already represent a pillar of the Total Air Force. Except when there has been a federal activation, the Air Guard is under the direction of state governors who rely on them to help maintain public order and safety. In recent years, the Air Guard has conducted relief missions to victims of several major hurricanes, for example.

In its federal role, the Air Guard provides 100 percent of the fighter-interceptor force. Other major contributions include providing 44 percent of the Air Force's tactical airlift forces; 43 percent of KC-135 air refueling forces; 33 percent of the fighter force; 28 percent of air rescue forces; 27 percent of the aeromedical evacuation force; 10 percent of the bomber force; and 8 percent of strategic airlift.

Air Guard crews likewise fly virtually all of the Air Force's aircraft, from C-5 and C-141 strategic airlifters and B-1 bombers to F-15, F-16, and A-10 fighter aircraft.

Highest Retention

Despite those responsibilities, and the burden on members of being citizens as well as airmen, the Air Guard boasts by far the best retention figures of any reserve component of any armed service. In 1997, the Air Guard suffered only 10.1 percent total attrition vs. 19 percent for the Air Force Reserve, 17.7 percent for the Army National Guard, 29.8 percent for the US Naval Reserve, and 27.7 percent for the US Marine Corps Reserve.

Ironically, the spate of real-world deployments that are wearing on active duty personnel have been embraced by many Air Guard personnel who may have joined the service to add a little adventure to their workaday lives.

"We're the busiest of all reserve components, yet our reenlistment rates are the highest," Weaver pointed out. "I think that's partly because we've come such a long way from the old days of flying around the flag pole at the local base. We're in-

volved in real-world missions around the globe."

He went on, "Think about it. We've gone from the days of Gen. Curtis LeMay, who never thought a part-time airman could fly the KC-135, to the point today where we [the ANG] have the majority of the Air Force inventory. We also have almost as many F-16 fighters as the active force."

Many USAF pilots who are leaving active duty service have found a home in the Air Guard. That trend, coupled with a recent doubling of the number of pilots the Air Guard annually sends to flight school, has helped the ANG to avoid personnel shortages that have plagued active duty units in recent years.

McKinley sees other positive features as well. "One of the benefits of having a mix of prior service people and those enticed into service by tuition assistance and other recruiting tools provided by the states is a certain balance," he said. "Our people tend to have very rich and full lives, balancing family, civilian jobs, and Guard duty. Our retention, recruiting, and quality of life are all in pretty good synch right now, and that keeps morale high."

"How ready are we?" Weaver recently asked a gathering of top ANG leaders. "The highest C-status of any component—active or reserve—in the entire DoD. ... Our flying units collectively are near 90 percent C1 or C2 [the two highest categories]. We are the only component of the entire DoD that can boast of that."

Given the unusually high operations tempo, however, Air Guard leaders are keeping a close eye on readiness and personnel indicators for any signs of strain. For instance, figures showed a recent increase in "cannibalization" rates of aircraft, and the Guard's "combat capable" rate (C2 or higher on the readiness rating scale), though still high at nearly 90 percent, has dropped from 97 percent in 1996.

No Anxiety—Yet

"That drop does give me some cause for concern, but I don't hear warning bells yet," said Weaver.

"When your optempo goes up, it's natural for your readiness to dip down. I would get concerned if I saw that downward trend continue, but I think we're sort of bottoming out in terms of optempo, which mirrors the active Air Force."

According to Weaver, ANG leaders are only too aware of problems—engine problems, particularly in the C-130, A-10, and F-16 fleets. Despite US Air Force-wide engine and engine spare parts shortages, readiness hasn't taken a dramatic hit.

However, he warned, as budget constraints on USAF continue, finding the money for flying hours, maintenance, and spare parts will become a challenge. "This is a Total Force-wide problem," Weaver said. "You can't do more with less. Fact is, you can't do the same with less. I expect our C-status to reflect that."

Weaver said that modernization of ANG's fighter force represents his No. 1 short-term concern. However, his longer range concerns focus on the Air Guard's KC-135 engine modernization and continuation of the C-130J program to provide replacements for an aging C-130 fleet.

He said he also will take steps to make the ANG's B-1B bombers at McConnell AFB, Kan., and Robins AFB, Ga., more usable in theater combat. "I am confident," said Weaver, "that the ANG can play a critical part in helping the Air Force find combat employment opportunities for B-1s."

Given the delicate balance that exists between optempo, readiness, and personnel, however, ANG leaders carefully weigh any proposals calling for it to absorb more active duty missions or force structure. For instance, largely as a result of the success of the Air Guard's 184th Bomb Wing at McConnell in maintaining and flying the B-1 bomber, the General Accounting Office recently recommended that the Air Force could save money by transitioning more B-1 aircraft to the Guard.

"The GAO basically said that, because the Air Guard has such a stable and mature maintenance workforce and the B-1 is so maintenance inten-

sive, the Air Force should consider the option of moving more B-1s to the Air Guard," Weaver explained. "We had a similar success in the past with turning around maintenance with the F-4."

No Cure-All

There is a limit, though. Weaver said, "Where it makes sense and will save the Air Force money to bring force structure into the Guard, we should consider it, but the Air National Guard is not the answer to everything that ails the Air Force."

As the regular Army and its National Guard component have continued to engage in acrimonious and very public disagreements about missions, resourcing levels, and force structure, a number of experts looked to the Air Force and Air Guard for the secret of their successful partnership.

Army analysts argue that there is a natural transfer of skills for pilots in the civilian and military sectors. There are no civilian equivalents to driving a tank in fast-paced maneuver warfare. The Army also has a greater share of its overall force structure in its reserve component than the Air Force does.

However, disputes between the Army and its Guard component feature a persistent, palpable mistrust that is missing in relations between regular Air Force and Air Guard leaders. It is not that they don't have disagreements. They do. Rather, it is that their disagreements seem never to be marred by speculation about each other's ulterior motives.

"You can point to the fact that we [the ANG] are resourced properly, or trained to the same standard [as the regular Air Force], but the most important ingredient to our relationship is the respect shown to the Air National Guard by our mother service," said Weaver.

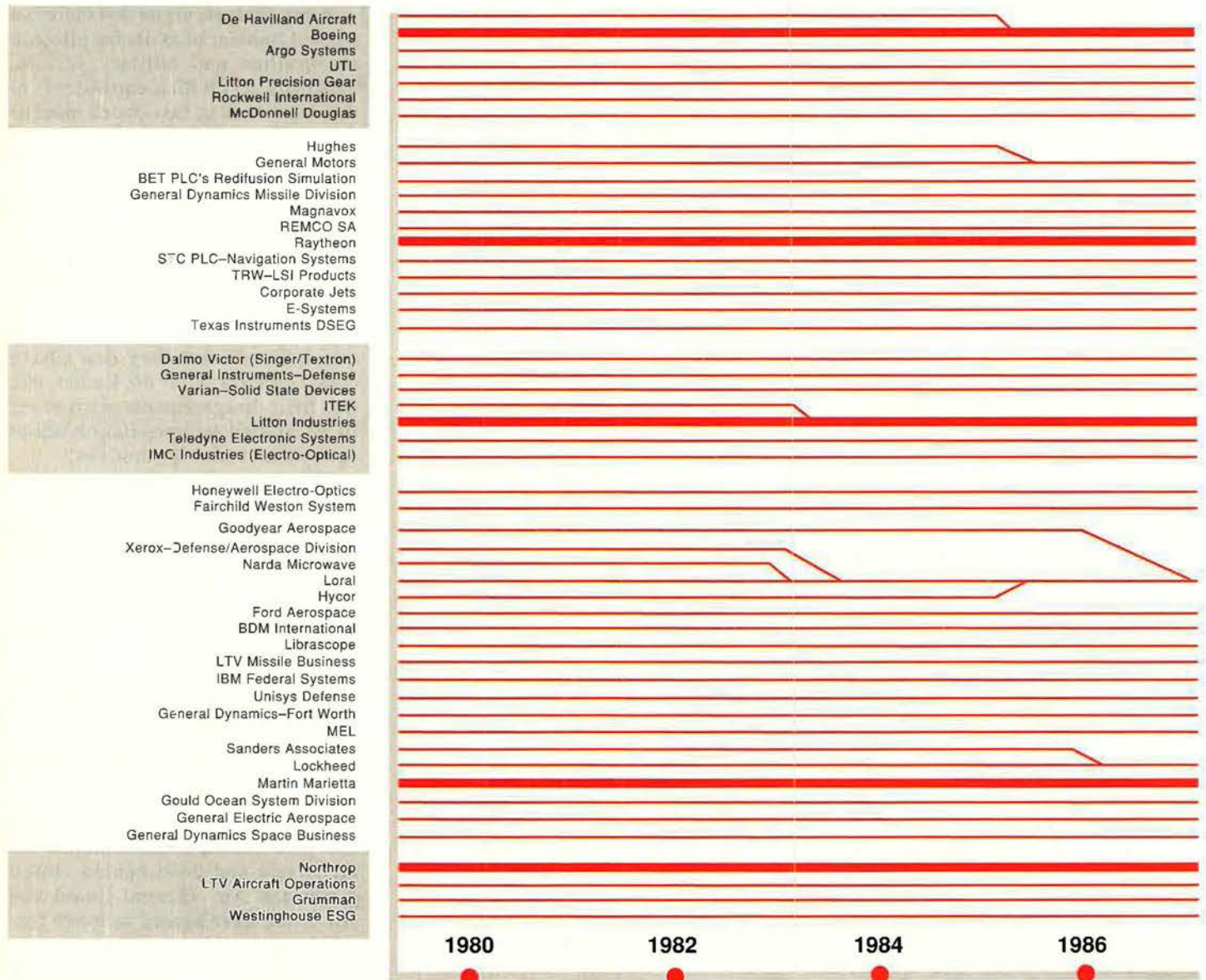
He went on, "That's not to say we don't have differences with the Air Force. I'm the first to say that we do have our differences. What separates us from some other reserve components is that we always have the opportunity to voice our concerns and give our arguments. And when all is said and done behind closed doors, the Air National Guard and Air Force have agreed to move forward with one voice. That's the key to our success." ■

James Kitfield is the defense correspondent for National Journal in Washington. His most recent article for Air Force Magazine, "Guard Controversies," appeared in the April 1998 issue.

Today's Big 5 aerospace firms incorporate what, not so long ago, were 51 separate companies.

The Distillation of the Defense Industry

By John A. Tirpak, Senior Editor



FOR a decade, the defense industry has been shrinking with dizzying speed as Pentagon budgets plummet and contractors either merge or team up to compete for the few remaining US procurement programs. Civilian employment in the defense industry has tumbled by more than 2 million workers—at one point dropping at the rate of 1,000 jobs a day. Long-respected names in the business have either disappeared or become mere divisions in a new family of mega-giant contractors.

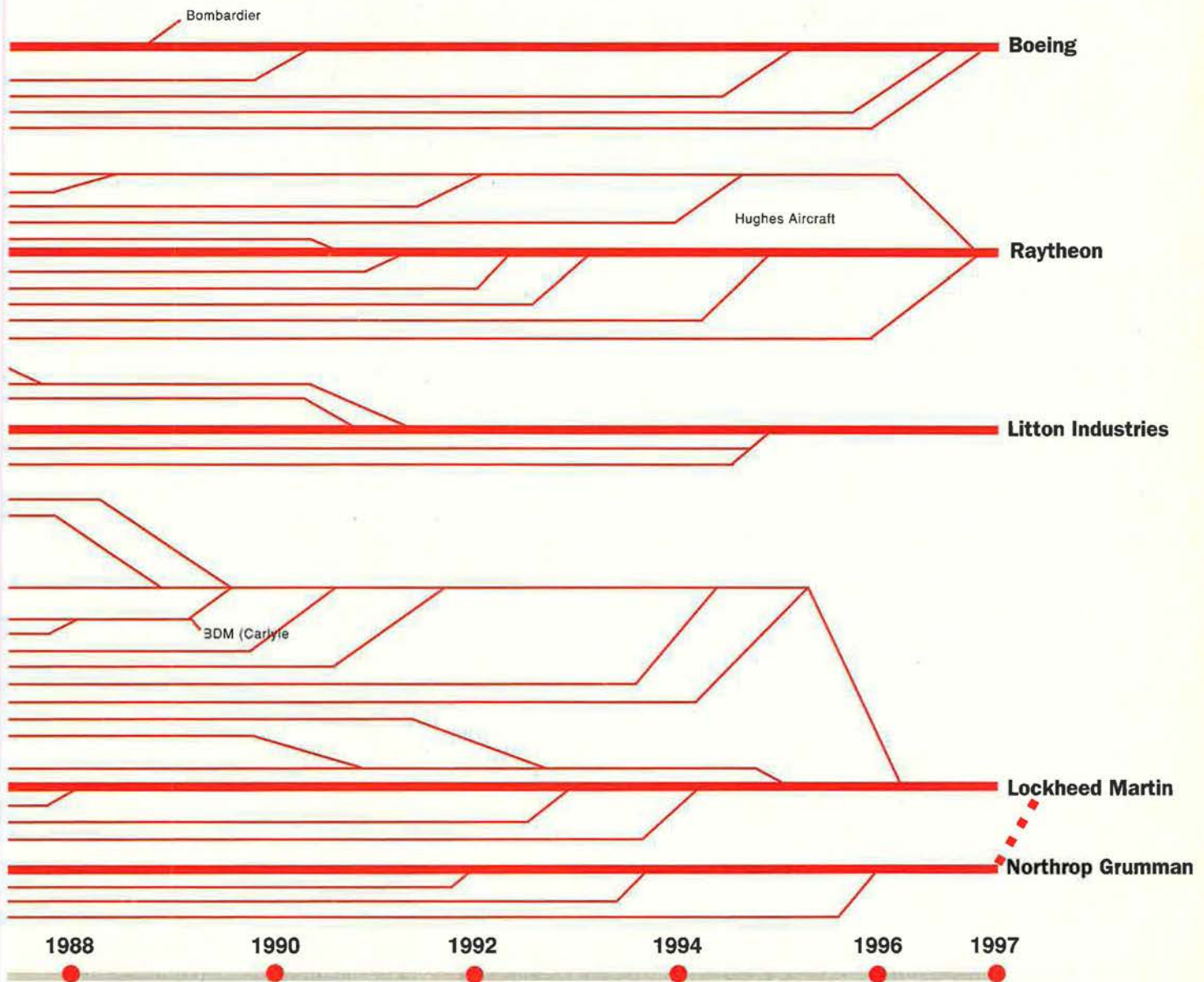
The changes have given rise to concerns in some quarters that the shrunken defense industry won't be able to rise to the challenge of another great military conflict and that

the industrial base can't be sustained, let alone reconstituted.

However, industry and Pentagon leaders contend that the tectonic shifts in the defense business are neither avoidable nor disastrous. They see the contraction as a realistic and necessary response to a changing world and that the shifts ultimately will save money and broaden the base of technology upon which the US military can draw for future weaponry. These leaders conclude the era of years-long wars of attrition are over and that there is no need to maintain an extensive, costly capability to "surge" the production of large platforms such as fighters and warships.

They believe that the consolidation will offer American companies a competitive edge over foreign rivals in the contest to supply allies with military and civil aerospace hardware.

However, even those leaders who trumpet the benefits of consolidation include an important caveat. They maintain that, if this "new and improved" military-industrial complex is to work, DoD and its suppliers will have to shift their thinking on how to do business. Specifically, they warn, the Defense Department must continuously come up with innovative ways to preserve competition when there are only two companies—or just one—making vital products.



"The Last Supper"

One of the red-letter events in the recent wave of consolidation is known to industry insiders as "the Last Supper." The coinage refers to a 1993 Pentagon dinner for the chiefs of the nation's biggest defense contractors, hosted by then-Secretary of Defense Les Aspin and his deputy, William J. Perry (who later succeeded Aspin in the top job). Along with the meal, Aspin and Perry served a blunt notice—the level of defense spending,

only two fighter aircraft makers, not five as was then the case. Likewise, DoD concluded it needed only one bomber builder, as opposed to three. It came to similar conclusions regarding tanks, submarines, missiles, satellites, and the like.

Perry, upon taking over as Defense Secretary in early 1994, further emphasized consolidation "in both private and public sector," Gansler said. The guiding principles, according to Gansler, were "that they

illustrate the magnitude of the contraction the defense industry has just gone through. Today's big five in aerospace—Lockheed Martin, Boeing, Northrop Grumman, Raytheon, and Litton, ranked one, two, three, five, and nine in defense contracting last year—consist of what were, just 14 years ago, 51 separate companies, nearly all of which counted as prime contractor or major subcontractor heavyweights in their own right.



The surge capability needed for aircraft, ships, and tanks during World War II, as in this B-17 plant, will not be needed in the 21st century.

which was already on a five-year slide, was going to fall much farther, and fast. Most of the guests were savvy to the situation; defense buyouts, mergers, and sell-offs had been proceeding apace since 1986. However, Aspin and Perry urged their dinner guests to take consolidation much further and much faster.

At the same time, DoD's two top officials insisted the Pentagon would not play a role in designating which companies should stay in business and survive. Instead, they said, they would allow the market itself to rationalize the industry.

Later, Perry flatly stated, "We expect defense companies to go out of business. We will stand by and watch it happen."

At the time of the Last Supper, the defense industry was burdened with "enormous excess capacity," according to Jacques S. Gansler, the current undersecretary of defense for acquisition and technology. "The budget was plummeting, particularly [the] procurement account," he said. Gansler noted that an in-house Pentagon study in 1993 determined that the nation needed

wanted to encourage consolidation in order to gain efficiencies, but they wanted to maintain competition in all critical sectors." These guidelines "are basically the same that Secretary [William S.] Cohen is using ... now," Gansler said.

Former Lockheed Martin chief Norman R. Augustine, in a 1996 speech to a joint session of the Association of the US Army and the American Institute of Aeronautics and Astronautics, boiled down the situation in blunt fashion. "It is much better to have 10 strong competitors than two," he said. "Unfortunately, that choice is basically irrelevant, since it is not among the options we have been given. The choice we have been given is more precisely characterized as one between having 10 weak competitors with dubious futures or two strong ones with hopeful futures."

When 51 Equals Five

Today, some of those defense contractors with "hopeful futures" are four of DoD's five largest aerospace and electronics suppliers, and they

With size comes clout. Last year, Lockheed Martin alone was paid 10 percent of all defense procurement dollars. The top five contractors accounted for more than 25 percent of the total. That was roughly the same amount that DoD expended on the next 95 defense contractors combined.

Now, Lockheed Martin and Northrop Grumman wish to merge into a single firm. If the deal is consummated, the number of "megas," as some in the industry call the big four contractors, will shrink to just three, and the new company would receive 28 percent of the combined Pentagon procurement and research and development budgets.

The Justice Department and Defense Department moved to thwart the Lockheed Martin and Northrop Grumman merger, however. They do not necessarily think the new company would be too big; rather, they are concerned that the combination would create a virtual monopoly in some areas—most notably, in the field of electronic warfare. The lack of competition, the government said,

would cause innovation in this vital area to languish and would endanger "our soldiers' lives and our taxpayers' wallets," in the words of Attorney General Janet Reno.

The government has asked Lockheed Martin to sell off some of its electronic businesses in order to preserve competition in these areas. The company has declined, wants to pursue the merger as now structured, and the issue is scheduled to be settled in court later this year.

The problem underlying the Lockheed Martin and Northrop Grumman merger, according to the government, is one of "vertical integration." When a company has in-house capabilities down to the second- and third-tier supplier levels, it can not only bid on new platforms as the prime contractor but as a "package deal," essentially selecting itself to provide subsystems. The problem with this is that other second- and third-tier suppliers might never get a chance to bid on the subsystem work dominated by the prime, and the in-house division, facing no competitor, has little incentive to innovate or keep costs low. As time goes on, the critics claim, competitors disappear from lack of work, and innovation is further stifled.

The federal government argues that this proposed merger would "reduce competition in the sale of advanced tactical and strategic aircraft, airborne early warning radar systems, sonar systems, and several types of countermeasures." Lockheed Martin is the prime contractor for the Air Force's F-16, F-22, and F-117 fighters, while Northrop Grumman is the prime contractor of the Air Force's Joint Surveillance Target

Attack Radar System and B-2 stealth bomber.

No to Monopoly

"At some point, the logical extension of consolidation is monopoly," Gansler said. "When you get down to the point where consolidation from two to one eliminates total competition, then it's obvious you blow a whistle and you stop."

Gansler emphasized that the government's move on the Lockheed Martin deal doesn't signal a shift in policy and that consolidation probably should continue.

"We're ... trying to let the market operate and not try to say to firms what they should and shouldn't do," he asserted. "We simply want to get down to the point with market forces operating whereby we still have competition left, but we have greater efficiency. ... We're going to look at each case separately."

Ironically, the federal government was warned about the vertical integration problem two years ago and by none other than Augustine himself. In a 1996 speech, Augustine pointed out that vertical integration threatened to provide mega-companies "the opportunity, if they wish to pursue such a course, to ... shut out as sellers those traditional second- and third-tier component suppliers who, operating at the lower end of the manufacturing 'food chain,' normally sell to the 'primes.'"

Augustine warned then that there were "disturbing signs that some in the aerospace community have elected to follow" the shut-out route, which he said would prompt competitors to follow suit in self-defense. "This is a trend," he said, "about which our

government, as both a large purchaser of aerospace products as well as the guarantor of free-market practices, should be evidencing a great deal more concern than it has indicated thus far."

Northrop Grumman CEO Kent Kresa, addressing the AIAA in Washington in May, said industry will avoid shut-out practices "not ... out of the goodness of our hearts" but because "it's good business." Any major contractor who "freezes out competitors by denying them access to components" or "shuts out those traditional vendors selling second- and third-tier components up the value-added process," Kresa observed, "will cut its own throat in the long run. It will stifle its access to innovation and give huge advantages to its competitors."

Augustine, in his speech, also made a key point about the efficiencies to be realized from consolidation. The merger that created Lockheed Martin, he said, eliminated 14 million square feet of unneeded factory space and cumulatively produced savings of \$1.8 billion a year, most of which would be passed on to the government in the form of lower overhead costs and lower bids on new systems. Such savings, he noted, were equivalent to what the government says it will eventually save "as a result of the rather monumental effort of the Base Closure and Realignment Commission—or BRAC."

Kresa asserted that adding his company to Lockheed Martin would produce additional savings each year of some \$1 billion, "a majority of which will accrue to our government customers."

The General Accounting Office, a

Vertical Integration in Aircraft Sector: Current Capabilities

Sector	Lockheed Martin	Northrop Grumman	Boeing	Raytheon	Litton	ITT	Tracor
Platforms	X	X	X				
Systems Integration	X	X	X	X ¹			
Radar							
Airborne Early Warning	X	X					
Airborne Fire Control		X		X			
Surveillance	X	X		X			
Imaging	X	X		X			
Electronic Warfare							
RFCM	X	X		X ²	X ³	X	X ⁴
IRCM	X	X					
EOMWS	X	X					

Notes: The Xs denote demonstrated capability at the system level.

¹ Raytheon E-Systems has done integration work on airborne intelligence platforms.

² Raytheon produces towed decoys and off-board countermeasures, not internal systems.

³ Litton provides Electronic Support Measures, not entire RFCM systems.

⁴ Tracor supplies threat warning receivers and transmitters, not entire RFCM systems.

Source: DoD

congressional watchdog agency, said in an April report that there is "little evidence" that the Pentagon has been harmed by industrial consolidation so far. The Defense Department, it said, encouraged consolidation to "eliminate excess capacity to remain competitive and financially viable," adding that DoD expects "significant cost savings" from the shakeout.

Putting it more simply, Augustine noted that "two full factories" running at full capacity are more efficient "than four half-full" ones.

The New Industrial Way

Part of the solution to maintaining a healthy defense industrial base, according to Gansler, is to limit, as much as possible, the strictly "defense" aspect of it. By using more off-the-shelf commercial technology, and by using new computer-run, adaptive production methods, the base of technology—and suppliers—upon which the Pentagon can draw would be broadened so that "we only have one industrial base."

As an example, Gansler noted that certain electronic cards used in the F-22 fighter and Comanche attack helicopter are made on the same assembly line as those made for use in automobiles.

"The computer knows" when the next item on the line is defense-specific and builds it accordingly, Gansler pointed out. Using such a process, an item that might have been very expensive due to the need to set up tooling and facilities for a low-volume run suddenly becomes relatively cheap because it is made alongside high-volume items.

"So you get the overhead absorption, you saved at least 50 percent on the cost of the defense goods, and you have a greatly expanded industrial base," Gansler explained. While such an approach does not apply to items such as aircraft stealth technologies or submarine quieting technologies—which have no commercial market—using such practices as much as possible and adapting them to defense-specific products can produce enormous savings, Gansler said.

Using this commercial-goods and commercial-practices approach will help cut down the Pentagon's onerous cycle time of 10 to 20 years for introducing new technology, Gansler noted. The computer industry, for example, doubles the power of its

products every 18 months, and the Pentagon should emulate its success by pursuing "something that's more like [a] spiral development process ... where you have a continuing evolution of requirements and products that come along every few years," staying abreast of technological developments.

He added, "Assuming we're successful" in acquisition reform and in moving toward more commercial products, "we'll have a far broader industrial base."

Forget About a Surge

Part of the savings to be achieved in the defense industry lay in abandoning the practice of maintaining manufacturing lines or tooling for the sake of being able to "surge" their production in wartime, Gansler observed. In the 21st century, he said, "it's not likely that, in emergency conditions, you're going to start building airplanes or ships or tanks or things like that" since such systems would probably take far longer to build than the conflict would last. "You don't need the same standby capability that we had envisioned for World War III, where you have huge amounts of equipment coming back for repair and maintenance and huge production increases," such as in World War II.

In Gansler's view, the US would be likely to surge the "expendables, [meaning] munitions, spare parts, things of that sort. ... So, you need some standby capability for those," he said, but to the greatest extent, that should be accomplished "through an integrated civil-military" production line, so the Pentagon doesn't have to pay "for ... excess capacity sitting around waiting for a surge requirement."

An integrated commercial-military line also provides for surge by simply shifting the emphasis of production, he noted.

Gansler acknowledged, however, that in some areas—such as submarine construction—"it may be just for the purposes of maintaining an industrial base that you're willing to accept the inefficiencies and the subsidies required to do it. So there are going to be cases where that occurs."

The Pentagon has managed to keep competition alive as the industry consolidates but will have to increas-

ingly turn to nontraditional means of doing so, according to Eleanor Spector, director of defense procurement.

"We still have two sources in every sector that we need to compete," Spector asserted, adding that consolidation has been "very healthy" for the Defense Department. "We have a strong, healthy defense industry in the face of a 60 percent drop in the budget," she noted. As the supplier base narrows, though, there are things that can be done to maintain competition even if there is only one supplier left for a given item.

"We can provide things as government-furnished [equipment]," she said. "If teams form that don't allow for competition in some cases, we can break up exclusive teaming. If teams form that create [a] sole source, we can have international competition. We can create firewalls within companies if we have to. We can do dissimilar competition, as you saw with the non-developmental aircraft vs. the C-17."

There is "a whole menu of things ... that we can do to create competition," said Spector, "and we will."

Gansler observed that, if there is a sole-source situation, "you can always start up an R&D effort for the next-generation system to create an alternative, rather than depend on one supplier." All these techniques "exercise the buying power of the government," he said.

The prospect of dissimilar competition has been used as a lever in the Navy F/A-18 and Air Force F-22 fighter programs, Gansler noted, and DoD has held out variants of the forthcoming Joint Strike Fighter as competition. Similarly, "competing missiles vs. airplanes" is an example of using different approaches to the mission itself as the competitive prod.

Foreigners Can Play

Moreover, because the US will probably conduct most of its future wars as part of a coalition, Gansler said, finding a foreign supplier/competitor on some systems is acceptable, since it is in the alliance's advantage to have interoperability.

Gansler said the Pentagon's policy on foreign ownership of US defense firms is to treat such proposals on a case-by-case basis. If a foreign company were to take an equity stake in a US contractor doing sensitive work,

"they would have to set it up as a separate operating unit. They'd still have the equity, but [they] wouldn't get the technology transfer."

Noting the competing interests of foreign and US companies, Gansler said, "You run into the [fact that] they're your ally in a military sense and then your competitor in an economic sense, and where that line is drawn becomes more and more difficult" to determine. Still, he warned against "the trend toward 'Fortress

involved. Since then, the "megs" got bigger in order to acquire more market share and improve their bottom line. He warns that, in the next two or three years, the industry will see "some very big losers"—companies that failed to recognize the need to consolidate and missed the chance to get together with suitable partners. Such companies, said Bovin, will be "left behind."

The companies that moved to consolidate in the early 1990s—when

fense industrial base "and left it to the marketplace to work it all out." There is a "misconception in Europe," he added, "that DoD engineered it all."

Charles Masefield of the UK Ministry of Defense, also addressing the AIAA, said that the leaders of several European countries recently issued their own "Last Supper" message to European contractors to start consolidating or be hopelessly outclassed by the new large American

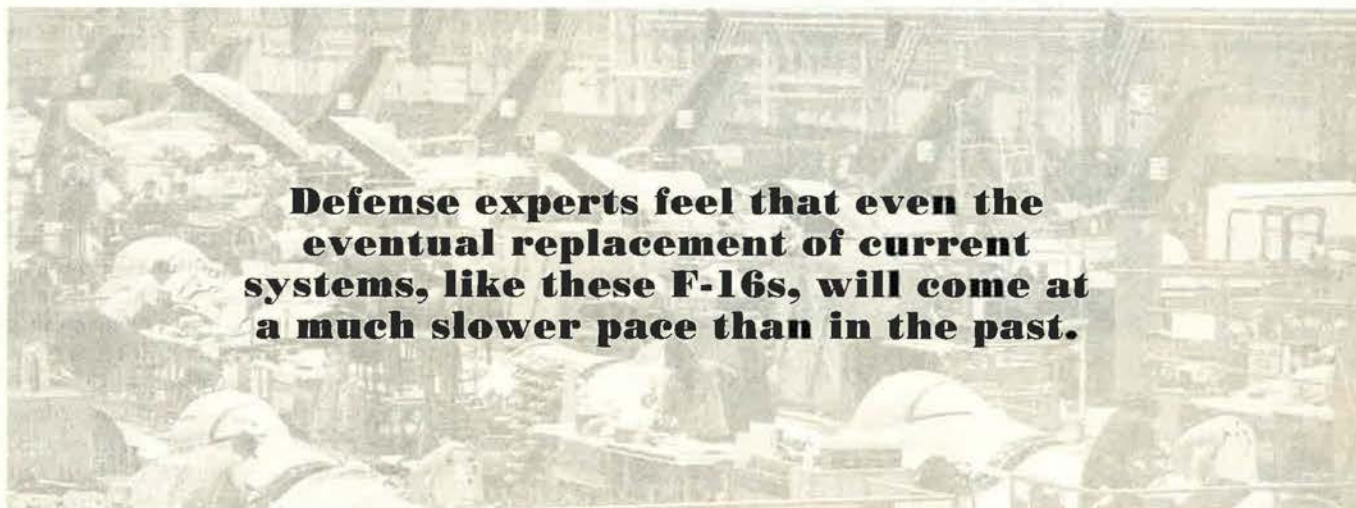


Photo by Jim Haselline

Defense experts feel that even the eventual replacement of current systems, like these F-16s, will come at a much slower pace than in the past.

Europe' and 'Fortress America,' " in which protectionism prevents the alliance from benefitting from its members' technologies. Such a stance "is inconsistent with the concept of coalition warfare." Gansler wants to see more "trans-Atlantic linkages," but he prefers to let industry work out the structure of such cooperation for itself.

The mega-mergers in the US defense industry are probably drawing to a close, according to Denis A. Bovin, vice chairman of investment banking and senior managing director at Bear Stearns & Co., an investment banking firm that has participated in many of the deals that created the supercontractors.

"We're probably looking at the end of what I would call the 'leadership mergers,'" Bovin said at a recent AIAA conference, "but we'll pick up speed in [mergers among] the secondary tiers."

Left Behind

Bovin said that the fast pace of mega-mergers took place at first to ensure the survival of the companies

defense stocks were low priced—"got the best deals and the best partners," Bovin said. Companies only now looking to merge will find it harder because defense stocks have risen in price, making acquisitions more expensive.

European defense companies, which face numerous obstacles to consolidation, will have to overcome them if they are to compete with the big US firms, Bovin observed.

By themselves, Boeing, Lockheed Martin, and Raytheon are "twice as big" as the major European defense companies combined, he said, and will be able to offer more technology at a lower cost because of the efficiencies they have realized through consolidation.

"European defense companies may be unable to compete in a few years time," Bovin asserted.

From the perspective of exports, savings in defense overhead, and cheaper new technologies, consolidation has been "a wonderful development for the US taxpayer," Bovin said. He also observed that the Pentagon "devised a vision" for the de-

companies. He predicted that the mergers will come but not in the same rapid way that they took place in the US. There will be "evolutionary progress" in rationalizing the European defense industry, he said.

The likelihood that the US will need to reconstitute a defense industrial base on the scale that it supported during the Cold War is considered remote, at least for the foreseeable future. Kresa of Northrop Grumman said that his company expects defense budgets to remain "essentially flat" well into the next century.

Kresa said that large numbers of defense platforms bought during the Reagan Administration will be getting old and will come due for replacement in the next few years and that this "may keep things from getting worse" in the defense industry.

Some in the Pentagon and Congress feel the world is safe enough to warrant skipping a generation of systems. Whenever the replacement actually occurs, Kresa said, "the pace will be much slower, and the industry will not come back to its earlier size." ■

The Base Closure Flap

Opposition to closing more bases centers on claims that the Clinton Administration subverted the last BRAC round for political purposes.

By Otto Kreisher ■

PENTAGON officials and leading members of Congress generally agree that the defense budgets proposed by the Clinton Administration for future years will not be big enough to keep American forces combat ready and also finance a new generation of weapons. Congress also tends to accept, with some quibbling, the Pentagon analysis that the services have too much infrastructure, even after going through four painful rounds of base closings. And most lawmakers will concede that the closing of unnecessary bases should save money in the long run, even though many question the Defense Department's claims as to how much it will save.

There, any trace of consensus ends. Again this year, the anxious pleas by Defense Secretary William S. Cohen and service leaders to cut expenses by closing more bases have crashed into a solid wall of opposition from a small but powerful group of lawmakers dedicated to protecting the Pentagon's major industrial activities—air logistics centers, depots, and shipyards.

Political opposition to shuttering military facilities, always strong, is intensified by widespread anger at President Clinton's handling of the 1995 base closures and by general reluctance of lawmakers to do anything as politically risky as approving more base closings in an election year. As a result, it appears certain that Congress again will reject Cohen's request to authorize additional base closures after 2000.

Because any significant increase in military spending appears highly unlikely, Cohen and the increasingly beleaguered service chiefs will be forced to scramble for ways to pay for their weapons modernization programs while supporting forces spread inefficiently over a Cold War base structure.

Air Force Hit Hard

The stalemate particularly hurts the Air Force, which is straining to carry out increasingly frequent de-

ploysments of air expeditionary forces to the Persian Gulf and elsewhere without stripping domestic bases of essential support personnel. On that front, it appears to be fighting a losing battle.

There can be no question that the services must find new sources of financing—either through larger appropriations or by eliminating some current costs. Various government and private studies put the gap between projected budgets and actual needs at between \$10 billion and \$26 billion per year by the middle of the next decade. Those calculations are based on the assumption that the Defense Department budgets will stay at about the current \$260 billion level, adjusted for inflation.

As a solution, DoD proposed additional base closure rounds. This has been controversial, to say the least. Cohen's plan calls for two more attempts to reduce the military's complex of operating and training bases and support installations to the level needed by a force of about 1.36 million troops, the level prescribed by the Quadrennial Defense Review.

After failing last year to get more rounds, Cohen asked Congress this year to authorize base closure proceedings in 2001 and 2005 but has received little support. The law authorizing the expedited Base Realignment and Closure process has expired and must be restored by legislation. However, members of both the Senate Armed Services Committee and House National Security Committee refused to authorize new BRAC rounds. The matter may come up again in future months, but it is unlikely that final legislation will overturn the decisions of the two defense committees.

The Pentagon's request for new BRAC authority has been blocked by a coalition of forces in Congress, formed around the small but influential Depot Caucus. The caucus comprises about 50 lawmakers whose constituents work at the shipyards, depots, air logistics centers, and major laboratories. Two of the most vocal members of that group are Rep. James V. Hansen (R-Utah), who chairs the Depot Caucus, and Sen. James M. Inhofe (R-Okla.), who chairs the Senate Armed Services Readiness Subcommittee, which controls the base closure process.

Lingering Bitterness

Opposition has come from a host of Republicans in both chambers and a number of Democrats on the authorizing committees, including Rep. Ike Skelton (D-Mo.), the senior minority member of the House National Security Committee. A major reason for the opposition, in addition to general concerns about losing major sources of jobs in their districts or the rarer concern that defense reductions have gone too far, is the bitterness over the 1995 BRAC round. The bitterness focuses on Clinton's attempt during the early part of his campaign for reelection in 1996 to protect most of the jobs at two large USAF Air Logistics Centers—Sacramento ALC at McClellan AFB, Calif., and San Antonio ALC at Kelly AFB, Texas.

In the initial stages of the 1995 BRAC round, Air Force officials said they wanted to realign and redistribute work at all five of the service's ALCs without closing any, even though most were operating at about 50 percent of capacity. The other three facilities are Ogden ALC at Hill AFB, Utah; Oklahoma City ALC at Tinker AFB, Okla.; and Warner Robins ALC, Robins AFB, Ga.

"The recommended realignments will consolidate production lines and move workloads to a minimum number of locations, allowing the reduction of personnel, infrastructure, and other costs," the Air Force explained.

However, the BRAC commission rejected that plan, instead deciding to close the Sacramento and San Antonio ALCs, which were rated as the least efficient of the five depots. The commission justified its decision by pointing to a General Accounting Office analysis. The GAO said, "The Air Force recommendation may not be cost-effective and does not solve the problem of excess depot capacity."

Thus, the BRAC commission called for outright closure of Sacramento and San Antonio in 2001. It was assumed that the work being performed at the two centers would then be shifted to the surviving three depots. At least, that was the working assumption of members of Congress representing the surviving depots.

According to the rules, which were followed in the three previous BRAC rounds, the President and Congress can accept or reject the commission's

The Way It's Supposed to Work

For most of US history, administrations opened and closed bases almost at will. President Lyndon B. Johnson closed down a number of installations in New England, it is said, just to punish congressional delegations for opposing his Vietnam War policies. That freedom was revoked in 1977 under legislation that was cosponsored, ironically, by then-Sen. William S. Cohen (R-Maine).

By making major reductions or closures of military installations subject to congressional, legal, and environmental scrutiny, the legislation prevented the armed services from closing any major base for a decade.

To break that logjam, Congress passed a bill in 1987 that authorized an independent, nonpartisan commission to review a list of bases the military considered excess. It became known as the Base Realignment and Closure process.

The list approved by the BRAC commission had to be accepted or rejected in full by the President and by Congress. And facilities approved for closure or major cutbacks by that process were immune from the legal and environmental challenges that had barred past actions.

BRAC commissions formed in 1988, 1991, 1993, and 1995 recommended the closure of 97 major bases and more than 100 smaller facilities and major changes, or realignment, of scores of other installations.

With the glaring exception of the handling of two major Air Force facilities on the 1995 list, the BRAC process functioned as designed, with no political interference.

list in its entirety but cannot pick and choose among the actions proposed.

Clinton, however, denounced the BRAC action, claiming that it ignored the heavy economic impact of such a closure on the two communities—particularly Sacramento, which already had been hit hard, along with the rest of California, by past base closures.

The President and then-Defense

Secretary William J. Perry also said the two closures would severely affect Air Force readiness by disrupting major maintenance programs.

During his reelection campaign, President Clinton promised to shield the vote-rich states of California and Texas from the decisions of the 1995 commission. The result: No move to redistribute the workloads ever was initiated. Instead, the President ordered the Air Force to launch a competition that would "privatize in place" a major part of the jobs at the two depots and to keep about 7,500 of the jobs at Sacramento and 13,000 of the jobs at San Antonio until 2001, when the ALCs should have been closed under the BRAC rules.

Former Sen. Alan Dixon (D-Ill.), the chairman of the 1995 BRAC Commission, later said the privatization effort was within the scope of the commission's decision, but many lawmakers reacted with outrage.

Critics were quick to note that California and Texas were among the most crucial states in the presidential election, and they accused

action came from the lawmakers representing the three remaining ALCs. They and other Depot Caucus members have fought the privatization effort throughout, trying to ensure that the competition is won by the remaining ALCs and not by commercial firms.

As developed by the Air Force, under White House pressure, the privatize-in-place initiative sought to get a commercial firm to win the competition for much of the repairs and modifications done at McClellan and Kelly with a proposal to do the work at the former Air Force facilities.

Bundling Up

The competition has been complicated by Air Force requirements that major parts of the work at the two ALCs be "bundled" into one contract. The packaging, which the depot advocates tried to prevent, has particular impact on Sacramento, because it combines the airframe maintenance on KC-135s with the work of the aircraft's hydraulics and other systems.

Ogden ALC, which is bidding on the Sacramento work, does not have the facilities to work on the fuselage of such large aircraft. So it must team with a commercial firm that could do work on the airframe. Contracts are to be awarded in August.

Just when it appeared the depot controversy would simmer until then, Clinton's congressional critics got

their hands on what they took to be an incriminating April 26 memo. The memo, written by acting Air Force Secretary F. Whitten Peters to Deputy Defense Secretary John J. Hamre, appeared to convey White House political pressure to again help California. Peters reported that John Podesta, deputy White House chief of staff, wanted the Pentagon to urge Lockheed Martin to join the bidding on maintenance business at McClellan and to keep the work in Sacramento.

Inhofe and Hansen reacted angrily, demanding that Cohen stop the competition if he could not ensure a fair and open process free of political pressure. "The White House has violated every ethical standard, including the letter and spirit of the BRAC recommendations and process," Inhofe said. "I can't believe the Administration would be so blatant, so flagrant, and so dumb to put this in print," Hansen said.

The flare-up over Sacramento and San Antonio came just as Cohen and his supporters in Congress were making their last-ditch efforts to get authorization for the new rounds included in the new defense authorization bills. They had their eye particularly on the Senate Armed Services Committee, where the proposal had failed on a tie vote the year before. The committee turned thumbs-down on the Cohen plan.

The Pentagon leader, reacting to congressional accusations, on May

Results of Excess Capacity Analysis

Armed Force	Change in Capacity Relative to Force Structure Since 1989 (as percentage of 2003 capacity)
Army	20-28
Navy	21-22
Air Force	20-24
DLA	35
All DoD	23

the President of blatantly politicizing the BRAC process. They charged the Administration of "playing dirty," using its political clout to ensure that government workers at the two facilities could easily find work in the private sector.

The bitter reaction to Clinton's action on the two ALCs has been a major factor ever since and was central in congressional opposition to Cohen's requests for additional BRAC rounds.

The strongest reaction to Clinton's

Results of Excess Capacity Analysis for the Air Force

Installation Category	Change in Capacity Relative to Force Structure Since 1989 (as a percentage of 2003 capacity)
Administration	21
Air Force Reserve ^a	69
Air National Guard	no increase
Depots	no increase
Education & Training	no increase-28
Missiles & Large Aircraft	17-18
Small Aircraft	28-42
Space Operations	no increase
Product Centers, Labs, & Test & Evaluation	24-38
Total	20-24

^aThe Air Force Reserve Command metric measures apron area at the bases in this category and Total Aircraft Inventory within the command. The increase in AFRC apron area is the result of the realignment of March, Grissom, and Homestead AFBs from active duty bases to AFRC installations.

5 set up a new process for deciding the fate of jobs at the two contested Air Force bases. It will involve establishment of an "independent review authority" to ensure fairness in the bidding process, said the Pentagon. At the same time, the author of the memo, Peters, recused himself from decision-making.

For all of the controversy, the BRAC process has proved to be something less than the gold mine of income that BRAC founders had predicted. It has cost much more than expected to close the bases, mainly because of higher environmental cleanup costs.

Worth It

However, the Pentagon claims BRAC has been well worth the effort. In a report released April 2, the Pentagon told Congress that with three BRAC rounds substantially completed and the 1995 round partly done, the savings are exceeding the costs. It said that, by 2001, when the approved BRAC actions are completed, the services will have saved a net of \$14 billion and will save \$5.6 billion a year from then on.

The report noted that, despite those actions, Pentagon infrastructure reductions have failed to keep pace with the sharp drops in defense spending and in forces since the end of the Cold War. Budgets have been cut more than 40 percent and forces by 36 percent, but the base structure by only 21 percent, Cohen said. That leaves at least 15 percent extra infrastructure, he said.

In an attempt to convince a skeptical Congress of the need for additional BRAC rounds, the report tried to quantify the excess bases by comparing the reductions in various operational or support forces with the changes in the infrastructure they used.

That calculation indicated that infrastructure now exceeds force structure requirements by 23 percent compared to the forces. To remove that excess, the military would need two more rounds of closures about the size of the last two BRACs, Pentagon officials said.

Multiplying the 23 percent excess infrastructure times the 259 major installations left after four BRACs indicates there are about 55 unnecessary major bases. That is also the total number of large facilities or-

Voices From the Caucus

The Depot Caucus exerts major influence on Capitol Hill. Rep. James V. Hansen (R-Utah), who chairs the group, and Sen. James M. Inhofe (R-Okla.), who chairs the Senate Armed Services Readiness Subcommittee, are the two key figures.

"Congressman Hansen believes we do need to close more bases," said a senior Hansen aide, because there are "too many runways and not enough aircraft. But that's not the reason the Pentagon wants to do it." This aide said Cohen is pushing for more base closures because "the defense budget is underfunded by \$10 [billion] to \$15 billion a year."

Because new rounds of base closures will not show any real savings for years, he insisted, "None of that has a thing to do with getting \$15 billion more next year and the year after that to solve the readiness and modernization gap."

"My boss supports BRAC as a necessary means to reduce unnecessary infrastructure. The thing he doesn't support is saying it will cure the short-term budget shortage," he said.

Hansen, said the aide, also worries about closing large expensive facilities that could never be regained if a future threat required a defense buildup. "Do we think this is as big as DoD is ever going to get?" he asked.

dered closed in the last two rounds.

The Air Force, which started the BRAC process with more bases than any of the other services, has closed a smaller share, and it still has more major installations than the other services.

According to BRAC commission documents, the Air Force cut 14 percent of its major bases, compared to 20 percent by the Army and 24 per-

cent by the Navy-Marine Corps. With a nearly 40 percent reduction in its overall forces, the small cut in bases means the Air Force infrastructure exceeds its requirements by 20-24 percent, the Pentagon report said.

Similar opposition was voiced by the chairmen of the two defense authorizing committees, Sen. Strom Thurmond and Rep. Floyd D. Spence, both South Carolina Republicans.

"Senator Thurmond is opposed to more rounds of base closure at this time," said spokesman John Decosta. "He has said he doesn't think we should move forward with more rounds until we are finished with the '95 round," Decosta said.

Thurmond "also is concerned that we may be losing irreplaceable assets. ... We should stop and think—What do we need? What can't we do without?—instead of just closing bases to get funds," the spokesman said. "The savings won't cut in for many years."

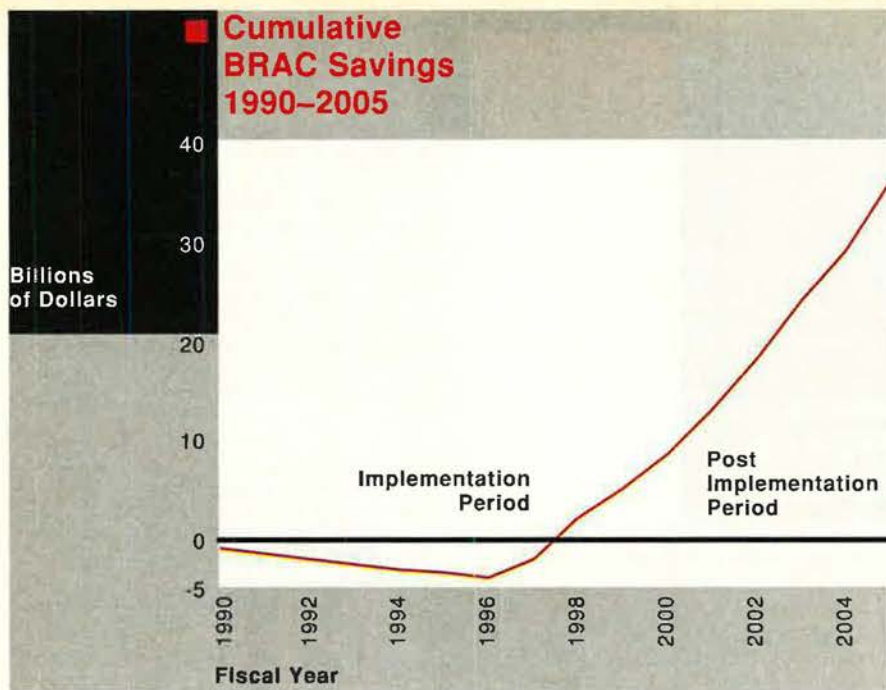
In opening one of his budget hearings earlier this year, Spence belittled the increasing calls for more base closings.

"Judging from some of the recent rhetoric coming from the Pentagon, you would think BRAC was the miracle cure for readiness, modernization, quality-of-life shortfalls, and everything else that ails the Department of Defense," he said.

"Even if Congress put aside legitimate concerns about the integrity of the BRAC process following the President's action back in 1995," and closure rounds proceeded as expected in 2001 and 2005, "under the most optimistic of scenarios, not one penny is likely to be saved until the later part of the next decade or beyond," Spence said.

He warned, "The process of closing bases will result in significant additional net costs to an already underfunded defense budget. We are 10 years into the BRAC experience and there is still a legitimate debate about whether we are actually saving any money yet. So calling for more BRAC rounds may make for good theater, but it offers no solutions in the foreseeable future to the serious shortfalls confronting the services."

The biggest increase in capacity compared to forces was in ramp space for the Air Force Reserve—69 percent, when AFRC picked up the former March AFB, Calif., Grissom



AFB, Ind., and Homestead AFB, Fla. There were sizable excesses in relative capacity for small aircraft, ranging from 28–42 percent, and in laboratories, product centers, and test and evaluation facilities—24–38 percent. Space for large aircraft and missiles now exceeds force requirements by 17–18 percent compared to the force, the report said.

The impact of the past base closures on the Air Force is a bit difficult to determine. BRAC commission reports indicate the four rounds closed 28 major bases used by the regular Air Force, Air National Guard, and Air Force Reserve, with three active bases converted to reserve status.

Those numbers don't square with Air Force figures. Jimmy G. Dishner, deputy assistant Air Force secretary for installations, counted 22 major closures and 17 realignments of large facilities. Although savings are hard to calculate, Dishner said the Air Force believes it will have had a total of \$5.9 billion in "cost avoidance" due to base closures by 2001 and will enjoy \$1.8 billion a year in lower cost after that.

Dishner said the Air Force would not attempt to identify excess bases until Congress authorizes additional BRACs. However, Gen. Michael E. Ryan, Air Force Chief of Staff, said the service is conducting a strategic basing study for projected forces that would guide a future analysis on where to base those forces.

A Strategic Problem

Ryan said recently that the Air Force was as anxious to shed excess infrastructure to produce additional savings as the other services are, but he was more concerned about the operational impact of having his declining forces spread over too many bases.

The imbalance in force reductions and base closures "left us with a very thin distribution of our forces over bases that really don't have a lot of depth," he said. The situation becomes particularly troublesome when air expeditionary forces must take support personnel from those "thin" bases to operate from foreign airfields, Ryan said.

Deployment of support personnel, such as firefighters, security forces, and medical specialists, from domestic bases "leaves them [the contributing bases] in a hole," he said.

"We are an expeditionary Air Force," said Ryan. "That's what the nation wants of us." For that reason, he added, the Air Force must "reorganize ourselves in a manner that allows us to do that. We can't do that from our thin base structure."

Ryan explained that the major problem lies with the Air Force's 20 combat-coded fighter and attack wings, which are "spread over too

many bases. We need to reduce that." Dishner said the fighter wings are dispersed across 70 different locations, including Guard and Reserve stations.

Cohen and Air Force officials insisted that they have not tried to determine exactly how many bases would be proposed to any future BRAC commissions, but the Pentagon estimated that, if BRAC commissions were created as requested, base closure would produce a net savings by 2008, which would grow to about \$3 billion a year by 2012. The additional base reductions would free up a total of \$20 billion by 2015, the report said. That, Cohen was quick to note, could help pay for the modernization programs the services are counting on to keep their technological edge in the next century. Cohen also pointed out that the savings from the proposed new BRAC rounds would kick in just when those big weapons systems were coming into production.

Many of the opponents insist that approval is not needed this year, since the first round would not come for three years.

It only takes about 18 months to conduct a BRAC round, including a year for the services to produce their recommendations and six months for a commission to review that and make its decisions, congressional aides said.

Starting the process now would only lead to an early "panic" among communities with potentially vulnerable bases, the opponents said. The request for approval this year "is all about covering up the fact that this Administration's defense budget is inadequate," declared an aide to Hansen.

Cohen has insisted that he needs the approval now because he must make decisions on whether to proceed with the new weapons programs and how to get funds to maintain readiness.

"Without the certainty of BRAC, we'll have to adjust those plans for modernization, either that or affect our force structure or the quality of life for our troops. And that's why it's imperative that we have BRAC now," Cohen said. ■

Otto Kreisher is the national security reporter, based in Washington, for Copley News Service. This is his first feature article for Air Force Magazine.

Most units are not as ready as they should be—and everybody knows it.

Readiness in a Downturn

By Peter Grier

AIR Force MSgt. Eugene D. Mehaffy has a message for Pentagon budgeteers: Real readiness does not come cheap.

An 18-year veteran and C-5 flight engineer with the 22d Airlift Squadron from Travis AFB, Calif., Mehaffy saw readiness rates reach historic levels around the time of the Gulf War. Today, the readiness of his unit remains high but is probably not sustainable, he told Congress earlier this year.

Years of budget cuts are finally taking their toll. Spares shortages for the Galaxy are only one aspect of the problem, he said. Manning reductions, plus retention losses driven by low pay and high operations tempo, are becoming major factors in the readiness equation.

Higher-ups constantly tell Mehaffy to "do more with less." Yet "less" means such frustrations as the inability of a tired and hungry crew to get a box lunch at some en route stopovers. "I only hope everyone now understands 'more with less' is not going to happen," the veteran NCO told a House committee this spring.

Frustration similar to that of Mehaffy's affects flight lines all across the Air Force. Everyone from commanding generals to the airman stacking munitions realizes that most units are not as ready as they would like to be.

This does not mean the Air Force could not fulfill its worldwide missions, if called upon. The hundreds of sorties flown every day over Iraq, Bosnia, and other trouble spots testify that US airpower remains a potent weapon.

Downhill Sliding

But many officials warn that the service may no longer just be standing at the top of a slippery slope on readi-

ness. Downhill sliding has begun, and once such movement develops momentum, it is difficult to reverse.

"It is like the *Titanic*," Gen. Richard E. Hawley, the commander of Air Combat Command, told the audience at a recent Air Force Association symposium. "If you've seen the movie, you know they were frantically trying to turn that ship. We can apply a lot of rudder to the force today and it is going to take time before those trends begin to stabilize and we can reverse them in order to prevent the hollow force from developing."

Readiness problems are relative, of course. No one is predicting that Air Force wings will once again suffer a serious decline such as the one they experienced in the drawdown years following the Vietnam War, when overall mission readiness figures sank to less than about 55 percent.

Overall, 91 percent of Air Force units have readiness ratings of C1 or C2. Readiness in front-line theater units in PACAF and USAFE is even higher than that.

Some key indicators are dropping, however. In the late 1980s, fighter force readiness hovered around 80 percent, for instance. Today, only about 74 percent of the Air Force's fighters are fully mission capable on a given day.

Air Force mission capable rates for all systems peaked in 1991 at 83.4 percent. Since then, they have slowly declined by almost 9 percentage points, to 74.6 percent at the end of the first quarter of Fiscal 1998.

Within these figures lie some specific problems which officials find particularly troublesome. "Engine readiness has become a very significant problem," said acting Air Force Secretary F. Whitten Peters at a recent AFA meeting.

The F100-229-series and TF39-series power plants, used in front-line fighters and the C-5, respectively, are among those most dogged by breakdowns and parts shortages.

Budget cuts are a big reason for the recent readiness problems—but they are far from the only cause. Engines are a good example in this regard. "It is not just a matter of money," said Peters.

Turmoil in the San Antonio Air Logistics Center workforce, coupled with a spares funding shortfall in Fiscal 1997, caused lower than expected engine repair productivity. In addition, engines—and aircraft—are aging. In four years, over 75 percent of the Air Force fleet will be 20+ years old.

The service is planning to buy new engines for the F-15 fleet and for RC-135 reconnaissance aircraft. Some \$500 million has been set aside for C-5 engine and avionics improvements. By the end of next year, the core F100 repair work will have been transferred to a stable work force at Oklahoma City ALC.

These and other changes should stem the 1.1 percent annual decline in mission capable rates, the Air Force contends. The question is when.

"It will take some time for these problems to work themselves out," said Peters. "It has taken until recently for the underfunding in 1997 to work its way through the depot pipeline, so it will take at least several more months before the increased funding in 1998 and 1999 will take effect."

One good way to peel back the layers of the readiness problem and understand its causes is to break down overall mission readiness figures into two main categories: Not Mission Capable Supply (airplanes suffering from lack of parts) and Not Mission Capable for Maintenance (airplanes at

least partly broken because no one has gotten around to fixing them yet).

The Unready Quarter

Lt. Gen. William P. Hallin, USAF's deputy chief of staff for installations and logistics, told Congress this spring that a bit more than a quarter of Air Force aircraft were rated not mission capable in the first quarter of Fiscal 1998. Of those, the larger group was affected by lack of parts, he said. Those rated Not Mission Capable Supply constituted just over 14 percent of the fleet. According to Hallin, slightly more than 11.3 percent were judged Not Mission Capable for Maintenance.

"These rate increases illustrate that the MC-rate decline is both maintenance and supply driven," said Hallin.

In other words, readiness is a complicated issue that features interlocking problems. Hallin said that major areas of concern, and areas where corrective actions have focused, include aging aircraft and personnel retention, as well as engines and spare parts.

"We are concerned with the adverse trend and increased level of effort required to meet our operational requirements," said Hallin.

The state of the F-15 air superiority fighter force is a good example of readiness trends at work, according to Hallin. He said that, while the aircraft is not nearly as elderly as the B-52 and KC-135, the average age of USAF's F-15s is more than 15 years. Age-related component failures are causing parts shortages, which in turn drive the airplane's Not Mission Capable Supply rate up.

A lack of horizontal stabilizers is a major driver of F-15 and F-15E readiness rates, for instance. The stabilizers are in short supply because corrosion caused by water seeping through deteriorated seals results in longer-than-expected depot repair times. That translates into airplanes sitting on the flight line.

F-15C/Ds, for their part, are experiencing structural corrosion in the forward fuselage fuel cell area that is causing many to sit on the ground awaiting inspection.

Even the F-16, a relative youngster of a military aircraft, faces age-related readiness problems. Early production F-16s are dogged with a rising number of fuel leaks, which are a particularly time-consuming problem to fix.

Lean Years

Meanwhile, funding for aircraft spares went through a particularly lean period in the early years and middle years of this decade. The "spares" line item was funded at less than its full requirement from 1991 through 1994 and in 1996 and 1997, according to Hallin. That exacerbated existing supply problems.

Overall, the complexity of parts supplies is shown in an Air Force analysis of the top 10 spare parts shortages affecting F-16s throughout most of 1997. Three of the items were in short supply, it turned out, because contractors were late in producing them. One of the shortages was caused by a "technical surprise"—failure at a higher than predicted rate. One shortage was due to inaccurate demand forecasting caused by the aging of the aircraft model. One was driven by insufficient capacity in the depot to meet repair demands. The last four were caused by long lead times for depot component repair parts.

"Improved supply chain discipline, along with FY 98 and FY 99 spare parts funding at 95 percent and 100 percent, respectively, should begin to stabilize spare parts shortages in FY 98 and begin recovery," concluded Hallin.

Officials take some heart in the fact that the recent decline in readiness leading indicators has been gradual. The drop in the mid- to late-1970s was sharp and uncontrolled.

Some studies have since concluded that the most important factor in the creation of the late 1970s "hollow" force was the exodus from the services of experienced personnel following the pullout from Vietnam. The overall skill and quality of Air Force units dropped far below the levels necessary to maintain complicated jet aircraft.

By 1976, the rate of nonjudicial punishment actions for all Air Force personnel was about 40 per 1,000 people, for instance. By way of comparison, the figure for 1997 was 22.

The lesson from this is that current retention rates are thus a key readiness ingredient. And while the Air Force may not be as bad off as it was in the 1970s in this regard, retention is rapidly becoming a difficult issue.

The pilot problem is well-publicized; by the end of 1998, the Air Force could be short of its total requirement by as many as 800 pilots. But key specialists throughout the service, from officers to NCOs to first-

term airmen, are walking away in alarming numbers. The first-term reenlistment rate for aircraft armament personnel is only about 21 percent, for instance. It is 14 percent for all F-16 avionics specialists and 46 percent for F-16 crew chiefs.

The well-known problem of high operations tempo is a major contributor to the high separation rates. It is a figure that Air Force leaders repeat again and again: The active duty force has declined in size almost 40 percent since the end of the Cold War, yet deployments have increased fourfold. On any given day Air Force personnel are working hard from Saudi Arabia to Diego Garcia to Bosnia.

But optempo is not the only trend with a big effect on retention. The revitalized US economy is a vacuum sucking airmen and pilots into the private sector. Young enlistees see that their future retirement and health care benefits may not measure up to those offered in the past and make career decisions accordingly.

Experience Gap

The result of all this may be a growing "experience gap" on the flight line and in the air, according to personnel in front-line units.

Take, for example, Mehaffy's organization, the 22d Airlift Squadron at Travis. Today, the squadron's pilots and crew, as a group, are the youngest, least experienced people ever to fly the C-5. Of 61 pilots assigned, for instance, only nine have prior Galaxy seasoning. Most are in their first mobility airlift tour.

Each year, one-third of the experience that the unit "grows" on its own is lost because pilots leave for new posts based on a three-year assignment cycle.

"This rotation forces a loss of my top-line fliers—instructors, examiners, and supervisors," said Lt. Col. Karen M. Torres, commander of the 22d Airlift Squadron, in a recent congressional appearance.

Nor is the experience gap limited to officers. Enlisted flight engineers and loadmasters are leaving for more lucrative jobs with private cargo carriers, as well. Their initial pay can range from \$50 to \$57 per flight hour, plus benefits.

"For the first time, we are finding flight engineer and loadmaster trainees who don't want to finish training, much less start a flying career, be-

"Seriously Compromised"

The House National Security Committee, which held numerous readiness hearings this year, completed its defense bill on May 6. At the same time, the chairman, Rep. Floyd D. Spence (R-S.C.), issued a harsh assessment of the combat readiness of US forces.

"The committee remains concerned by contradictions between official reports of military readiness and the reality confronting military personnel out in the field. Where official reports and testimony before the committee portray the overall readiness of US armed forces as high, soldiers, sailors, airmen, and Marines increasingly admit that their units are continuing to slip below standards. ...

"The committee conducted a series of hearings ... to hear the views of operational unit commanders and senior noncommissioned officers from all of the military services on this issue. What the committee heard from all who testified was that personnel are working harder and longer than ever before, leaving little doubt that 'doing more with less' is methodically undermining the readiness of US military forces.

"Despite dedication and high morale, the readiness of today's forces has become a systemic problem that limits the military's ability to execute the National Military Strategy. ... Despite a growing consensus that US military readiness is in steep decline, the Administration continues to underfund critical accounts that support the ability of US forces to fight and win wars.

"Despite the addition by Congress of approximately \$350 million in fiscal year 1998 to address the backlog of depot maintenance and repair, the backlog will grow by \$120.4 million in fiscal year 1999. Despite the addition by Congress of \$600 million in fiscal year 1998 for real property maintenance and repair accounts, this backlog will grow by \$1.6 billion in fiscal year 1999. And despite the addition of \$562 million in fiscal year 1998 for Navy and Air Force flying hour and spare parts accounts, the shortfall in fiscal year 1999 is projected to reach \$250 million.

"These few examples are symptomatic of the problem: as defense resources and force size have declined, and the number, frequency, and duration of contingency operations [have] increased, the ability of US armed forces to train for their primary warfighting missions has been seriously compromised."

cause of the difficult work environment," said Mehaffy.

Top service officials say that, to reduce the retention problems, they need to develop more incentives for their airmen, particularly key middle managers and the enlisted ranks.

USAF leaders are trying to reduce deployment rates through creative use of Guard and Reserve units and increases in manning of high-demand specialties, among other things. The Fiscal 1999 budget proposed a pay raise of 3.1 percent, but Congress is moving toward approving one of 3.6 percent. One-third of Air Force military construction spending next year will be devoted to such quality-of-life improvements as new child care centers, houses, and converting "gang latrine" dorms to the DoD 1+1 standard.

Bonuses offered per the Air Force selective reenlistment program have been increased for the hardest-hit specialties. The number of specialties to which the bonus applies has been expanded from 41 to 88.

"We are also aggressively implementing the new Aviation Career Incentive Pay and bonus programs passed by Congress last year," Peters told AFA. "We are having some luck, but the future there is still in doubt and we have more work."

While retention is an issue throughout the Air Force, some readiness problems affect only certain service commands.

Hard-flying Air Mobility Command units are simply wearing out airplanes, for instance. The C-5 is becoming maintenance-intensive, requiring 21 man-hours of ground work for each hour of flying time. Yet the aircraft has roughly 80 percent of its structural life remaining.

Desperate Need

"That equates to another 30 to 40 years of service, but it desperately needs new engines and upgraded avionics," said Gen. Walter Kross, commander of Air Mobility Command and commander in chief of US Transportation Command.

The Air Force logistics system has become a readiness challenge for AMC, said Kross. Airlifters fly into many locations that have little or no repair infrastructure. They need the right parts in the right places at the right time to maintain a high operations tempo.

Kross also says that the Air Force needs a new long-range strategy for the C-130 fleet to maximize readiness. The problem is that the service's fleet of 500 C-130s is composed of five different versions. These variants may look alike on the outside, but inside

they are virtually five different systems. The C-130J is 70 percent different than its immediate predecessor.

That means that C-130 training, maintenance, and logistics is far more complicated than it needs to be. "We've got to get that family down to two types," said Kross.

Pacific Air Forces, for its part, has fewer readiness problems than much of the Air Force. Its distance from continental US depots means that PACAF gets some supply priority—as does USAFE.

Thus, PACAF mission capable rates are somewhat higher than those of Air Combat Command units. Its infrastructure, however, may well be shakier. The average age of PACAF's buildings is over 40 years. Some 65 percent of infrastructure systems—such as water, sewer, heating, airfield lighting—have exceeded design life expectancy.

A deteriorating fuel infrastructure at Andersen AFB, Guam, is already impairing aircraft resupply. Alaska's bases are in similar straits, though construction of new JP-8 tankage is scheduled for this year.

"Our ability to support continuous air operations may be seriously impacted by our inability to resupply jet fuels in theater," PACAF commander Gen. Richard B. Myers told a House panel in March.

Overall, Air Force readiness problems need to be addressed through sufficient resources, say service leaders. Some money is working its way through the supply pipeline. The question is whether it will be enough. ■

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, "Troubles With Tricare," appeared in the June 1998 issue.

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Military medical leaders cite the problems and the prospects at an AFA symposium.

Plotting a Course for Health Care

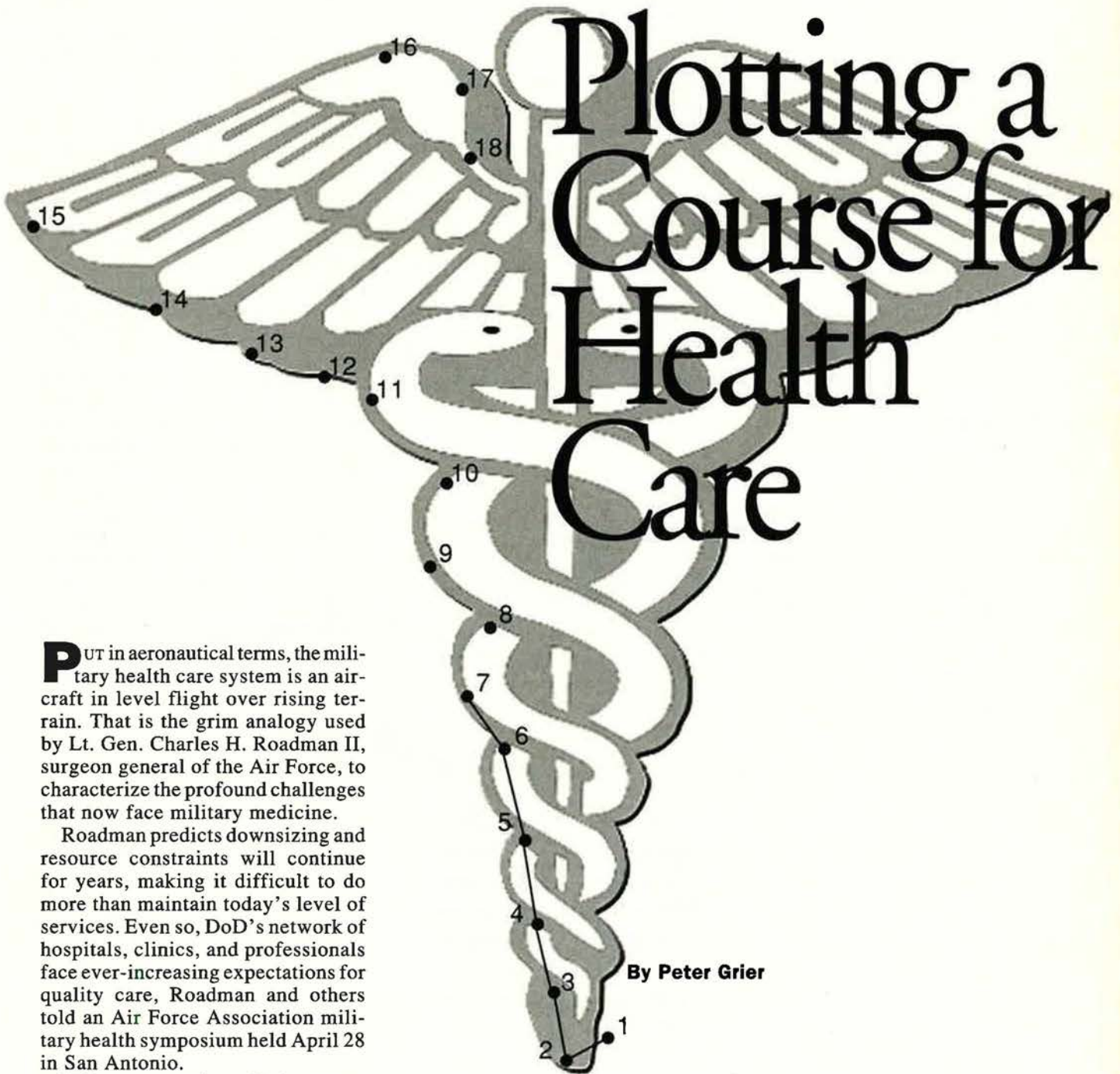
PUT in aeronautical terms, the military health care system is an aircraft in level flight over rising terrain. That is the grim analogy used by Lt. Gen. Charles H. Roadman II, surgeon general of the Air Force, to characterize the profound challenges that now face military medicine.

Roadman predicts downsizing and resource constraints will continue for years, making it difficult to do more than maintain today's level of services. Even so, DoD's network of hospitals, clinics, and professionals face ever-increasing expectations for quality care, Roadman and others told an Air Force Association military health symposium held April 28 in San Antonio.

"We cannot wait until the mountain is on us," Roadman told symposium attendees. "We must begin to lead turn ... to identify problems, set a strategy, lead turn so that we avoid the ramifications."

All the services now recognize that there is a handful of critical tasks at which they must succeed in order to navigate between the peaks into which military health care could crash, according to the Air Force's top doctor.

By Peter Grier



Their No. 1 goal is to be ready to take care of combat forces on a moment's notice. That includes being ready to respond instantly to the use of chemical or biological weapons against US troops anywhere in the nation or the world.

Goal No. 2 is to deploy a managed health care system. For all of the services, that means Tricare. "There isn't another plan other than Tricare," warned Roadman.

Goal No. 3 is learning to "right-size." In other words, the services must wring inefficiencies out of their medical systems. The Air Force currently has 21 facilities that average fewer than 10 patients in beds per day. If service leaders have their way, such inefficient infrastructure will become things of the past.

Breaking Habits

Finally, the military needs to break free from ingrained habits of waiting for diseases and injuries to occur, rather than trying to prevent them. Officials said the services need to build healthy communities, which means an emphasis on prevention.

Roadman said Air Force ground crews do not just wait for an F-15 to break before they touch it; they carry out preventive maintenance to keep the airplane in the air, and the service needs to think about its people in the same way.

"It means that we don't spend \$1.3 billion on smoking-related illness, but ... put that money into preventing that ahead of time," said Roadman.

At the same time, the Air Force, Army, Navy, and Marine Corps must maintain their culture of taking care of their own. Medicine remains a big quality-of-life issue for the current force. Within the Air Force, access to quality care is a major retention issue.

"When one of our young people is flying at 500 feet over the terrain just below the speed of sound, he should not be worried about whether his child can get into the pediatric clinic back at home base," said Roadman.

Health care has also become a huge problem for retirees. The Pentagon has simply delayed in dealing with the consequences of decisions made in past years. Now that retirees outnumber active duty troops, problems are coming home to roost.

For Medicare-eligible military retirees, space-available care in Mili-

tary Treatment Facilities has become difficult to find. Plans for Medicare Subvention, a process whereby Medicare reimburses the Pentagon for a portion of care provided to older retirees in MTFs, might be one solution. At the insistence of Congress, the Pentagon now has undertaken a subvention test in six sites.

Of Medicare Subvention, Roadman said, "We have high hopes." He added, "I think it is going to be a close-run thing," because it might entail new costs for the Defense Department.

Some lawmakers are eager to open the Federal Employees Health Benefits Program to military retirees, as well. The FEHBP solution sounds good, said Roadman, but it could also founder on the issue of increased cost to DoD accounts.

"I think [FEHBP] holds [Medicare Subvention] at risk," the Air Force doctor said. "It holds at risk space-available care, both for over 65 and under 65. ... If you are already in level flight with rising terrain, raising the terrain is not the strategy to use."

A Process, Not a Place

Still, said Roadman, the Air Force will continue working as hard as it can to provide and broker care for retirees. It will continue with its commitment to take care of its own. It will build a mosaic of care that meets people's requirements, said the service's top doctor. "But it won't be a place," he warned. "It will be a process."

Joining Roadman were a number of senior active duty participants, including Gen. Lloyd W. "Fig" Newton, commander of Air Education and Training Command; Lt. Gen. David L. Vesely, assistant vice chief of staff of the Air Force; Vice Adm. Harold M. Koenig, surgeon general of the Navy; Lt. Gen. Ronald R. Blanck, surgeon general of the Army; Maj. Gen. Earl "Wynn" Mabry II, commander of Air Force Medical Operations Agency; Brig. Gen. Linda J. Stierle, director of Air Force Medical Readiness Doctrine and Planning and Nursing Services; Lt. Col. Mark Edger, chief of aerospace medicine, Air Force Medical Operations Agency; and Maj. John Bulick, Air Force Surgeon General's Office.

Speakers from private industry and other federal entities were Maj. Gen. George K. Anderson, USAF (Ret.), of the Koop Foundation; David W. Forslund of Los Alamos National Laboratory, N.M.; Dr. John P. Howe III, president of the University of Texas Health Science Center at San Antonio; Julie Turner, member of the staff of Rep. Charles W. Stenholm (D-Texas), and James E. Woys, COO, Foundation Health Federal Services.

The Air Force surgeon general's colleagues from other services agreed that the nation's military health system is at a crossroads. Lower budgets must be assessed in the context of increased expectations from patients at all levels, said Lt. Gen. Ronald R. Blanck, surgeon general of the Army.

"Patients want now the same level of care, whether they are at Ft. Irwin,



FEHBP "holds at risk space-available care, both for over 65 and under 65. ... If you are already in level flight with rising terrain, raising the terrain is not the strategy to use."

[Calif.] ... or in Bosnia, or Kuwait, or on board ship, or here in San Antonio," said Blanck.

Teamwork between the services is one way to meet these expectations, said Blanck. At the Navy hospital in Okinawa, Japan, for instance, the Air Force runs the neonatal intensive care unit. At Tripler Army Medical Center in Honolulu, the deputy head of the facility is a Navy captain.

Tricare will be another expectations-enabler, said the Army surgeon general, as it will allow leverage of the Pentagon's direct-care dollars into a wider network.

Technology will also help stretch scarce dollars in the future. The Navy, for instance, has focused on trying to move information instead of people.

Medical evacuations off a ship are expensive, after all, at some \$4,400 per case. So the Navy has worked hard at digital camera-based telemedicine. Sixty telemedicine consultations were conducted on board USS *George Washington* during a recent six-month deployment to the Persian Gulf. The consultations, transmitted by satellite back to the National Naval Medical Center, Bethesda, Md., helped avoid 20 medical evacuations.

The 60 consultations involved 10 different medical specialties, though half were dermatological in nature. Surprisingly, a few involved mental health.

"There were five sailors on that ship who didn't think they were going to make it," said Vice Adm. Harold M. Koenig, surgeon general of the Navy. "These were all first-term enlistees. ... We were able to hook up, real time, with a psychiatrist at Bethesda to work with each of those patients, and every one of those sailors was able to complete that cruise."

The Navy even has a baby bonding program, which allows mothers on shore to transmit digitized newborn photos to dads at sea. At the Navy hospital in Naples, Italy, newborn pictures are all posted on a Web page so that stateside family members can share in the experience.

"Navy medicine is trying to re-engineer how we deliver health care," said Koenig.

Ignore the Unessential

Other speakers warned that, as all the services move into the new world

of health care information systems, they need to keep their focus on truly important items: patients and medical personnel. They said it was easy to get swept away in the technology and build systems which satisfy the needs of computer professionals but are less than satisfactory for physicians.

"As long as people use the term 'telemedicine' it is a failure," said David Forslund of the Los Alamos National Laboratory, N.M. "[My] personal view is [that] we have to get rid of the term 'telemedicine' and have just one [term]: 'medicine.'"

From the Air Force perspective, maintaining the current state of readiness for combat medicine capability all starts with recruiting and training, said Gen. Lloyd W. "Fig" Newton, commander of USAF's Air Education and Training Command.

The need is considerable and constant. Of the service's officers, one in five has a health care specialty. For enlisted, the figure is one in seven. Yet recruitment of health care professionals, said Newton, "has been—and we suspect will always be—a significant challenge for us."

Exploding demand in the civilian health care sector, plus the continued decline in the number of military hospitals, has only made this task more difficult. It has meant that recruiters have to work a bit harder for medical workers, said Newton.

Recruits come from three sources: working physicians attracted by the military lifestyle and opportunities; residents, who are eligible for a military financial assistance program; and the Pentagon's health professional scholarship program.

The latter program is a primary conduit for physicians coming into the armed services. The Air Force awards over 200 medical scholarships a year.

In 1997, the recruiting goal was 99 physicians. That represents a 50 percent drop from the early 1990s goal of more than 200 a year. The Air Force met its physician goal in 1997, said Newton, and is likely to do so again in 1998.

Air Force recruiters have also consistently met their goals for attracting nurses into the service. In 1997, they recruited 396 nurse candidates—one more than their goal.

Changing Times at the VA

The Department of Veterans Affairs, like the Department of Defense, is changing the way it thinks about medicine. Increasingly, the focus is on health care itself, not on the infrastructure of hospitals, said Dr. John Howe, president of the University of Texas Health Science Center at San Antonio.

In March 1993, the VA system contained 54,000 hospital beds. In September 1997, the figure was 31,000.

At the same time the number of VA clinics and partnership agreements with research foundations and academic medical centers is rising, reflecting a new emphasis on ambulatory care.

The VA is undergoing other profound changes, as well, such as an attempt to lower the system's average cost per patient by 30 percent and establishment of 22 regional provider networks. But as it embarks on this transformation, citizens need to remember that the VA system is a safety net for the country.

As the pendulum has swung away from big government, "one of the anchors in the storm is the VA system and its commitment to the poor," said Howe.

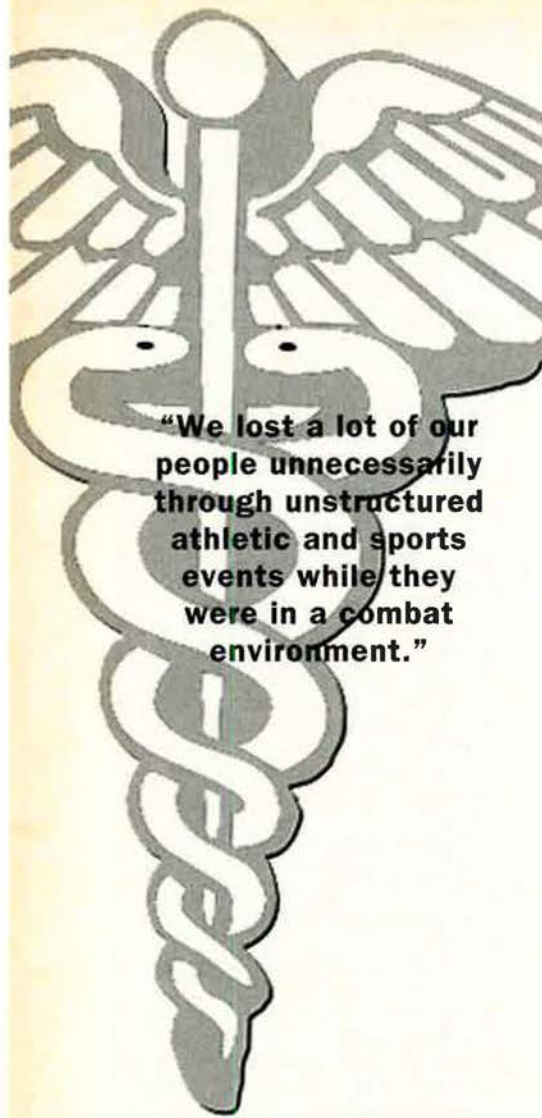
Seventy-one percent of VA users have incomes under \$20,000 a year, pointed out Howe. The comparable figure for the general population is 33 percent. Two-thirds of VA users have no health insurance. Eighty percent are unable to work.

"That is a profile of a population in need and that is not usually part of the equation when we think about the importance of the VA," said Howe.

Fleeing Dentists

However, dental care is another story. The field is plagued by a high attrition rate, among other things. The Air Force recruiting goal for dentists has increased from 60 in the early 1990s to over 125 for 1996 and 1997. Actual accessions were about 70 for both years, despite such inducements as a signing bonus of upwards of \$30,000. "Dental recruitment has been a tough nut to crack," said Newton.

The deployment of USAF health care recruits who are now entering the Air Force mirrors that of personnel service-wide. In today's era of expeditionary air operations, most forces are concentrated at bases in



"We lost a lot of our people unnecessarily through unstructured athletic and sports events while they were in a combat environment."

the United States and make extended TDY deployments overseas. In the medical field, too, more troops will be based in the continental United States.

Already, cutbacks in forward deployed medical forces have been considerable. At the time of the fall of the Berlin Wall in late 1989, the Air Force had some 40 Military Treatment Facilities spread across the European theater, for instance. Today, there are fewer than a dozen.

This shrinkage has profound implications for the military's theory of combat medical care.

In the past, planning called for most treatment to be done in theater. Today, all the services "are just looking at that care that absolutely has to be done in theater and then moving that individual to more definitive care which is usually going to be in the continental United States," said Brig. Gen. Linda J. Stierle, director,

Air Force Medical Readiness Doctrine and Planning and Nursing Services.

That means the fixed-wing air medical evacuation airplanes of the service have become an even more important national asset than they were in the past, according to Stierle.

The Air Force still counts on flying in medical care for forward-based units. Due to today's fast pace of operations, the Air Force can anticipate that every month three or four air transportable hospitals and, at any given time, 300 medics will be on deployment somewhere in support of a contingency.

In the past, injured personnel would not have been evacuated from a theater if doctors anticipated that they would return to duty within 30 days. Today, the policy is seven days.

Stierle said, "If you are injured in a combat zone ... [and] we cannot return you to do duty within seven days, then you will be evacuated."

If doctors do not anticipate that the injured person will be well enough to fight again in 15 days, then the patient will be air evacuated, likely to the United States.

The reason for the change: It is easier to move people back than to move more medical equipment forward. Lift capacity defines everything. "We are talking about having to move stabilized patients, not stable patients, ... patients [who] could deteriorate in flight," said Stierle.

Air Force medical officials tested this concept during Patriot Med Star, a 1995 air medical evacuation exercise. The Air Force converted a C-141 to critical care capability, through adding oxygen and electrical support for 12 vent-dependent patients.

"We were able to demonstrate that we could use the C-141 in that capacity," said Stierle. "But as we look to the future, even for us, information superiority and emerging technology is very important."

Unconventional Problems

Better air evacuation equipment is not the only new medical equipment on Air Force priority lists. The potential rise of unconventional weapons has created some burning issues that need to be addressed through R&D, said Lt. Col. Mark Ediger, chief of aerospace medicine, Air Force Medical Operations Agency.

Current anti-laser eye protection is inadequate, for instance. It alters color vision significantly, perhaps rendering warning lights invisible. Better protection against toxins, heat, and cold are high on Ediger's wish list, as are fatigue countermeasures.

Expeditionary pilots will face tremendous jet lag as they begin combat operations. "Even though we may be able to help them sleep at certain times, we don't have the means right now to adjust their circadian rhythm," said Ediger.

Caring for the wounded is not the sole purpose of the Air Force medical network. The health readiness of all Air Force personnel is becoming an increasing emphasis for service doctors, noted Maj. Gen. Earl "Wynn" Mabry, commander of the Air Force Medical Operations Agency.

One lesson learned from the Gulf War was that the Air Force did not have a good information base on the health of its people before deployment to the Kuwaiti theater of operations. That has made the evaluation of Persian Gulf illness syndrome, and any possible proximate cause, much more difficult.

"Part of our commitment as we put people into harm's way in the future is we will know their health status and risk factors going in, while they are there, and coming back," said Mabry.

As a result, every active duty individual is now supposed to have an annual health assessment and risk appraisal. Results will be tracked by computer—a difficult assignment considering it will involve such variables as status of immunization against anthrax, a process which takes six shots over 18 months.

Another Gulf lesson learned was that many in theater casualty producers are avoidable. While the war against Iraq was far from typical in its low battle casualty count, the main cause of troop air evacuation was not bullets, shrapnel, or even disease. It was sports injuries.

"We lost a lot of our people unnecessarily through unstructured athletic and sports events while they were in a combat environment," said Mabry. "Those are things that are preventable."

With a smaller force available to fight, troops will have to be more fit than ever before. Commanders cannot afford the daily kinds of illnesses

and injuries they have tolerated in the past.

From the top down, said Mabry, Air Force leaders should do their best to eliminate superfluous risk factors. Anti-smoking and anti-alcohol campaigns could provide major benefits in this regard, he said, noting that DoD spends a billion dollars a year to take care of illnesses related to tobacco and alcohol. He added that alcohol alone accounts for an estimated \$12.7 million in lost productivity every year.

Health centers, using one-on-one or mixed-group counseling, have proven effective against these problems. With respect to smoking, said Mabry, "we are down below 25 percent over all, and some bases ... are even below 20 percent."

Focusing on Fatties

Aerobic fitness remains a concern, as well. About 72 percent of Air Force personnel are now judged in moderate to high aerobic shape. "We are targeting to work hard on the 20 percent in the low-fit category," said Mabry.

The Air Force has been the butt of jokes by the other services for switching to bicycles from the 1.5-mile run for fitness testing, but the change has been a success, in this sense: During running tests, a certain percentage of the most unfit personnel collapsed and died of cardiovascular failure.

"We're not saying it is the absolute ultimate, because it is expensive, ... but we've been doing this for five years, and I can tell you we have not lost anybody," said Mabry.

As befits its importance to the force, military health care is a hot topic for the nation's lawmakers. Retirees and current service members alike contact their members of Congress with concerns about access to and availability of care, said Julie Turner, a staff member in the office of Rep. Charles Stenholm (D-Texas).

Rumors, particularly about possible closing of more military hospitals, spread among constituents like wildfire.

There is concern not only about the actual access to care "but about the perception that there is some kind of loss, that there is a decrease and less availability of care," said Turner.

Cost to the federal government is another lawmaker concern.

"The money, at this point, is not there for the next couple years to do any type of increase ... in military spending overall and in military health care in particular," said Turner.

Congress approved a test of Medicare Subvention despite opposition from the Republican House leadership, said Stenholm's aide. Lawmakers will insist that the test be budget neutral—not cost the government a dollar extra—she added.

FEHBP is now the legislative military health issue of the day. While there would be obvious benefits to opening the federal employee health plan to military retirees, there are downsides as well, said Turner.

"It is a different kind of system, one where you have to contribute through your full lifetime," she said.

And the co-share cost can be substantial. Blue Cross costs some \$603 annually for a single person, for instance, with a 5 to 25 percent co-payment for each doctor visit.

"Dicey"

While an FEHBP demonstration would likely pass if it reached the House floor, the complicated process of committee approval means the legislation's success "is still a little dicey," said Turner. However, some tinkering with Tricare is likely, she said, such as raising of some reimbursement rates.

Tricare implementation has not exactly been a success in all areas of the country. James E. Woys, chief operating officer of Foundation Health Federal Services, admitted that working in health maintenance organizations in general and Tricare in particular makes him something of a target these days.

Foundation Health Federal Services has won three of the Tricare regional contracts. While implementation has gone smoothly in some areas, in one—

the south-central Region 6, and particularly in areas of Texas—it has not.

"Abilene [Texas] was a disaster," said Woys. "We didn't do a very good job in claims and processing when we brought up Region 6."

Hopefully, a lot of money and attention has solved these problems, he said, but attracting full provider networks in some rural areas remains difficult.

Part of the reason is simply regional acceptance of managed care, said Woys. In California, where such plans are widespread, he can get providers to give him a 15 to 20 percent discount on rates to qualify for Tricare business.

In Texas, where managed care is still in its infancy, and primary care physicians make more than they do in California, resistance to such discounts is widespread.

Woys said he is aware of the widespread suspicion that managed care means slowing down or denying medically appropriate treatment. However, he said, "I have never once ... been in a meeting where anybody has suggested denying care."

The Air Force health care strategy rests on four pillars: medical readiness, Tricare, right-sizing, and building healthy communities, concluded Lt. Gen. David L. Vesely, USAF assistant vice chief of staff.

Readiness is both a peacetime and a wartime function. It means everything from a flexible organization for health care professionals, to physical exams and current vaccinations for the force as a whole.

Tricare, the peacetime health program, is essential to the force quality of life. "Many of the problems with Tricare have been identified, and I know that all of you are working to resolve those problems," said Vesely.

Right-sizing means concentrating the active medical force on military unique missions, and privatizing or outsourcing other capabilities when necessary.

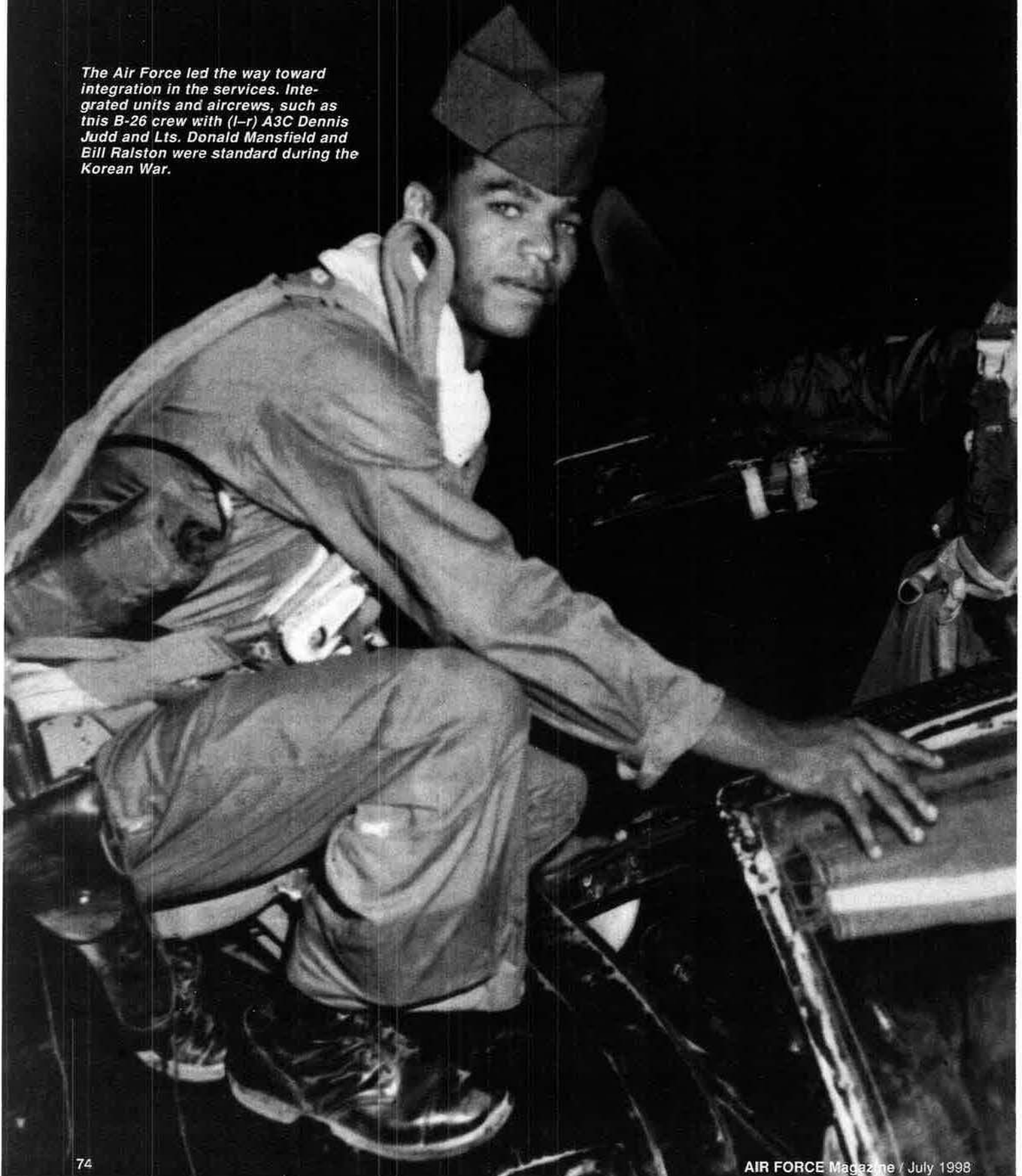
Building healthy communities means encouraging healthy life styles and enhancing availability of preventive health services.

"It does no good to advise a patient to obtain a mammogram or a cholesterol screening if she or he can't get that service in a timely fashion," said Vesely. ■

Peter Grier, Washington bureau chief of the Christian Science Monitor, is a longtime defense correspondent and regular contributor to Air Force Magazine. His most recent article, "Troubles With Tricare," appeared in the June 1998 issue. Another, "Readiness in a Downdraft," appears on p. 65 of this issue.

Fifty years ago this month, racial segregation was abolished in the armed forces.

The Air Force led the way toward integration in the services. Integrated units and aircrews, such as this B-26 crew with (l-r) A3C Dennis Judd and Lts. Donald Mansfield and Bill Ralston were standard during the Korean War.



When the Color Line Ended

By Herman S. Wolk



THE summer of 1998 marks the 50th anniversary of President Harry S. Truman's executive order directing the military services to enforce "equality of treatment and opportunity for all persons ... without regard to race, color, religion, or national origin." Truman directed that this policy be put into effect as soon as possible, consonant with efficiency and morale. Prior to the President's action, the fledgling United States Air Force in 1948 had already begun to move toward integration. Secretary of the Air Force Stuart Symington possessed the vision to lead the service in throwing off the shackles of segregation, in effect setting an example for American society.

The story of how the Air Force, in a few short years after World War II, moved from "segregated skies" to fully integrating its forces revolves around several themes: clear recognition of segregation as an inefficient military use of manpower; increased pressure from the African-American community; election-year politics in 1948; and farsighted leadership provided by officers and civilians in the Air Force and defense establishment.

The US Army (including the Army Air Corps) prior to World War II reflected the biases of American society; there were few blacks (in 1937, only 6,500 in an Army of 360,000) and segregation was the norm. During the military buildup prior to the Japanese attack on Pearl Harbor, the War Department directed the Air Corps to develop a plan for increased numbers of black Americans. These troops were to be in segregated units, in keeping with long-standing Army policy.

Separate but Equal

The Air Corps decided to establish technical training for African-



Tuskegee Airmen like Lt. Clinton Mills (left) and Lt. Howard Baugh—here chalking up on a P-40 their morning's score of Nazi vehicle kills—contributed to the outstanding record compiled by African-Americans in World War II.

Americans at Chanute Field, Ill., and pilot training at Tuskegee, Ala. The Air Corps directed that facilities at Tuskegee would be “fully equivalent, with respect to the character of living conditions, facilities, equipment, and training, to that provided for white personnel under similar conditions.”

In other words, the concept was “separate but equal.”

The Army's Chief of Staff, Gen. George C. Marshall, said that, in World War II, society dictated that it was absolutely necessary for the War Department to follow a policy of segregation. The military, he reasoned, should not be on the leading edge of change in this regard. However, after the Pearl Harbor tragedy, with increasing numbers of African-Americans entering the service, the Army Air Forces faced the difficult problem of attempting to absorb large numbers of blacks in a relatively short time.

The armed forces thus became a kind of proving ground. The military was forced to confront—within units and in the communities surrounding its bases—the same racial problems that plagued American society as a whole.

By June 1944, there would be almost 150,000 African-Americans in the AAF in a force of over two million. Most served in support units such as air base defense, quartermaster, ordnance, and transportation. The majority were assigned to jobs

in aviation squadrons which did not require high skill levels. Not surprisingly, employment of these large numbers of Americans in menial tasks resulted in low morale amongst the troops, who protested being relegated to segregated units.

It was the black flying units, however, that attracted the most attention. In January 1941, the War Department announced the establishment of the 99th Pursuit Squadron and the Tuskegee training program. Observers noted that the Air Corps decided on pursuit training because bomber training would have required navigators, bombardiers, and gunners, with the great pressure this would have placed on segregated facilities. Subsequently, the AAF formed the 332d Fighter Group, consisting of three additional squadrons.

The 99th arrived in the Mediterranean theater in 1943 and the 332d deployed in early 1944 to the same theater. The AAF did form a black bombardment group, the 477th, which trained in 1944–45 at Selfridge Field, Mich., Godman Field, Ky., and Freeman Field, Ind. Subsequently, units of the 477th joined returning personnel of the 332d to form the 477th Composite Group, headed by Col. Benjamin O. Davis Jr., a 1936 graduate of West Point and son of Brig. Gen. Benjamin O. Davis Sr., who at that time was the highest ranking African-American officer. During the war, the younger Davis commanded the 99th and then the 332d.

The 99th and the 332d enjoyed success in the Mediterranean theater, and in mid-1944 the 99th joined the 332d. The group, under Davis, participated in campaigns in Italy, France, Romania, Germany, and the Balkans. The 332d Group earned the Distinguished Unit Citation. Lt. Gen. Ira C. Eaker, commander in chief of the Mediterranean Allied Air Forces, noted that the 332d performed well in combat. The 477th Bombardment Group, however, suffered a different experience. It began training at Selfridge, moved to Godman Field, then to Freeman Field, and then back to Godman. White officers of the 477th were indifferent to the needs of the unit, and after more than 100 black officers staged a walk-in protest at the segregated officers club at Freeman Field in April 1945, this unit was on the verge of collapse. By the end of the war, it never had an opportunity to perform its mission.

The Role of Parrish

Despite overcrowding at Tuskegee Field, the 99th and the 332d, both units commanded by black officers, were fortunate to have Col. Noel F. Parrish as Tuskegee Field commander from December 1942 to 1946. Parrish was an enlightened Kentuckian who worked well with blacks and whites. He understood problems in the South and improved relations with the town of Tuskegee. He addressed local groups and understood white Southerners. Morale at Tuskegee improved and Parrish earned the respect of blacks. One African-American pilot noted: “The only thing that struck me was why have a white in charge of the base when there were qualified blacks, but if there had to be a white, he was the best one.”

The AAF's experience with black units during the war indicated that the most important factors were the attitude and competence of the local commander. Parrish was a standout, but unfortunately, other commanders lacked his ability to understand the dynamics of race relations and how to improve morale. The fact was that African-Americans were patriotic. They made outstanding contributions to the war effort at home and abroad, but they were indignant at segregation in society and in the military. The black community during the war fought segrega-

tion and kept the pressure on the War Department to change its discriminatory policies. This pressure forced the Army Air Forces to increase opportunities for African-Americans.

Thus, in the immediate postwar period, the military realized it would have to formulate new racial policies. Pragmatically, military efficiency demanded it. In the wake of demobilization, there would be a higher percentage of blacks in the military since many wanted the security of a military career, preferring not to re-enter a hostile society. The AAF quickly realized that it had to make much more effective use of manpower, and this meant bringing African-Americans into skilled jobs.



Benjamin Davis Jr., in the cockpit of his P-51 (above), was barred initially from flight training because of color but went on to lead black flying units and to become the first African-American Air Force officer to achieve general's rank. He set an example for black airmen like SSgt. William Accoo (above), whose meticulous care of a Mustang gives it a mirror finish.

After the Japanese surrender, based on a recommendation by Assistant Secretary of War John J. McCloy, the Secretary of War, Robert P. Patterson, directed Marshall to appoint a board to review the Army's racial policy. The board, chaired by Army Lt. Gen. Alvan C. Gillem Jr., was ordered to formulate a policy to more efficiently employ African-Americans in the postwar Army.

The Gillem board noted that the Navy's use of "limited integration" had improved the performance of blacks without attendant race problems. Late in the war, the Navy had integrated vessels in the auxiliary

fleet. However, the great majority of black sailors remained in the separate Steward's Branch. The board concluded that the Army must make efficient use of black manpower in a proportion corresponding to civilian society and "must eliminate, at the earliest practicable moment, any special consideration based on race ... and should point towards the immediate objective of an evaluation of the Negro on the basis of individual merit and ability."

Not Nearly Enough

Although the board's proposals amounted to a clear advance, crit-

ics—including Truman K. Gibson, a notable black American who had advised the War Department on racial policy—emphasized that the report lacked a clear statement on segregation; failed to recommend elimination of the black quota based on a percentage (10 percent) of the civilian population; and also failed to articulate specific steps toward integration. The AAF's reaction to the report was perhaps best summed up by Eaker, at the time AAF deputy commander, who concluded the War Department "should never be ahead of popular opinion" in this matter. Eaker, however, also made clear that the AAF should emphasize integrated flying schools and that blacks should be based where community attitudes were favorable.

Gen. Dwight D. Eisenhower, Army Chief of Staff, and Patterson approved the Gillem board's report, which was published as War Department Circular 124, in April 1946. Nonetheless, the fact remained that the War Department had not yet arrived at the point of ordering integration of its forces. As noted, after the war black civil rights groups in the United States stepped up their campaign to end segregation in the military. Although the Gillem report stopped far short of calling for integration, significant changes were on the horizon. Having achieved independence in September 1947, the United States Air Force was prepared to move in new directions, and this included race relations. Even prior to becoming the first Secretary



Lts. Dempsey Morgan, Carroll Woods, and Bob Nelson, Capt. Andrew Turner, and Lt. "Lucky" Lester of the 100th Fighter Squadron were some of the pilots whose skills forced the AAF to look into increasing opportunities for blacks.

of the Air Force, Stuart Symington, as assistant secretary of war for air, recognized the need for equal opportunity for African-Americans. His mother had been one of the earliest civil rights advocates in Baltimore. As president of the Emerson Electric Manufacturing Co. of St. Louis, Symington made it a point to place blacks in professional positions. He also integrated the cafeterias and the smoking lounges. Symington was not only a tough-minded businessman, he deeply believed in equal opportunity.

Symington's first months as Air Force Secretary coincided with initiation of a study ordered by Lt. Gen. Idwal H. Edwards, deputy chief of staff for personnel, on the impact of segregation in the Air Force. Edwards had been a member of the McCloy committee, and he believed that the Air Force's policy on the employment of blacks was wasteful and had a negative impact upon effectiveness. In early 1948, Edwards directed Lt. Col. Jack F. Marr to investigate and deliver an in-depth study of segregation in the Air Force.

"Eliminate Segregation"

Marr found waste and inefficiency. The 10 percent quota remained a serious problem; in the all-black 332d, for example, in the event of a combat situation, it would not be possible to find sufficient replacements to maintain the unit. Based on Marr's study, Gen. Carl A. "Tooeey"

Spaatz, the first Air Force Chief of Staff, emphasized in April 1948 that the Air Force must "eliminate segregation among its personnel by the unrestricted use of Negro personnel in free competition for any duty within the Air Force for which they may qualify." Meanwhile, the Army was dragging its feet. Army Secretary Kenneth C. Royall stated that his service would attempt to improve the status of blacks within a segregated Army. Royall seemed perturbed that the Air Force continued, under Symington, to move toward integration.

There were also difficulties within the Air Force. In 1948, some amongst the top leadership opposed integration. Assistant Secretary of the Air Force Eugene M. Zuckert, whom Symington had designated as his project officer for integration, noted that there were many who needed to be convinced that integration would work for the Air Force. On the other hand, there was an important, dynamic coterie that took its lead from Symington. During a meeting of the Air Board in early January 1948, Jimmy Doolittle, Air Force Association president, retired Maj. Gen. Follett Bradley, and Edwards strongly advocated integration. "I am convinced," emphasized Doolittle, "that the solution to the situation is to forget that they are colored." Industry was in the process of integrating, Doolittle said, "and it is going to be forced on the military. You are merely postponing the inevitable and you might as well take it gracefully." The Air Board noted Army Secretary Royall's reluctance, the problem being the "Army's concept" of moving toward integration.

Symington, Zuckert, and Edwards pressed the issue. In retrospect, it is clear that they made the difference. Symington in effect told the Air Force leadership to get with the program. Then, in mid-1948, the entire landscape of race relations was transformed by President Truman. The subject of civil rights already had been thrust to the forefront in this



Top USAF leaders pushed the newly independent service toward "unrestricted use of Negro personnel." Here in 1950, Cpl. William Robinson and Pfc. Christopher Otey Jr. man radio facsimile equipment for the 2143d Air Weather Wing, Tokyo.

election year by the work of the President's Committee on Civil Rights—which addressed, among other issues, discrimination in the military—and by Truman's Feb. 2, 1948, message to Congress. Although he noted that progress had been made in the armed services, Truman in his message declared: "I have instructed the Secretary of Defense to take steps to have the remaining instances of discrimination in the armed services eliminated as rapidly as possible. The personnel policies and practices of all the services in this regard will be made consistent."

Truman's emphasis on civil rights in 1948, and his acceptance of a strong platform in this regard at the Democratic convention, would lead to a walkout by some Southern states and the birth of the "Dixiecrat revolt." The President persevered, however. Truman had been genuinely outraged at violence perpetrated against blacks in the South.

Truman's Order

Aided by political advisors Clark M. Clifford and Oscar R. Ewing, among others, Truman on July 26, 1948, issued Executive Order 9981—shown in advance to the reluctant Royall—which stated "there shall be equality of treatment and opportunity for all persons in the armed services without regard to race, color, religion, or national origin. This policy shall be put into effect as rapidly as possible." Truman directed creation of the President's Committee on Equality of Treatment and Opportunity in the Armed Services (known as the Fahy Committee) "to examine into the rules, procedures, and practices in order to determine in what respect such rules, procedures, and practices may be altered or improved with a view to carrying out the policy of this order."

It should be noted that Truman's Secretary of Defense, James V. Forrestal, was an advocate of equal opportunity although he believed that integration could evolve only through specific actions and educational programs of each of the services. Crit-



The Air Force efforts to judge individuals on their capabilities gave rise to such outstanding leaders as Daniel "Chappie" James Jr., here a colonel commanding the 7272d Flying Training Wing, Wheelus AB, Libya. James became USAF's first African-American four star general.

ics denounced Forrestal's approach as "gradualism."

Truman's executive order lent great impetus to the drive toward integration. The Air Force was already on the move. The President's committee would monitor the progress of the services. Symington declared that integration was "the right thing to do" morally, legally, and militarily. Edwards noted in early 1949 that black officers and airmen could now be assigned anywhere in the Air Force according to their qualifications "and the needs of the service." African-Americans would no longer be assigned solely to black units. They would be assigned according to merit rather than quotas. Thus, Benjamin Davis' 332d Fighter Wing would be deactivated, with its men reassigned throughout the Air Force. Black service units would also be deactivated.

As to why the Air Force did not instantly integrate, Marr, who wrote the Air Staff's integration study, emphasized to the Fahy Committee: "We are trying to do our best not to tear the Air Force apart and try to reorganize it overnight." Also, the Air Force wanted to reassure its own doubters that the task could be com-

pleted efficiently. Some have observed that the Air Force almost had completed integration of its forces before the Army even started.

Although historians have generally concluded that integration was primarily fueled by the strictly pragmatic approach of efficiency and the politics of President Truman, an anti-racist philosophy in the Administration certainly existed. At the highest levels of government, this was best expressed by Truman and Secretary Symington. The President, along with close associates Ewing, David Niles, and Clifford, was appalled at the treatment that returning black veterans had received, especially in the South. Symington was a believer, an integrationist whose experience with industry preceded him into government. Everyone in the Air Force would be judged on capabilities. It can truthfully be said that Symington's view was simply, "Get the job done," without regard to race.

In mid-1950, the Army finally agreed to abolish its racial quota, and the Navy gave petty officer status to stewards. At the same time the President's committee pointed to the outstanding success in 1949 of the integration program in the US Air Force, where blacks had clearly demonstrated their ability.

By 1952, integration had been completed in the Air Force and the last segregated unit had been deactivated. ■

Herman S. Wolk is senior historian in the Air Force History Support Office. He is the author of The Struggle for Air Force Independence, 1943-1947 (1997) and a coauthor of Winged Shield, Winged Sword: A History of the United States Air Force (1997). His most recent article for Air Force Magazine, "The First Five Years of the First 50," appeared in the September 1997 issue.

Books

Compiled by Chanel Sartor, Editorial Associate

Bundy, William. *A Tangled Web: The Making of Foreign Policy in The Nixon Presidency.* Hill and Wang, 19 Union Square W., New York, NY 10003 (212-741-6900). 1998. Including photos, chronology, notes, bibliography, and index, 647 pages. \$35.00.

Cummings, Dennis J. *The Men Behind the Trident: SEAL Team One in Vietnam.* Bantam Books, 1540 Broadway, New York, NY 10036 (212-765-3535). 1998. Including photos and glossary, 255 pages. \$5.99.

Dibbs, John M. *Flying Legends: A Photographic Study of the Great Piston Combat Aircraft of WWII.* Zenith Books, 729 Prospect Ave., PO Box 1, Osceola, WI 54020-0001 (800-826-6600). 1998. Including photos and bibliography, 243 pages. \$39.95.

Fletcher, David. *Tanks in Camera: Archive Photographs From the Tank Museum, The Western Desert 1940-1943.* Books International, PO Box 605, Herndon, VA 20172-0605 (703-661-1500). 1998. Including photos and index, 186 pages. \$37.95.

Glantz, David M. *Stumbling Colossus: The Red Army on the Eve of World War.* University Press of Kansas, 2501 W. 15th St., Lawrence, KS 66049-3904 (785-854-4154). 1998. Including photos, maps, tables, appendices, notes, bibliography, and index, 374 pages. \$39.95.

Greenfield, Art, ed. *World and United States Aviation and Space Records.* National Aeronautic Association, 1815 N. Fort Myer Dr., Ste. 700, Arlington, VA 22209 (703-527-0226). 1998. Including photos and index, 408 pages. \$18.95.

Hallion, Richard P., ed. *Air Power Confronts an Unstable World.* Brasseys Inc., PC Box 960, Herndon, VA 22070. 1997. Including photos, notes, and index, 247 pages. \$32.95.

Kinzey, Bert. *F4U Corsair.* Squadron/Signal Publications, 1115 Crowley Dr., Carrollton, TX 75011-5010 (972-242-8663). 1998. Including photos, 80 pages. \$12.95.

Lamont-Brown, Raymond. *Kempeitai: Japan's Dreaded Military Police.* Books International, PO Box 605, Herndon VA 20172-0605 (703-661-1500). 1998. Including photos, maps, glossary, bibliography, and index, 182 pages. \$35.95.

Logan, Don. *The Boeing C-135 Series: Stratotanker, Stratolifter and other Variants.* Schiffer Publishing Ltd., 4880 Lower Valley Rd., Atglen, PA 19310 (610-593-1777). 1998. Including photos and appendices, 256 pages. \$49.95.

MacKay, Ron. *Walk Around: Hawker Hurricane.* Squadron/Signal Publications, Inc., 1115 Crowley Dr., Carrollton, TX 75011-5010 (972-242-8663). 1998. Including photos, 80 pages. \$14.95.

Mandales, Mark D. *The Development of the B-52 and Jet Propulsion: A Case Study in Organizational Innovation.* Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328 (202-512-1800). 1998. Including photos, tables, notes, appendix, and index, 191 pages. \$18.00.

McKenzie, E.D. *Boys at War, Men at Peace: Former Enemy Air Combatants Meet to Remember and Reconcile.* Vantage Press, Inc., 516 W. 34th St., New York, NY 10001 (212-736-1767). 1998. Including photos and bibliography, 313 pages. \$21.95.

Mesko, Jim. *U.S. Tank Destroyers in Action.* Squadron/Signal Publications, Inc., 1115 Crowley Dr., Carrollton, TX 75011-5010 (972-242-8663). 1998. Including photos, 50 pages. \$7.95.

Mitcham, Samuel W. Jr. *Rommel's Greatest Victory: The Desert Fox and the Fall of Tobruk, Spring 1942.* Presidio Press, 505 B San Marin Dr., Ste. 300, Novato, CA 94945-1340 (415-893-1081). 1998. Including photos, maps, notes, bibliography, and index, 243 pages. \$27.95.

Mowthorpe, Ces. *Battlebags: British Airships of the First World War, an Illustrated History.* Books International, PO Box 605, Herndon, VA 20172-0605 (703-661-1500). 1998. Including photos, bibliography, and index, 194 pages. \$22.95.

Neillands, Robin. *In the Combat Zone: Special Forces Since 1945.* New York University Press, 70 Washington Square South, New York, NY 10012-1091 (212-998-2575). 1998. Including photos, bibliography, and index, 350 pages. \$25.95.

Pattillo, Donald M. *Pushing the Envelope: The American Aircraft Industry.* The University of Michigan Press, 839 Greene St., PO Box 1104, Ann Arbor, MI 48106-1104 (734-764-4388). 1993. Including photos, tables, appendix notes, bibliography, and indices, 459 pages. \$45.00

Poteet, Lewis, and Martin Stone. *Plane Talk (Push You, Pull Me): A Lexicon of Aviation Words and Phrases, With a Special Section on Aircraft Names.* General Distribution Services, Ste. 202, 85 River Rock Dr., Buffalo, NY 14287 (800-805-1082). 1997. Including sources, 221 pages. \$9.99.

Prefer, Nathan N. *Patton's Ghost Corps: Cracking the Siegfried Line.* Presidio Press, 505 B San Marin Dr., Ste. 300, Novato, CA 94945-1340 (415-898-1081). 1998. Including photos, maps, appendix, bibliography, and index, 243 pages. \$24.95.

Price, Alfred. *Focke Wulf: FW190 in Combat.* Books International, PO Box 605, Herndon, VA 20172-0605 (703-661-1500). 1998. Including photos, appendices, and index, 192 pages. \$32.95.

Reed, R. Dale, with Darlene Lister. *Wingless Flight: The Lifting Body Story.* Government Printing Office, Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954 (202-512-2250). 1997. Including photos, appendix, glossary, bibliography, and index, 230 pages. \$25.00.

Spires, David N. *Beyond Horizons: A Half Century of Air Force Space Leadership.* Government Printing Office, Superintendent of Documents, Publication Customer Service, Washington, DC 20401 (202-512-1800). 1997. Including photos, appendices, notes, glossary, bibliography, and index, 383 pages. \$33.00.

Sweetman, Bill. *F-22 Raptor.* Motorbooks International Publishers and Wholesalers, 729 Prospect Ave., PO Box 1, Osceola, WI 54020 (800-826-6600). 1998. Including photos, appendix, and index, 96 pages. \$12.95.

Thompson, Warren E. *Northrop P-61 Black Widow.* Specialty Press Publishers and Wholesalers, 11481 Kost Dam Rd., North Branch, MN 55056 (800-895-4585). 1997. Including photos, diagrams, appendix, and chronology, 100 pages. \$16.95.

Van Wagner, R.D. *Any Place, Any Time, Any Where: The 1st Air Commandos in World War II.* Schiffer Publishing, Ltd., 4880 Lower Valley Rd., Atglen, PA 19130 (610-593-1777). 1998. Including photos, illustrations, appendix, and bibliography, 171 pages. \$39.95.

Waller, Douglas C. *Air Warriors: The Inside Story of the Making of a Navy Pilot.* Simon & Schuster, 1230 Avenue of the Americas, New York, NY 10020. 1998. Including photos, notes, and index, 416 pages. \$25.00.

Weiss, Jeffrey, and Craig Weiss. *I Am My Brother's Keeper: American Volunteers in Israel's War for Independence 1947-1949.* Schiffer Publishing Ltd., 4880 Lower Valley Rd., Atglen, PA 19310 (610-593-1777). 1998. Including photos, appendix, bibliography, and index, 288 pages. \$29.95. ■

The Pentagon says we can reduce nuclear weapons but not eliminate them entirely.

Why We Still Need Deterrence

The Need Still Exists

"Nuclear deterrence has always been a controversial subject, fostering much debate over the years. While the end of the Cold War has fortunately decreased the intensity of this debate, the issues of nuclear force posture and nuclear deterrence continue to be debated by individuals and groups who question the need for nuclear weapons in today's world, and, in some cases, call for the complete elimination of these weapons. ...

"However, we are not yet at the point where we can eliminate our nuclear weapons. For the foreseeable future, we will continue to need a reliable and flexible nuclear deterrent—survivable against the most aggressive attack, under highly confident, constitutional command and control, safeguarded against both accidental and unauthorized use, and capable of inflicting a devastating retaliatory response should deterrence fail."

"Gravest Threats"

"We will need such a force because nuclear deterrence remains an essential element to deal with the gravest threats. As stated in the Secretary's [Secretary of Defense William S. Cohen] 1998 Report to Congress, the United States must retain sufficient strategic nuclear forces and theater nuclear systems to help deter any hostile foreign leadership with access to nuclear weapons from acting against US vital interests and to convince such a leadership that seeking a nuclear advantage would be futile. We be-

Edward L. Warner III,

assistant secretary of defense for strategy and threat reduction, is the Pentagon's senior official for the handling of US strategic nuclear affairs. On March 31, 1998, Warner delivered a major statement on nuclear deterrence to the Senate Armed Services Strategic Forces Subcommittee, portions of which are presented here.

lieve that these goals can be achieved at lower force levels and are accordingly taking the lead in additional strategic arms reductions."

Why Deterrence?

"In view of all of the reductions we have already made and the steady progress of arms control, the question of why we need a nuclear deterrent at all following the Cold War is relevant.

"The Clinton Administration answered this question in the Nuclear Posture Review. The NPR recognized that with the demise of the Soviet Union, the dissolution of the Warsaw Pact, and the embarkation of Russia on the road to democracy, the strategic environment has been fundamentally transformed. Conventional forces can and should play a larger share of the deterrent role.

"Nevertheless, nuclear weapons continue to play a critical role in deterring aggression against the US, its overseas forces, and its Allies and friends. This is the case because the positive changes in the international environment are far from irreversible, and the threat posed by Weapons of Mass Destruction in the hands of rogue states has grown."

Theater Nukes Needed, Too

"The NPR reaffirmed that we need not only a strategic nuclear deterrent but also flexible, responsive non-strategic nuclear forces. Maintaining the capability to deploy nuclear forces to meet various regional contingencies continues to be an important means for deterring aggression, protecting and promoting US interests, and reassuring Allies and friends. As stated in the NATO Strategic Concept, the US nuclear weapons deployed in Europe provide an essential political link between the European and North American members of the Alliance."

The Question of Russia

"Russia has made great progress toward the creation of [a] stable market democracy, and we do not regard it as a potential military threat under its present or any reasonably foreseeable government. We have made wise investments in the Cooperative Threat Reduction program, and we share with the current Russian leadership (and most other Russian centers of influence) a determi-

nation not to let our relations return to a state of hostility in which these weapons would again be a threat.

"Nevertheless, Russia still possesses substantial strategic nuclear forces and an even larger non-strategic nuclear stockpile. Because of significant degradation in its conventional military capabilities, Russia appears to be placing even more reliance on its nuclear forces.

"Russia's new National Security Concept, promulgated in December 1997, states that 'Russia retains the right to use all available forces and means, including nuclear weapons, if armed aggression launched against it threatens the very existence of the Russian Federation as an independent, sovereign state.' It also states that 'the main task of the Armed Forces of the Russian Federation is to ensure nuclear deterrence, which is to prevent both a nuclear and conventional large-scale or regional war, and also to meet its allied commitments. To accomplish this task, the Russian Federation should have a potential of nuclear forces which can guarantee that planned damage will be caused to any aggressor state or a coalition of states.'

"We cannot be so certain of future Russian politics as to ignore the possibility that we may once again need to deter the nuclear forces of a hostile Russia should the current policy of democratic reform be replaced by a return to aggressive authoritarianism. We do not believe that such a reversal is likely and we are working hard to avoid it. Nevertheless, it is prudent to maintain a secure and capable nuclear force as a hedge against it happening."

No "Undeterrables"

"Even if we could ignore a future threat from Russia, there is a range of other potential threats to which nuclear weapons are a deterrent. China has a significant nuclear capability, and its future political orientation is far from certain. In addition, the number of rogue states with actual and potential WMD programs is considerable.

"We do not regard these states as undeterrable, either in their incentives to acquire a WMD capability or to use it. We believe that the knowledge that the United States has a powerful and ready nuclear capability poses a significant deterrent to proliferators. If any nation

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hostile
Russia

were foolish enough to attack the US, its Allies, or friends with chemical or biological weapons, our response would be swift, devastating, and overwhelming. As Secretary [William J.] Perry said in 1996, we are able to mount a devastating response without using nuclear weapons. Nevertheless, we do not rule out in advance any capability available to us."

"Indispensable" to US Security

"The US nuclear deterrent also helps to discourage the spread of nuclear weapons among our Allies and friends. The extension of our deterrent to those nations has removed any incentives they might have to develop and deploy their own nuclear forces, as many are technically capable of doing. ...

"Because nuclear deterrence will remain an indispensable part of our national security policy for the foreseeable future, the US nuclear deterrent must remain credible; its weapons systems and nuclear warheads must be safe, reliable, and effective." ■

AFA 1998 National Convention

Marriott Wardman Park Hotel, Washington, D.C., Sept. 14–16, 1998

Opening Ceremonies: keynote address by a national leader. Performance by the chorale of the Randolph–Macon Academy, the only coeducational all AFJROTC cadet school in the nation

Aerospace Education Foundation Luncheon featuring the 1998 AEF contest-winning AFJROTC unit; Doolittle, Eaker, and Goldwater Fellowships; awards for excellence in education

Business Sessions: national elections, adoption of AFA Statement of Policy

Awards: membership awards, national awards to Air Force, government, and AFA leaders and outstanding Air Force crews

Annual Reception in exhibit halls

Salute to the 12 Outstanding Airmen of the Air Force; address by USAF Vice Chief of Staff Gen. Ralph E. Eberhart; Toastmaster: CMSAF Eric W. Benken



International Airpower Symposium: AFA will host a special international airpower symposium during the convention. During the past few years, the international community has been faced with contingencies in Iraq, Rwanda, Korea, Liberia, Bosnia, and a host of other countries. Air operations are crucial in providing a rapid response to stabilize and resolve problems from humanitarian relief to conflict. World-renowned leaders will offer new perspectives on the strategic use of air operations to help resolve crises. Invited speakers include: members of Congress, Secretary of State, Secretary of Defense, Secretary of the Air Force, Chief of Staff of the Air Force, and international Air Chiefs. Building on the success of the 1997 International Symposium held at the AFA Air Force Fifty Celebration in Las Vegas, this 1998 symposium continues the AFA tradition of *Assuring America's Aerospace Excellence*.

Air Force Anniversary Dinner: an evening of entertainment and fellowship in honor of the 51st anniversary of the United States Air Force and recognition of AFA's top three awards to industrial, civilian, and military leaders

Aerospace Technology Exposition with more than 52,000 square feet of technology displayed by companies from all over the world. Exhibit halls open Monday, Tuesday, and Wednesday

Attention Industrial Associates: Exhibit space at AFA's Aerospace Technology Exposition is still available. Please call Pat Teevan at 703-247-5836 for information

Headquarters Hotel: Marriott Wardman Park Hotel (formerly the Sheraton Washington Hotel) 202-328-2000. Also, free housing service is available to match requests with vacancies at several area hotels: Washington DC Accommodations 800-554-2220

For further information call the AFA Fax Reply Service at 800-232-3563 or check the AFA Website at www.afa.org

Individual Tickets:

Tuesday Luncheon	\$75 each
Annual Reception	\$85 each
Outstanding Airmen Dinner and Reception	\$140 each
Anniversary Dinner	\$185 each

Note: Add \$10 to each ticket request postmarked after Aug. 30, 1998.

Recognized during this convention will be the:

- ★ **25th Anniversary of the return of the POWs from Vietnam**
- ★ **50th Anniversary of the US Air Force Reserve**
- ★ **50th Anniversary of the Berlin Airlift**
- ★ **75th Anniversary of the first nonstop flight across America, which paved the way for commercial aviation**

AFA / AEF National Report

By Frances McKenney, Assistant Managing Editor

AFA at Vietnam POWs' 25th Reunion

With Gene Smith, chairman of the board of the Air Force Association, among their members, the NAM-POWs veterans group gathered over Memorial Day Weekend in Dallas for their 25th anniversary reunion.

Billed as a celebration of 25 years of freedom, the five-day reunion brought together 277 former prisoners of war from the Vietnam War. They traveled from as far as Germany and Hawaii for what reunion chairman Bernard L. Talley said was the largest gathering of Vietnam-era POWs since their release in February 1973.

Chartered in Arizona that same year, NAM-POWs, Inc., brings together those who were prisoners of war in Southeast Asia during the period 1961-73. Retired Air Force Col. George E. "Bud" Day, a Medal of Honor recipient and member of the **Eglin (Fla.) Chapter**, served as the group's first president.

Today the NAM-POWs group numbers 530 members, including AFA's Smith, who was an F-105 pilot with the 355th Tactical Fighter Wing, Takhli RTAB, Thailand. On a mission targeting the Paul Doumer Bridge in Hanoi in October 1967, Major Smith was shot down by ground fire. He was a POW at Hoa Lo Prison ("Hanoi Hilton") and Son Tay until repatriation in 1973.

Former POWs Sen. John McCain (R-Ariz.) and Rep. Sam Johnson (R-Texas) flew down from Washington for some of the NAM-POWs 25th reunion events. Other special guests were Marine Corps fighter ace Robert E. Galer, Navy fighter ace William E. Lamoreaux, and USAF fighter aces John S. Loisel, Robinson Risner, and James H. Kasler. The latter two are NAM-POWs members.

Reunion attendees received a medical update from Navy Capt. (Dr.) Mike Ambrose, head of the Special Studies Department, Naval Operational Medicine Institute at NAS Pensacola, Fla. Ambrose provided information on the Navy's long-term medical study of POWs who were



AFA Chairman of the Board Gene Smith (second from right), a prisoner of war in North Vietnam for more than five years, was joined by USAF Chief of Staff Gen. Michael Ryan (center) at the NAM-POWs reunion that celebrated 25 years of freedom for POWs held captive during the Vietnam War. (L-r) Sam Trinh, Kien Ngyuen, and Son Ha, POWs from South Vietnam, were among the many special guests at the Memorial Day weekend event.



Before the NAM-POWs gala at the symphony hall in Dallas, AFA Chairman of the Board Smith (right) chatted with C.S. "Smitty" Harris, who became one of the first POWs in the Vietnam War when his F-105 was shot down in April 1965.

Photos by Fernando Sierra



held in captivity for an extended period. Former POW Dr. Thomas M. McNish, a retired Air Force colonel, delivered a briefing about the Department of Veterans Affairs' current activities.

At the Cavanaugh Flight Museum that evening, the guests enjoyed a flyby of military aircraft, museum tours, and a Mexican buffet. The museum also gathered Vietnam-era aircraft, such as the F-4 and F-105, for the guests to photograph.

A POW/MIA remembrance ceremony was a highlight the next evening at a formal gala held at the city's Morton H. Meyerson Symphony Center. The Dallas Wind Symphony provided entertainment for the attendees, who included Air Force Chief of Staff Gen. Michael E. Ryan and representatives of the other services.

To cap the last day of the reunion, the NAM-POWs held a service, offering a wreath in memory of those missing in action.

Among the many AFA members who organized the reunion were former POWs Kenneth W. Cordier of the Dal-



AEF Chairman of the Board Thomas McKee (right) greeted Rep. Ike Skelton (D-Mo.) at the F-22 educational exhibit and reception. The Capitol Hill reception was cosponsored by USAF's Legislative Liaison, whose director, Maj. Gen. Paul Hester (left), was among more than 30 senior USAF leaders present.

Photos by Paul Kennedy

las Chapter and Michael H. LaBeau of the **Northeast Texas Chapter.**

AFA helped sponsor the event, and

the Dallas Chapter hosted a luncheon for the POWs and guests on the final day of the reunion. Chapter volunteers also helped out with various events all weekend.

F-22 Exhibit a Capitol Success

An educational exhibit and reception spotlighting the F-22, USAF's first new fighter in 20 years, was held on Capitol Hill in May and garnered praise for the event's cosponsors, the Air Force's Legislative Liaison and the Air Force Association.

Rep. Floyd D. Spence (R-S.C.), chairman of the House National Security Committee and a proponent of the advanced tactical fighter, looked at the 11-panel information display and said it reinforced what he has been trying to tell his colleagues—that the F-22 is on schedule in its testing.

This reception was one in a series of Legislative Liaison-AFA educational events held in the Rayburn House Office Building. It featured an F-22 concept demonstrator, provided by Lockheed Martin, as well as AFA's display on the Raptor.



Rep. James Gibbons (R-Nev.) of the House National Security Committee makes a few points to Capitol Hill staffer Greg King (center) and USAF Capt. Dawn Suitor of the Donald W. Steele Sr. Memorial (Va.) Chapter. Seventeen members of Congress attended the F-22 exhibit and reception.

Attendees included G.V. "Sonny" Montgomery, who served 30 years in the House before retiring in 1995. Among the Mississippi Democrat's many accomplishments was development of the Montgomery GI Bill.

The House National Security Committee's ranking minority member, Rep. Ike Skelton (D-Mo.), and Rep. Saxby Chambliss (R-Ga.), cofounder of the congressional bipartisan Airpower Caucus, had the opportunity to meet acting Air Force Secretary F. Whitten Peters and more than 30 senior USAF leaders at the gathering.

Other committee members present were Reps. Herbert H. Bateman (R-Va.), Tillie Fowler (R-Fla.), James A. Gibbons (R-Nev.), Norman Sisisky (D-Va.), and Delegate Robert Underwood (D-Guam).

Rep. Todd Tiahrt (R-Kan.) of the Military Construction Appropriations Subcommittee attended, as did Reps. Bill Barrett (R-Neb.), Howard Coble (R-N.C.), John J. Duncan Jr. (R-Tenn.), Thomas Ewing (R-Ill.), Frank A. LoBiondo (R-N.J.), Michael R. McNulty (D-N.Y.), Joseph R. Pitts (R-Pa.), and Delegate Eni F.H. Faleomavaega (D-American Samoa).

National President Doyle E. Larson, Aerospace Education Foundation Chairman of the Board Thomas J. McKee, and National Director Mary Anne Thompson headed the list of AFA leaders at the gathering.

In all, the Legislative Liaison office counted 300 guests, to make it one of AFA's most successful Capitol Hill events. The turnout reflects an abiding interest among members and staffers in learning about weapon systems and programs on which they have to commit large amounts of money, commented Kenneth Goss, AFA's director of national defense issues.

Is Disarmament Possible?

AFA National President Doyle E. Larson was keynote speaker at a forum on disarmament sponsored by the United Nations Association of Minnesota and cosponsored by the **Gen. E.W. Rawlings (Minn.) Chapter** and the Minnesota Alliance of Peacemakers.

"The elimination of nuclear weapons must be done only when international safeguards make the step feasible," Larson said in his speech entitled "Is Disarmament Possible?" delivered at the University of St. Thomas in Minneapolis in May.

He told the audience that for two years at SAC headquarters, he flew



AFA National President Doyle Larson (right) attended the association's national policy symposium on military health care, a busy two days described by Alamo Chapter Vice President Kaye Biggar (left) as "a resounding success."

five times a month on EC-135 "Looking Glass" command-and-control aircraft that could launch a retaliatory nuclear strike if the ground C² capability was disabled. He also noted that he had monitored the Soviet Politburo closely and said, "There is every reason to believe our nuclear weapons served as a deterrent to the Soviets in the Cold War."

Larson's speech made the audience sit up and think, reported Chapter President William H. Engstrom. Afterward, several of the chapter members fielded questions raised by Larson's remarks. Richard O. Keer, a former missile wing commander; Jaromir "Jerry" J. Bon, who has served in Bosnia; and Engstrom, who described himself as "an old airplane driver," were among those answering questions such as: Could the number of nuclear weapons be reduced to zero? Were treaties viable? What role should the UN Security Council have in the process of treaty verification?

The forum attendees were a "non-choir audience," Engstrom explained, and he felt they were surprised by the in-depth expertise and experience the AFA members brought to the discussion.

The all-day event was part of the Minnesota UN Association Global Policy Project called "Options and Opportunities: Arms Control and Disarmament for the 21st Century."

First Time Success

The **Alamo (Texas) Chapter**

hosted several activities as part of AFA's national policy symposium, "Health Care: From the Clinic to the Battlefield," held in San Antonio in April.

Chapter member Ralph Charlip chaired the symposium, and member John Williams organized a golf tournament that attracted 136 players.

The chapter also sponsored a fiesta dinner. William V. McBride, national director emeritus; Edward W. Garland, Texas southwest area vice president; Clarence "Buster" Horlen, state executive vice president; Kaye H. Biggar, chapter vice president; and Robert J. Cantu, former chapter president, were among those who attended. Chapter members Connie C. Hutchinson arranged for entertainment by a mariachi band, and David C. Stoltz handled tickets.

Edward E. Kirkham Jr., chapter president, said that to place this event's success in context, he would have to point out it was the chapter's first occasion to host a symposium and supporting events. The chapter's Community Partners were key to the event's success, according to Kirkham.

Don Locke, the chapter's Community Partners committee chairman, helped rally BDM, Conceptual Mindworks, Merck, Rhone-Poulenc Rorer, and Security Service Federal Credit Union, among others. Kirkham was especially impressed with the donation of entire tables to the chapter by USAA and Onboard Software.



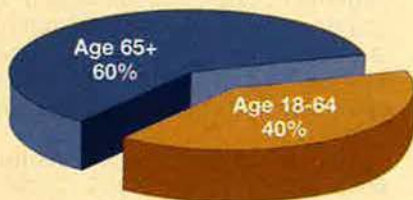
AFA LONG-TERM CARE PROGRAM ON THE HORIZON



It Can Happen to Anyone

No one likes to think about the possibility of needing long-term care, but the unfortunate reality is that many of us will someday require it. Sixty percent of those age 65 and older will need some form of long-term care,¹ and 43 percent will enter a nursing home at some point in their lives.²

But anyone, at any age, might need long-term care after an accident, an operation, or because of a chronic medical condition. In fact, of the more than 13 million Americans who need long-term care, 40 percent are working age-18 to 64.³



Percentage of people who need long-term care by age

You May Need Care for a Long Time

On average, people 65 and older stay in a nursing home two and a half years.⁴ Additionally, over 20 percent of those who enter a nursing home will stay longer than five years.⁵

Long-Term Care Is Expensive

Some people go through their entire life savings to pay for long-term care.

In the United States today, the average cost of nursing home care is over \$40,000 a year.⁶ Care at home costs over \$20,000 annually.⁷ And costs are continually rising.



Long-Term Care Is Expensive

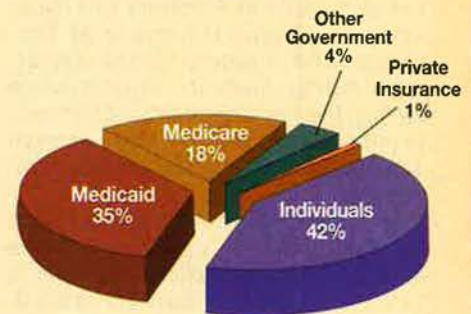
You're Not Covered

Most people learn about long-term care the hard way-when they or a loved one need extended care at home or in a nursing home. That's when they learn that they aren't covered for those costs.

The reality is, Medicare and other government programs were never designed to cover America's long-term care crisis. Health insurance covers very little long-term care... typically only short-term recuperative care after a hospital stay. Long-term disability insurance does not pay for long-term care; it only covers income loss.

The government program that does pay for some long-term care is Medicaid. However, because it is a welfare program, you cannot qualify until you've exhausted virtually all

your assets. As a result, most of the bill for long-term care services is paid by the people who need the care, or their extended families.



*Who Pays for Long-Term Care?**

One Possible Solution to the Long-Term Care Dilemma

AFA is concerned, on behalf of its members, about the long-term care dilemma. The majority of our members are not covered. Many of you asked if we could help, so we plan to respond to your needs. More information about AFA's new long-term care program will be presented to all members starting this fall.

References:

1. Project Report Prepared for HIAA, 1990.
2. New England Journal of Medicine, 1991.
3. United States General Accounting Office, 1995.
4. New England Journal of Medicine, 1991.
5. *Ibid.*
6. Health Insurance Association of America, 1997.
7. Long Term Care Group, Inc., 1997.

* Department of Health and Human Services, 1995


Convention Season: In the "Heart of Dixie"

The **Montgomery Chapter** hosted the Alabama State Convention in April, one of AFA's first conventions of the season.

Keynote speaker AFA National President Doyle E. Larson tossed out his prepared remarks when he spotted his mentor, Montgomery Chapter's Alvan C. Gillem II, former Air University commander, and instead spoke about their friendship and experiences. According to Roy A. Boudreaux, state president, the audience thoroughly enjoyed the war stories, particularly the AFROTC cadets. From the University of Alabama at Tuscaloosa, Tuskegee University at Tuskegee, and Alabama State University in Montgomery, the students were among the special guests at the convention, along with Lt. Gen. Joseph J. Redden, current Air University commander.

In a convention highlight, Francis J. "Pat" Kramer, president of the **Mobile (Ala.) Chapter**, received a 1997 Exceptional Service Award. Barry Metz, Montgomery Chapter vice president for aerospace education, presented Angela Bacon with an Aerospace Education Foundation Spouse Scholarship. Bacon was among 31 spouse scholarship recipients from the fall 1997 competition.

Frederick A. Zehrer III, Montgomery Chapter vice president, and Nancy R. Zehrer, Montgomery Chapter vice president for AFROTC affairs, served as emcees for the event.



Earl D. Clark Jr. (1923–1998)

Earl D. Clark Jr., an AFA national director emeritus and AEF national vice president, died June 1, 1998, at his home in Shawnee Mission, Kan.

An AFA member since 1947 and its Man of the Year in 1984, Clark served as national secretary for three years and as an AEF national treasurer and trustee.

His numerous AFA offices included national vice president (Midwest Region) and Kansas state president. He was also chairman of AFA's Relocation and Building committees.

He was honored with many AFA awards, among them a Presidential Citation, Medal of Merit, Exceptional Service Award, and Doolittle Fellowship.

A native of Kansas City, Kan., Clark served in World War II as an Eighth Air Force bomber pilot. He then earned a degree in architecture from the University of Kansas. Recalled to active duty for the Korean War, he again served with Eighth Air Force. He retired as a colonel in the Air Force Reserve after more than 40 years of active duty and Reserve service.

In his civilian career, Clark was owner and president of a construction company and worked as an architect and banker. As devoted as he was to AFA, he also found time to be active in many Kansas City civic organizations.

In the "Pelican State"

Among the proudest participants at the Louisiana State Convention in May was Daniel C. Hendrickson, national director, who traveled from Layton, Utah, to watch his son, Paul Hendrickson, lead the Tulane University AFROTC color guard at the gathering.

Hosted by the **Greater New Orleans Area Chapter**, the convention featured Aerospace Education Foundation Chairman of the Board Thomas J. McKee as keynote speaker for the banquet. He helped congratulate several ROTC and JROTC cadets during the awards portion of the dinner.

Karl K. "Kris" Cowart, a mechanical engineering student at Louisiana State University, Baton Rouge, was introduced to the audience as one of the 1998 winners of a prestigious Dr. Theodore von Karman Graduate Scholarship. Cowart was commissioned in late May out of LSU's ROTC program and will begin graduate work at Georgia Tech in mechanical engineering this fall.

The Aerospace Education Foundation awards von Karman scholarships of \$5,000 to five outstanding AFROTC graduates earning advanced degrees in math, engineering, or the sciences. The annual scholarship is named for the research engineer who developed applications of aerodynamics that improved aircraft performance.

Also recognized at the banquet were Chad James, ROTC Cadet of the Year, and Melanie McCall, Angel Flight Member of the Year. Both students are from Louisiana Tech University in Ruston, La. AFJROTC Cadet of the Year was Leslie E. Boggan of West Jefferson High School in Harvey, La.

During the two-day convention, the following were elected state officers: William F. Cocke of the **Ark-La-Tex (La.) Chapter**, president; Ralph W. Stephenson Jr., of the **Maj. Gen. Oris B. Johnson Chapter**, vice president; James E. Huggins, treasurer; and Bernice J. Harrison, secretary. Huggins and Harrison are both from the Ark-La-Tex Chapter.

Ivan L. McKinney, national vice president (South Central Region) and Marleen Eddlemon, a member of the AFA/AEF 2010 Committee, also attended the convention.



AEF Chairman of the Board Thomas McKee (left) and Louisiana State President Michael Cammarosano (right) introduced Louisiana State Convention-goers to Karl "Kris" Cowart (center), a 1998 recipient of AEF's Dr. Theodore von Karman Graduate Scholarship.

"Plenty of good times in the 'Big Easy,'" said Michael F. Cammarosano, Louisiana State president, summing up the convention.

In the "Garden State"

Flavio J. "Cy" LaManna was elected for a third term as state president at the New Jersey State Convention, held in May in Piscataway, N.J.

Also elected were Ethel Mattson of the **Thomas B. McGuire Jr. Chapter**, vice president at large; Robert E. Hodges of the **Union Morris Chapter** and Almalinda B. Fairlie of the **Mercer County Chapter**, vice presidents; Vincent S. Fairlie also of the Mercer County Chapter, treasurer; and Sue-Ann Yustas from the **Passaic-Bergen Chapter**, secretary.

Aerospace Education Foundation Chairman of the Board Thomas J. McKee was the convention's guest speaker and delivered a comprehensive slide presentation on his organization.

The convention opened with a Friday evening reception, with food—turkey, ham, roast beef, and all the trimmings—cooked by Dolores F. Vallone, national vice president (Northeast Region). She also headed the committee that organized the convention.

After the Saturday business session, conventioners took part in a drawing of door prizes to raise funds and that evening attended a Mardi Gras-theme dinner in the Wyndham Garden Hotel. McKee served as banquet speaker, with James E. Young of the **Hangar One Chapter** as master of ceremonies.

The JROTC unit from Scotch Plains-Fanwood High School provided a color guard for the events. LaManna said the unit had just that day been named the No. 1 JROTC unit in the country.

Thirty Scott Associates

Also in the Garden State, the **Thomas B. McGuire Jr. (N.J.) Chapter** held its annual awards dinner in March and presented 30 Scott Associate awards to enlisted members of the year who were selected by the 305th Air Mobility Wing, 514th AMW (AFRC), 108th Air Refueling Wing (ANG), 621st Air Mobility Operations Group, 314th Recruiting Squadron, Air Mobility Warfare Center, and NCO Academy.

From the 305th AMW—host unit at McGuire AFB, N.J.—the winners were 1st Lt. Jeffrey D. Hayden, company grade officer of the year; MSgt. Michael S. Yakowenko, senior NCO of the year; SSgt. Jennifer D. Noble, NCO of the year; and A1C Samantha

AFA Conventions

July 11, **Kansas State Convention**, Garden City, Kan.; July 17–19, **Texas State Convention**, San Angelo, Texas; July 17–19, **Virginia State Convention**, Hampton, Va.; July 24–25, **Oklahoma State Convention**, Oklahoma City; July 24–26, **Pennsylvania State Convention**, Carlisle, Pa.; July 25, **Florida State Convention**, Melbourne, Fla.; July 25, **Massachusetts State Convention**, Hanscom AFB, Mass.; Aug. 1, **Montana State Convention**, Three Forks, Mont.; Aug. 7–8, **Colorado State Convention**, Aurora, Colo.; Aug. 15, **Georgia State Convention**, Savannah, Ga.; Aug. 15, **Illinois State Convention**, Galesburg, Ill.; Aug. 15, **North Carolina State Convention**, Goldsboro, N.C.; Aug. 21–23, **California State Convention**, Vandenberg AFB, Calif.; Aug. 22, **Indiana State Convention**, Indianapolis; Aug. 22, **New Mexico State Convention**, Clovis, N.M.; Sept. 12, **Delaware State Convention**, Dover, Del.; Sept. 14–16, **AFA National Convention and Aerospace Technology Exposition**, Washington; Oct. 3, **Utah State Convention**, Ogden, Utah.

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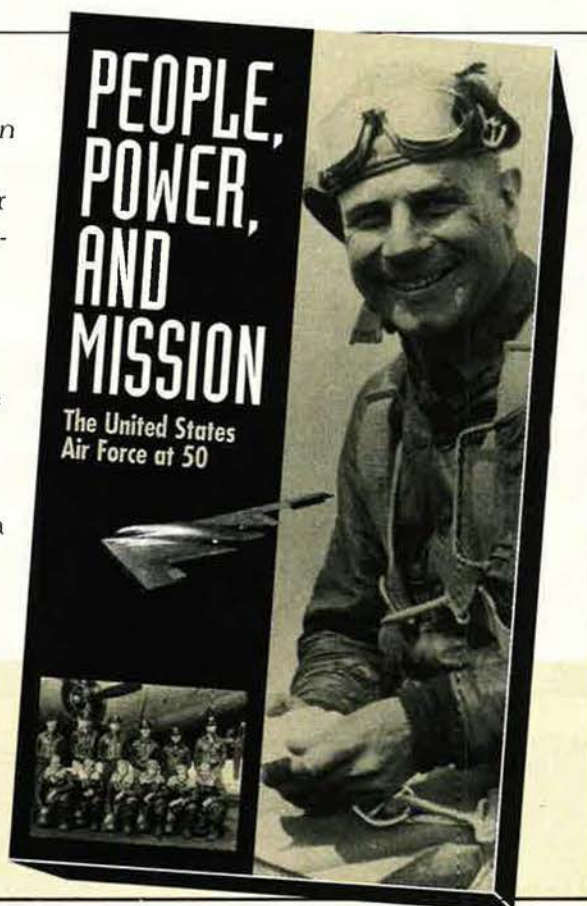
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Updegrave, airman of the year. Hayden and Yakowenko are AFA members.

Brig. Gen. Craig P. Rasmussen, 305th AMW commander and also a McGuire Chapter member, helped CMSgt. Michael Wysong, chapter vice president, present the awards to recipients from his wing.

Geraldine Jones, chapter secretary, said the awards dinner, now in its 20th year, is so popular among the units at McGuire that "they call us even before we advertise it to find out when it's going to be." This year, it was held at the McGuire AFB Officers Club.

Scott Associate awards represent a \$50 donation from the McGuire Chapter, in the name of the recipient, to the Aerospace Education Foundation.

Tri-State Convention

Hosted by the **Gen. E.W. Rawlings (Minn.) Chapter**, North Dakota, South Dakota, and Minnesota combined forces for a tri-state convention and workshop at historic Ft. Snelling on the outskirts of Minneapolis.

George E. Masters, national vice president (North Central Region), reported that the convention "got down

to the heart of what people really need" in his area: information on how to run a chapter. Discussions covered filing chapter reports, how to interest and mobilize the resources of Community Partners, newsletters, awards, and the Visions of Exploration program of *USA Today* and AEF.

Along with briefings from such organizations as the Civil Air Patrol and ROTC, the audience heard an address by AFA National President Larson. In his remarks, he continued the convention's emphasis on basic AFA operations and covered the topics of speakers' bureaus, awards programs, and the Air Force Memorial. He "tied our morning discussions together," noted Masters.

Former Women's Airforce Service Pilot Elizabeth Strofhufus capped the convention, entertaining the audience with stories about her experiences ferrying aircraft in World War II.

Rededication at Kitty Hawk

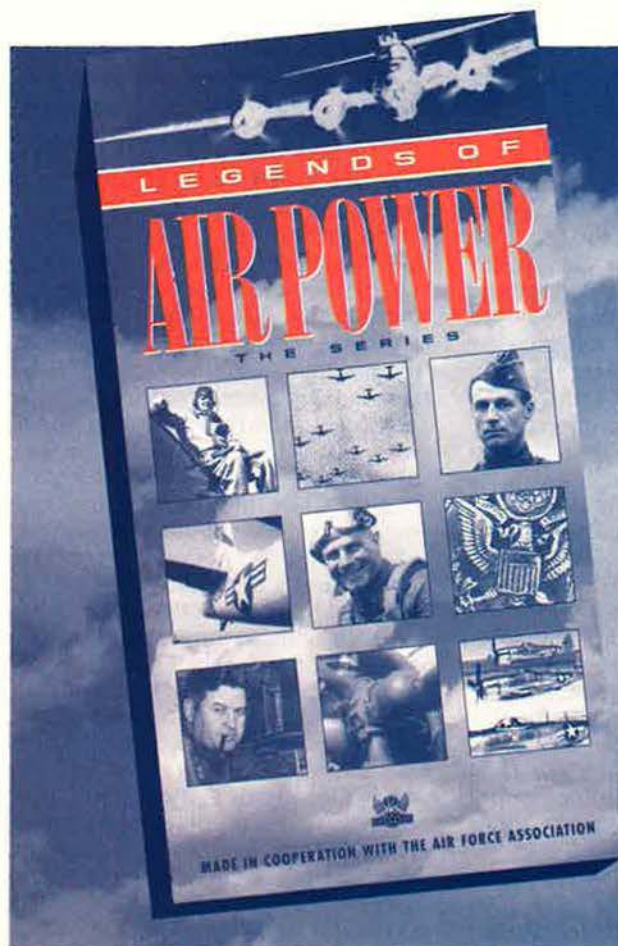
Orville Wright's grandnephew, former President George Bush, and astronaut Buzz Aldrin were among the VIPs who helped rededicate the Wright Brothers National Memorial in Kill Devil Hills, N.C., on May 2. Refur-

bishment of this memorial has been a longtime interest of the **Kitty Hawk (N.C.) Chapter**, which was among the organizations helping the primary sponsor, the First Flight Centennial Foundation.

Alton Jones, president of the Kitty Hawk Chapter, explained that the six-story granite pylon first opened to the public in 1932, with Orville Wright himself in attendance. Over the years, the monument began to show signs of age and exposure to the elements on North Carolina's Outer Banks.

The refurbishment included recaulking the granite and other repairs of structural damage. Another item that received attention was a rotating beacon atop the pylon. It had been out of service since the 1940s.

The rededication attracted a crowd of 8,000, Jones said. It included a flyby led by a Coast Guard C-130 and featuring a B-1 from Dyess AFB, Texas, an F-15 from Seymour Johnson AFB, N.C., an E-2 Hawkeye provided by the Navy, and other military and civilian aircraft. Along with Bush's speech, another high point was remarks from Aldrin, who joined Neil A. Armstrong in the first manned land-



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ing on the moon 29 years ago this month. Milton Wright, a grandnephew of the Wright brothers who lives in Dayton, Ohio, performed the rededication. David Hartman, a former host of the TV program "Good Morning America," served as master of ceremonies.

Turning on the beacon, with fireworks exploding behind it, completed the events. "It was a gorgeous evening," said Jones.

From the Ball

The **Dallas Chapter** received \$5,000 from the Dallas Military Ball Corp. The funds were part of the total amount raised through the 33d annual Dallas Military Ball, held in March 1997, and were formally presented to the chapter at its latest quarterly meeting in February.

Lt. Gen. Phillip J. Ford, 8th Air Force commander, was guest speaker at the meeting. He addressed the challenges and opportunities faced by USAF, including pilot retention and a high operations tempo, then helped present the \$5,000 check to the chapter.

William Solemene, a director of the ball and also the chapter's vice president for public affairs, explained that each year a different branch of service hosts the event, which was established by representatives from AFA, the Navy League, Association of the US Army, US Marine Corps Association, and Reserve and National Guard organizations.

The Air Force took its turn as host in its anniversary year, 1997. Solemene said the Dallas Chapter would use the donation for its aerospace education efforts, such as sponsorship of 40 classrooms participating in *USA Today*-Aerospace Education Foundation's Visions of Exploration program, Civil Air Patrol camps, and AFROTC and AFJROTC scholarships.

For a Song

In March, the **Richard I. Bong (Minn.) Chapter** honored the 148th Fighter Wing (ANG) and the 148th Fighter Wing Men's Chorus at a chapter quarterly meeting held at the wing's Duluth IAP facility.

The Guard unit was singled out for its support of the chapter's activities—for example, helping restore a P-38 Lightning, like the one flown by the chapter's namesake, World War II ace Maj. Richard I. Bong. Chapter members ANG Col. Timothy J. Cosalter, wing commander, and ANG CMSgt. Roger G. Brummer, wing



Bruce Bohn, president of the 1997 Dallas Military Ball Corp.; **Lt. Gen. Phillip Ford**, 8th Air Force commander; **M. Elisabeth Humphries**, Dallas Chapter president; and **William Solemene**, ball director, posed with the "check" the chapter recently received as its share in funds raised by the annual ball.

senior enlisted advisor, accepted an AFA plaque of appreciation.

The 10-member chorus—all enlisted men—was cited as "Ambassadors of Goodwill" because of their performances throughout the state.

John E. Swanstrom Jr., a Community Partner and also past president of the chapter, donated the awards.

Potential and Excellence

Patricia Accetta, secretary of the **Total Force (Pa.) Chapter** presented the Outstanding Cadet for the 10th Grade award to Andrew Senge, an AFJROTC cadet at North Allegheny Senior High School in Wexford, Pa.

Robert L. Carr, national director emeritus, and Tillie Metzger, the state's western region director, joined Accetta for the award presentation, held as part of the JROTC unit's 31st annual banquet and ball.

Cadet Senge's Aerospace Science Instructor is **Greater Pittsburgh (Pa.) Chapter** member James A. Miller. His team member ASI Rick Denault explained that many factors went into Senge's selection for the outstanding military potential and academic excellence award: his good grades, participation in the unit's color guard, drill team, and exhibition drill team, and his volunteer work at a Veterans Affairs hospital and in traffic control duties at football games and other community events.

Easy Decision

The **Lloyd R. Leavitt Jr. (Mich.)**

Chapter named Alpena High School senior Jeremy W. Jackson the winner of its first Lt. Gen. Lloyd R. Leavitt Scholarship, funded by the retired lieutenant general for whom the chapter is named.

The scholarship is available to any Alpena area high school senior who is entering a college ROTC program or the US Air Force Academy.

There was no difficulty in choosing a winner this time around, said James Rau, Michigan state president, since Jackson had been accepted by the USAFA. He is a National Honor Society member and had volunteered in the local office of Rep. Bart Stupak (D-Mich.) as well as at the county library, a nursing home, and with the Special Olympics program.

"Dick" Leavitt, an Alpena native who is now a member of the **General Doolittle Los Angeles Area (Calif.) Chapter**, and his wife, Anne, established the scholarship because of a desire to increase interest in aerospace education and military careers among college students. The Leavitts pledged to fund the scholarship, through AEF, at \$1,000 a year for five years. The Leavitt Chapter will add to the scholarship's fund.

ANG Awards in Fort Wayne

Three members of the 122d Fighter Wing (ANG), Fort Wayne IAP, Ind., received awards from the **Fort Wayne Chapter** at an Armed Forces Day luncheon meeting in May.

MSgt. John S. Furge II, a chapter member, was selected as Senior NCO of the Year for 1997.

MSgt. Nancy L. Buck received the NCO of the Year award (she was a technical sergeant at the time of the selection).

SrA. Alana S. Minx received the Airman of the Year award.

Theodore Huff Jr., chapter president, presented the awards.

ANG Col. Robert Myer of the 122d FW was the speaker at this meeting, held at an American Legion facility. He brought his fellow chapter members up to date on the wing's present and future activities.

Scholarships

At the February Aerospace Education Foundation board meeting in Orlando, Fla., William W. Spruance, national director emeritus, presented three scholarships to cadets at Embry-Riddle Aeronautical University, Daytona Beach, Fla.

Timothy A. Monroe received the Doyle E. Larson AFROTC Undergraduate Pilot Training Candidate Scholarship. The R.E. "Gene" Smith JROTC Scholarship went to John T. Pearce. The Jimmy Stewart Outstanding Citizenship Scholarship went to Anibal J. Rodriguez.

At Embry-Riddle's Prescott, Ariz., campus, Spruance also recently pre-

sented Col. Louisa Spruance Morse scholarships to cadets Richard White and Jeffrey Knapp; a Jimmy Stewart Scholarship to cadet Stewart Wells; Spruance scholarships to cadets Christopher Bragdon and Anthony McKee; and Col. and Mrs. Warren A. Bennett scholarships to cadets Bill Tice and Scott Silvester.

Spruance, a member of the **Diamond State (Del.) Chapter**, funds all of the scholarships. He is also an AEF trustee.

More Chapter News

■ The **Harry S. Truman (Mo.) Chapter** hosted the quarterly state meeting in Kansas City, Mo., in March. Brig. Gen. John A. Bradley, commander of 10th Air Force (AFRC), was guest speaker at the dinner gathering.

Among those attending the meeting were Charles H. Church Jr., AFA national treasurer; John J. Politi, national vice president (Midwest Region); and Rodney G. Horton, Harry Truman Chapter president.

■ Michael A. Moran, president of the **Grissom Memorial (Ind.) Chapter**, received a 1997 Exceptional Service award from James E. Fultz, state president, and Theodore O. Eaton, past state president, at the state AFA meeting in March. Paul Helmke, mayor of Fort Wayne, Ind., was guest

speaker at the event. His presentation on the need for citizen involvement in government was coordinated by William Howard Jr., state vice president.

■ Another 1997 Exceptional Service award presentation, for Nick Robolino, president of the **Bakersfield (Calif.) Chapter**, took place at the chapter's March meeting. Paul A. Maye, California state president, did the honors.

■ In March, Dr. (Lt. Col.) Russell A. Turner of Ramstein AB, Germany, was officially presented with his 1997 Paul W. Myers Award for Physicians by Maj. Gen. (sel.) John W. Brooks, 86th Airlift Wing commander and a member of the **Lufbery-Campbell (Germany) Chapter**. The award is named for a former USAF surgeon general.

■ With a plaque and a handshake at a chapter meeting at the Andrews AFB, Md., Officers Club, Charles X. Suraci Jr., **Thomas W. Anthony (Md.) Chapter** president, recently welcomed Richard L. Warren of the Kensington Copy Center in Kensington, Md., to the chapter's roster of Community Partners. Warren is a lightplane pilot and a licensed captain in the Coast Guard. He said that he became a Community Partner because "I believe in what AFA is doing." ■

Unit Reunions

3d Air Transport Sq/Military Airlift Sq. Sept. 17-19, 1998, in Fort Walton Beach, FL. **Contact:** Jack Langenstein, 200 Four Iron Dr., Summerville, SC 29483 (803-871-6873) (jlangen276@aol.com).

7th Logistics Support Sq/7th Air Transport Sq/58th Military Airlift Sq. Oct. 3, 1998, at Robins AFB, GA. **Contact:** Richard H. Fleck, 200 Utah Ave., Warner Robins, GA 31093 (912-922-5969).

11th BG (H) Assn (WWII). Sept. 2-6, 1998, at the Hyatt Regency Crystal City in Arlington, VA. **Contact:** Fred R. Fluhr, 8716 E. Fort Foote Terr., Fort Washington, MD 20744-6727 (301-839-5891).

27th Air Transport Gp, 86th, 87th, 320th, and 321st Transport Sqs; 310th 311th, 312th, and 325th Ferrying Sqs; and 519th and 520th Service Sqs. Sept. 24-26, 1998, at the Radisson Hotel Seattle Airport in Seattle. **Contact:** Fred Garcia, 11903 N. 77th Dr., Peoria, AZ 85345 (602-878-7007).

27th BG (L) and ex-POWs of the Japanese (WWII). Sept. 14-16, 1998, at the Holiday Inn Downtown in Mobile, AL. **Contact:** Paul H. Lankford, 105 Hummingbird Dr., Maryville, TN 37803 (423-982-1189).

27th Troop Carrier Sq. Oct. 14-18, 1998, at the Best Western Inn at the Park in St. Louis. **Contact:** Robert B. Gruber, 15003 SE 46th St., Bellevue, WA 98006-2567.

28th Logistics Support Sq/Military Air Transport Sq/Military Airlift Sq. Sept. 4-6, 1998, at the Best Western Ogden Park Hotel in Ogden, UT. **Contact:** Jim Thurell, 2603 N. 375 W., Sunset, UT 84015 (801-773-2632).

29th FIS. Sept. 24-26, 1998, at the Best Western Le Baron Hotel in Colorado Springs, CO. **Contact:** John L. Baczynski, 4 Romero Ct., Novato, CA 94945 (415-897-2419 or fax 415-892-7157) (FTRJOK@aol.com).

36th FG (WWII). Oct. 17-19, 1998, at the Best Western Hanalei Hotel in San Diego. **Contact:** Tom Glenn, PO Box 417, Sun City, CA 92586 (909-679-5396).

39th BG (Guam). Aug. 13-16, 1998, in Burlington, VT. **Contact:** Jack W. Wyckoff, 2714 Hayts Corners East Rd., Ovid, NY 14521-9768 (607-869-2547) or Bob Weiler, 2045 Hyde Park #3, Sarasota, FL 34239-3941 (914-365-8287).

51st FG, all units. Oct. 2-4, 1998, at the Double Tree Hotel at Warren Place in Tulsa, OK. **Contact:** R.G. Haines, 1720 13th Ave., Belle Fourche, SD 57717 (605-892-4623).

52d Air Rescue Sq; Flt. B, 6th ARS; and Ernest Harmon AFB, Canada, rescue unit personnel. Oct. 15-17, 1998, at Wright-Patterson AFB, OH. **Contact:** Roger A. Coelho, 44 Sinnott St., West Bridgewater, MA 02379 (508-587-9741).

54th Troop Carrier Wg, all units. Oct. 15-18, 1998, in Colorado Springs, CO. **Contact:** Glenn and Darlene McMurry, 8944 Krueger St., Culver City, CA 90232-2437 (310-559-8331) (xppp16a.prodigy.com).

55th Weather Recon Sq (WWII). Oct. 1-4, 1998, at the Best Western Midway Hotel Airport in Milwaukee, WI. **Contact:** Carlo Arrobio, 2612 Hollister Terr., Glendale, CA 91206 (818-243-9516) (CAAMA@WebTV.com).

60th Troop Carrier Gp (WWII). Sept. 2-5, 1998, in Birmingham, AL. **Contact:** John Diamantakos, 3525 Lynngate Cir., Birmingham, AL 35216-5239 (205-823-4747).

68th Air Service Gp (WWII). Sept. 6-10, 1998, at the Hyatt Regency Hotel San Antonio in San Antonio. **Contact:** Virgil Heller, 13998 Main St., Moores Hill, IN 47032 (812-744-3369) (113141.3607@compuserv.com).

76th Troop Carrier Sq (WWII). Oct. 1-4, 1998, at the Hyatt Regency Knoxville in Knoxville, TN. Members of the 435th Troop Carrier Gp are invited. **Contact:** Al Forbes, 1614-B Berwick Ct., Palm Harbor, FL 34684 (813-785-6075).

79th FG "Falcons," including 85th, 86th, and 87th FSs. Aug. 20-23, 1998, at the Marriott Huntsville in Huntsville, AL. **Contact:** Edwin P. Newbould, 1206 S.E. 27th Terr., Cape Coral, FL 33904 (941-574-7098).

Unit Reunions

90th BG "Jolly Rogers," Fifth AF (WWII). Sept. 16-20, 1998, at the Holiday Inn Select Koger South Conference Center in Richmond, VA. **Contact:** Atwell W. Somerville, 113 West Main St., PO Box 629, Orange, VA 22960-0368 (540-672-3200 or fax 540-672-9374).

93d Troop Carrier Sq, 439th Troop Carrier Gp (WWII). Sept. 16-20, 1998, at the Grand Ramada in Branson, MO. **Contact:** Tom Morris, 456 St. George's Ct., Satellite Beach, FL 32937-3840 (407-773-6960).

95th BG Assn (WWII). Sept. 8-12, 1998, in Tucson, AZ. **Contact:** Frank Coleman, 9 Marlette Dr., Carson City, NV 89703 (702-882-3398).

307th BG/Wg (1946-54). Sept. 30-Oct. 4, 1998, at the Radisson Hotel in Hampton, VA. **Contact:** Gene Dawson, 1108 Beverley Dr., Alexandria, VA 22302 (703-533-2102 or 703-548-9681).

320th BG (WWII). Sept. 2-5, 1998, at the Doubletree Hotel Denver in Denver. **Contact:** Stu Rowan, 108 Aspen St., Hereford, TX 79045 (806-364-4015).

325th FG "Checkertails." Sept. 23-27, 1998, at the Ramada Plaza Hotel in Asheville, NC. **Contact:** Ralph and Carol Cathcart, 113 N. Lincoln St., Augusta, MI 49012-9721 (616-731-2421).

342d FS (WWII). Sept. 27-Oct. 1, 1998, at the Dunes Manor Hotel in Ocean City, MD. **Contact:** Roy E. Jensen, 2215 Hyde Ln., Bowie, MD 20716-1148 (301-464-1663 or fax 301-464-6232) (rej20716@aol.com).

375th Troop Carrier Gp (WWII), 55th, 56th, 57th, and 58th Sqs. Oct. 6-9, 1998, at Harveys Casino Hotel in Council Bluffs, IA. **Contact:** Gene Diemand, 625 S. Wheaton Ave., Wheaton, IL 60187 (630-668-9575).

384th BG (H), Eighth AF (WWII). Sept. 24-27, 1998, at the Harrisburg Hilton & Towers in Harrisburg, PA. **Contact:** Ted Rothschild, 650 Snug Harbor Dr., Apt. G402, Boynton Beach, FL 33435-6140 (561-734-5052 or fax 561-731-5420).

409th BG Assn. Sept. 9-13, 1998, at the Radisson Hotel San Diego in San Diego. **Contact:** Thomas R. Sammons, 216 S. Jones Blvd., Las Vegas, NV 89107 (702-870-4088).

414th BS Assn (WWII, Italy). Oct. 7-10, 1998, in St. Louis. **Contact:** Jim Mundell, 1812 Sheridan Rd., West Lafayette, IN 47906-2226 (765-463-5495).

436th FS, 479th FG, Eighth AF (WWII). Sept. 24-29, 1998, at the Best Western Le Baron Hotel in

Mail unit reunion notices well in advance of the event to "Unit Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information.

Colorado Springs, CO. **Contact:** Kenneth and Gladys Hansen, 1105 McDougall Dr., Lander, WY 82520-3534 (307-332-5104).

449th BG (WWII). Oct. 4-7, 1998, in Biloxi, MS. **Contact:** Lee F. Kenney, 445 Maple Bluff Cir., Melbourne, FL 32940 (407-242-8654).

456th FIS. Sept. 24-28, 1998, at the Colorado Springs Marriott in Colorado Springs, CO. **Contact:** Kenneth H. Bell, 2C180 Silverhorn Ln., Monument, CO 80132 (719-488-2984).

464th BG (WWII), 776th, 777th, 778th, and 779th Sqs. Sept. 10-13, 1998, at the Marriott Airport at Lambert IAP in St. Louis. **Contact:** Kathy Evans, 3910 Regalway Dr., St. Louis, MO 63129 (314-394-3500 or 314-894-2794).

510th TFS (Clark AB, Philippines, 1958-64). Sept. 17-19, 1998, at the Sheraton Colorado Springs Hotel in Colorado Springs, CO. **Contact:** C.J. Stamschror, 683 Orange Ave., Los Altos, CA 94022 (650-948-2309 or fax 650-949-3209).

585th BS (M) (WWII). Sept. 17-19, 1998, in St. Louis. **Contact:** Tom O'Brien, 1907 Rio Vista Dr., Fort Pierce, FL 34949 (561-465-7974).

623 Aircraft Control and Warning Sq (Okinawa), 529th Aircraft Control and Warning Gp. Sept. 11-12, 1998, at the Stapleton Plaza Hotel in Denver. **Contact:** Ray Walker, 9149 Millertown Pk, Mascot, TN 37806 (423-932-3111).

857th Medical Gp. July 23-26, 1998, at the Holiday Inn Holiday in Elk City, OK. **Contact:** H. Clerval, 1021 Richfield Dr., Newark, DE 19713 (302-368-0474).

AAF/USAF Crash Rescue Boat Assn. Oct. 9-11, 1998, at Fort Walton Beach, FL. **Contact:** AAF/USAF Crash Rescue Boat Assn, PO Box 6004, MacDill AFB, FL 33608 (813-527-8671 or 561-588-5504).

Air Rescue Assn. Sept. 30-Oct. 4, 1998, at the Nevele Hotel in Ellenville, NY. **Contact:** Tom

Seebo, 1201 Danberry St., Burkburnett, TX 76354 (940-569-4573).

Airways and Air Communications Service. Oct. 9-4, 1998, at the Hilton Novi in Novi, MI. **Contact:** Ted V. Carlson, PO Box 177, Stickney, SD 57375 (605-732-4476).

Assn of Former OSI Special Agents. Sept. 10-13, 1998, at the Marriott Crystal Gateway in Arlington, VA. **Contact:** AFOSISA, PO Box 523135, Springfield, VA 22153-5153 (Fax 703-978-6198).

Dobbins AFB/ARB and 94th Airlift Wing. July 11, 1998, at Dobbins ARB, GA. **Contact:** Capt. Paul Koscak, Chief, Public Affairs, 1429 First St., Dobbins ARB, GA 30069-5010 (770-919-5055 or fax 770-919-5056).

C-133A/Bs. Aug. 21-23, 1998, in Dover, DE. **Contact:** Jay L. Schumaker, 30 Tina Dr., Dover, DE 19901 (302-697-9053).

OCS Class 51-A. Oct. 8-11, 1998, at the Doubletree Antlers Hotel in Colorado Springs, CO. **Contact:** Wayne D. Vogt, 2306 Parkview Blvd., Colorado Springs, CO 80906-1158 (719-636-3230).

Pilot Class 45-A (La Junta AAF). Sept. 12, 1998, in La Junta, CO. All personnel who served at this airfield are invited. **Contact:** Ray F. Bell, PO Box 29123, Atlanta, GA 30359 (404-321-3131).

Pilot Class 56-F, officers and aviation cadets. Sept. 4-6, 1998, at the Hyatt Regency Savannah in Savannah, GA. **Contact:** Richard A. Bowen, 1203 Old Stable Rd., McLean, VA 22102 (703-356-4337) or Bill Taylor, 148 Rendant Ave., Savannah, GA 31419 (912-925-6406).

Sampson AFB, NY, 3650th BMTW, all personnel, 1950-56. Oct. 9-12, 1998, in Valley Forge, PA. **Contact:** Walt Steesy, PO Box 299, Interlaken NY 14847-0299 (607-532-4204 or fax 607-532-4684) (SamAFBvet@aol.com).

Sixth AF, all units. Sept. 12-13, 1998, at the Airpower Museum, Antique Airfield in Ottumwa, IA. **Contact:** Robert L. Taylor, 22001 Bluegrass Rd., Ottumwa, IA 52501-8569 (515-938-2773).

Spectre Assn. Oct. 9-11, 1998, in Fort Walton Beach, FL. **Contact:** Jim Thrasher (850-897-4242).

US WAF Band (1951-61). Oct. 13-18, 1998, at the Best Western Continental Inn in San Antonio. **Contact:** brdevaug@midtel.net or CDPaulick@Worldnet.ATT.net.

Bulletin Board

Seeking **Sandy Ross**, daughter of CMSgt. William O. Ross, and **Robert McGihon**, who was stationed in Great Falls, MT, in 1952. **Contact:** Dennis L. Dagen, 104 Elm Dr., Warroad, MN 56763.

Seeking **Mary Ann Hamer**, who was the fiancée of **1st Lt. Jack A. Lightner**, F-51 pilot killed in 1950 in Korean War. **Contact:** Jerry P. Lightner, Rt. 1, Box 343, Bluemont, VA 20135 (540-554-8863) (jlx@mnsinc.com).

Seeking information on **1st Lt. Robert G. LeBlanc**, 12th TFS, Kadana AB, Japan, whose

F-100D crashed Dec. 1, 1958, and contact with **Capt. Charles Bean** and **Lt. Joseph Briggs** or anyone else who has knowledge of this incident. **Contact:** Ray LeBlanc, 100 Laurel Hill Dr., South Burlington, VT 05403 (802-864-6127).

Seeking members of **Flt. 256, 3723d Sq**, who served October-December 1975 at Lackland AFB, TX. **Contact:** David A. Rourke, 16 Beach Ave., Warwick, RI 02889 (401-732-9502).

Seeking information on or contact with members of the **B-17 #297998** that crashed around Jan. 21, 1945, in the Villafans forest in Lure, France.

Contact: Gérard Beuret, Moulin Grand-Pierre, 70110 Villers-la-Ville, France.

Seeking veterans of **1st Sea-Search Attack Gp; 9th, 25th, and 41st BGs; and 479th and 480th Anti-Sub Gps** for a history of Atlantic antisubmarine operations during WWII. **Contact:** Jack Lambert, 1051 Marie Ave. W., St. Paul, MN 55118 (612-454-7462).

Seeking pilots and crew members of the **48th FIS**, Langley AFB, VA, August 1958-December 1962, and the **59th FIS**, Goose Bay, Labrador, Newfoundland, June 1963-66 on TF-102A, 56-

Bulletin Board

2364, or 62364 with ADC. **Contact:** Alan Sernholt, 4910 Priscilla Ln., Sacramento, CA 95820.

Seeking the **B-24 #129** crew that trained in Tonopah, NV, in 1945, with pilot Robert Franken and copilot Ben Goodman. **Contact:** George Bowers, PO Box 455, Bellville, OH 44813-0455.

Seeking **Capt. Edwin Levine** or **Lt. Calvin K. German**, 6147th Tac. Con. Gp (Korea), pilots of Gen. I.D. White's C-47 in 1956. **Contact:** Bob Hanson, 17555 Cody St., Olathe, KS 66062 (bhanson@microlink.net).

Seeking information on **Floyd Wallace and Ernest McCoy Cox**, who were stationed at Aviano AB, Italy, during 1960-63. **Contact:** Theodore W. Norman, 609 Ogden Dr., Mt. Holly, NJ 08060 (609-261-7295 or 609-933-4048).

Seeking a photo of a **PT-19** or **19A**. **Contact:** Bob Hudson, 1323 N. 148th Plaza, Omaha, NE 68154.

Seeking **Carmen W. Burton**, of Forbes AFB, KS, 1963-64, **Clifford E. Neville**, and **Bernie Stein**, 442d BS, 320th BW, March AFB, CA, mid-1950s. **Contact:** John D. Robbins, 1117 Laurel St., Klamath Falls, OR 97601 (541-850-4276).

Seeking members of the **315th BS**, 21st BG, B-26 training unit, MacDill Field, FL, 1943. **Contact:** Ray Janer, 75 Henry St., Brooklyn, NY 11201.

Seeking service members and civilian personnel who served at **Ramey AFB/Borinquen AAF**, Puerto Rico, for Ramey AFB Historical Association. **Contact:** Ken Coombs, PO Box 250165, Ramey Base, Aguadilla, PR 00604.

Seeking USAAF personnel who served with the **201st Mexican FS**, Mexican Expeditionary Air Force, in the Philippines, 1945, and any AAF crash boat crews that responded to aviation crashes in the Philippines May-June 1945. **Contact:** Santiago A. Flores, PO Box 430910, San Ysidro, CA 92143-0910.

Seeking contact with or information on **John G. Emerson**, **Eugene A. Garrett**, **Calvin T. Hunt**, **Kenneth C. Irwin**, **John J. Krizman**, **Anderson E. Landrum**, and **Justin A. McNamara**, who were USAF pilots in the 1950s. **Contact:** Edwin D. Stoltz, 9117 W. Kerry Ln., Peoria, AZ 85382-4624 (602-566-0693) (Zonite@aol.com).

Seeking current and former **Air Force Security Policemen**, active duty or reserve, for membership in the Air Force Security Police Association. **Contact:** Jerry Bullock, 818 Willow Creek Cir., San Marcos, TX 78666-5022 (888-250-9876), or Rick Maitland, 456 Pine Tree Cir., Keller, TX 76248 (817-379-6133).

Seeking airmen stationed at **Donaldson AFB, SC**, September 1953-September 1954 who drove a 1937 LaSalle. Also seeking **R. Sanders FSC**, **Dick Bailey**, **L. Neal**, **David Lemme**, **Dana Hawks**, or anyone else in 3d or 9th Troop Carrier Sqs. **Contact:** F. Dale Parker, 1020 Woodward Ave., Pawhuska, OK 74056.

Seeking personnel of the **156th/512th FBS**, stationed at RAF Manston, UK, 1951-54. **Contact:** Dick Grace, 5609 Princeton Rd., Hamilton, OH 45011-8408.

Seeking information on **Lt. Col. Virgil I. "Gus" Grissom** and USAFA patches and memorabilia. **Contact:** Arlin L. Hill, PO Box 8693, Newark, OH 43058-8693.

Seeking photos of the artwork on **B-52H #60-0001 State of Michigan** and **KC-135A City of Oscoda** from the 379th BW, Wurtsmith AFB, MI,

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.

1960-62. **Contact:** William Reid, 1600 Prairie St., Essexville, MI 48732.

Seeking information from **Gerald Kobelski**, "Global" helicopter pilots/crews, or passengers who flew in the **Phoenix Islands** area in late 1970 to early 1971. **Contact:** Forest Blair, 2425 La Casa Dr., Henderson, NV 89014-3624.

Seeking a 35th TFW shoulder patch. **Contact:** Col Gardner, PO Box HP310, Hermit Park LPO, Townsville 4812, North Queensland, Australia.

Seeking large cast aluminum **Republic F-105** factory model and a blue and white T-38 Talon patch. **Contact:** Larry Rider, 23846 Marmara Bay, Monarch Beach, CA 92629-4411 (949-661-2511).

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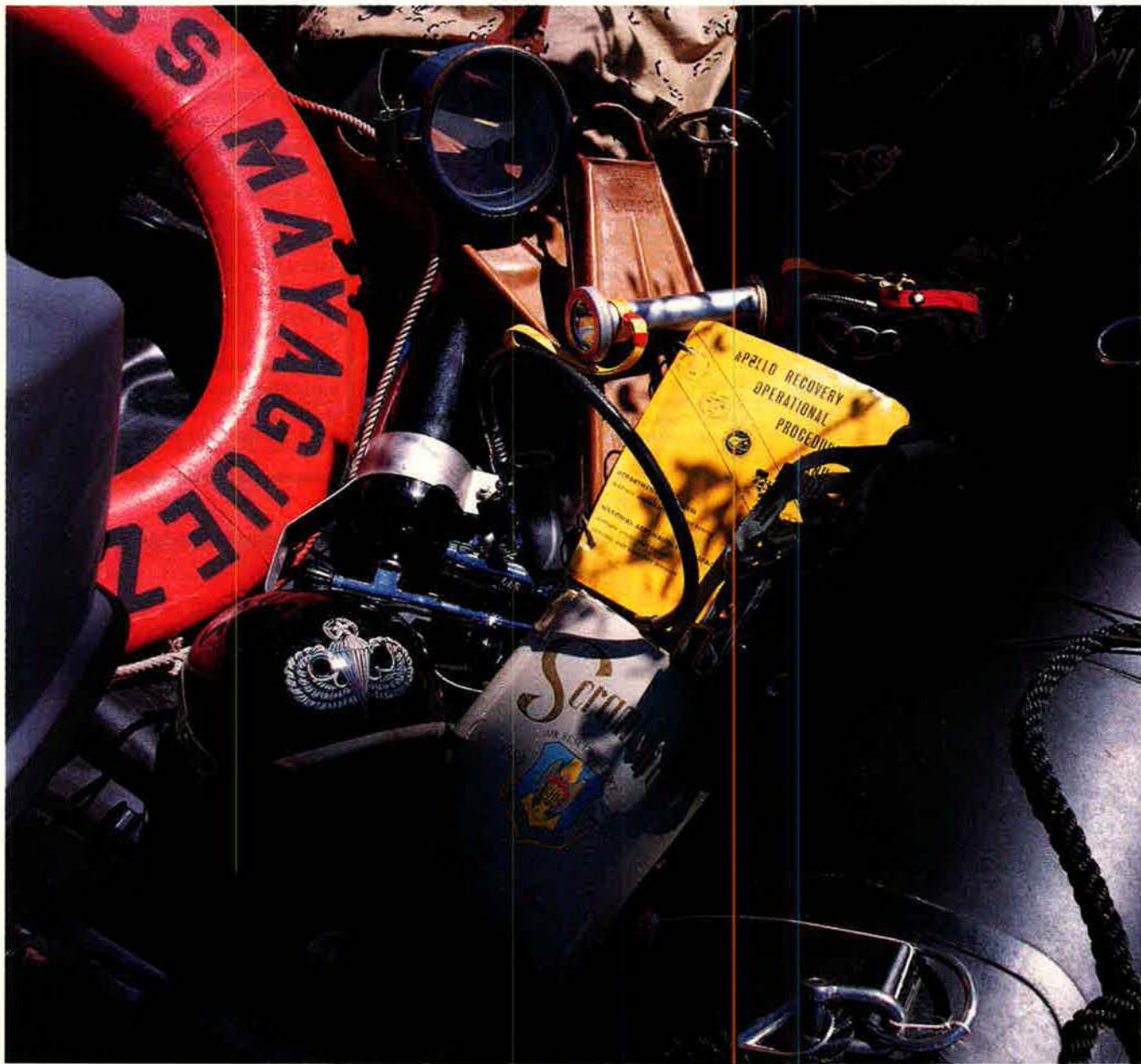
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Pieces of History

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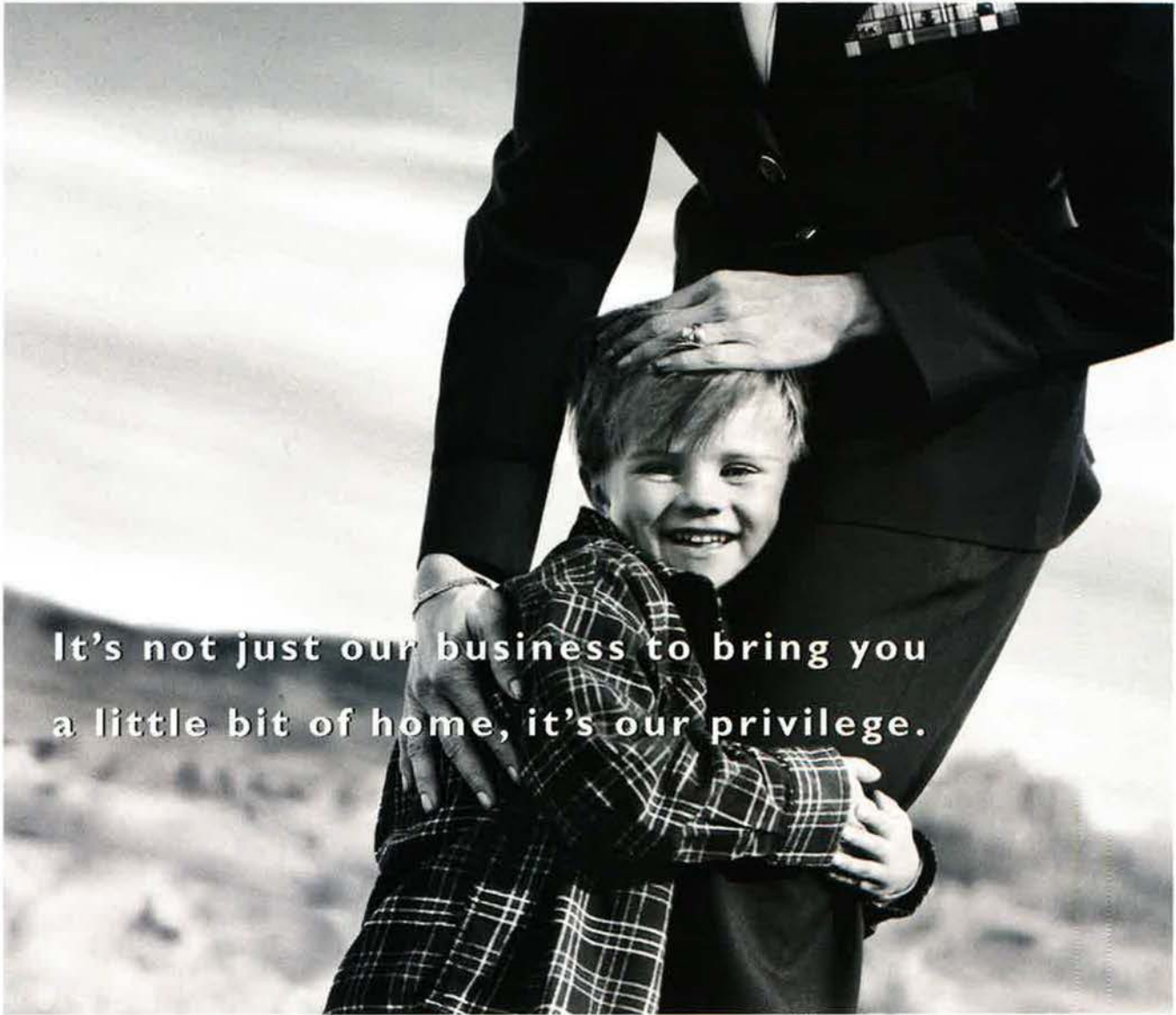
PJs—Heroes All



The lifesaving heroics of Air Force pararescuemen date from Aug. 2, 1943, when a doctor and two technicians jumped into the triple canopy jungle of Burma to save broadcast journalist Eric Sevareid and several US officials, all survivors of an airplane crash. Those early Pararescue Jumpers, or PJs, stayed with the survivors for 30 days, caring for their wounds and dodging

Japanese forces. The Korean War saw the first use of PJs to prepare a drop zone for Army paratroopers. They have been on call for every NASA space launch since the Mercury program began in the 1960s. Today, Air Force pararescue specialists, wearing their distinctive maroon berets, can be found in every corner of the globe. In the course of dramatic rescues under

hostile conditions—hazardous terrain as well as enemy fire—PJs have been awarded 11 of the 21 Air Force Cross medals that have gone to enlisted Air Force personnel.



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