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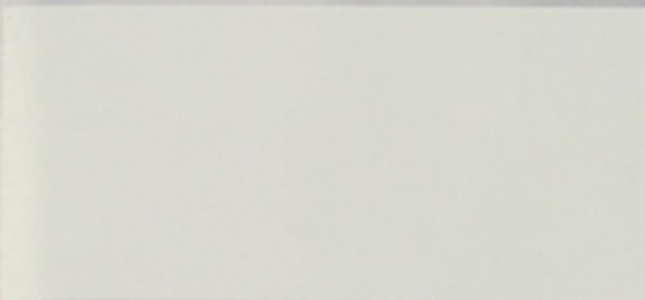
MAGAZINE

Firing For Effects

The Airlift Shortfall Deepens

The Halt Phase Hits A Bump

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About the cover: A B-2 Spirit from Whiteman AFB, Mo., soars through the skies during a training mission. See "Providing Vigilance, Reach, and Power" p. 26. USAF photo by Scott H. Spitzer.



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By John T. Correll, Editor in Chief

Breakthrough Force

WITHIN days of the Iraqi invasion of Kuwait in August 1990, American forces began pouring into the Middle East.

By the time Operation Desert Storm began six months later, we had put, without opposition, 430,000 troops and almost 2,000 aircraft into the Gulf area of operations.

Many of them were based well forward, within convenient reach of the Iraqi and Kuwaiti borders.

That won't happen in theater wars of the future.

Ten years from now, a regional adversary will have the land and sea approaches covered, hundreds of miles out, with theater ballistic missiles and cruise missiles.

There will be no easy access—as there was in the Gulf—to forward bases where we could mass large numbers of short-range land, sea, and air forces at the beginning of the fight. They would be sitting ducks for the missiles aimed at them.

The enemy will also be protected by a solid wall of overlapping air defenses. Most aircraft will not be able to penetrate that wall to attack ground targets, and until we can wrest control of the air, no other forces will be going in, either.

The Air Force believes it can solve some of this problem with a "Global Strike Task Force" built around stealthy, radar-evading B-2 bombers and F-22 fighters. Their job would be to kick down the door for the other land, sea, and air forces.

The concept has two main parts.

- The initial strike mission would shift to the B-2s and cruise missiles, which would attack from locations well outside the theater.

- An "enabling force" of several F-22 squadrons, operating from the outer edge of the theater, would thread the defenses, protect the bombers and support aircraft, and supplement the B-2s in the strike mission.

When the threat has been whittled down enough, the surface forces

and non-stealthy aircraft can move in and join the fight.

The basic idea is not new. In 1996, for example, Gen. Charles A. Horner, commander of coalition air forces in the Gulf War, told Congress that the proliferation of ballistic missiles and weapons of mass destruction had made it necessary "to shift as much of the power projection burden as we can—as fast as we can—

Its job is to kick down the door for the other land, sea, and air forces.

to long-range systems" capable of fighting from greater distances.

The feasibility of doing this was enhanced by the performance of the B-2 in the air war over Serbia, where it proved its critics colossally wrong. Its capabilities had been woefully underestimated, and so had its value.

Night after night, the B-2 made the 30-hour round-trip from its home base in Missouri. The Serbs did not know it was there until the bombs started falling.

It hit an average of 15 different aim points per sortie and destroyed 90 percent of its targets on the first strike. Improvements coming up in a few years will make it possible for the B-2 to strike 80 aim points on a single sortie.

The concept becomes further feasible with the advent of the F-22, which is built with the latest generation of stealth and which cruises faster than the speed of sound at 40,000 feet. It will negate large segments of advanced air defense networks, leaving it free to operate in 12 times more of the enemy's airspace than the current fighter, the F-15, can.

A small force of F-22s—two to four squadrons—would be enough to defend the B-2s, enabling them

to attack in daytime as well as at night, and also provide cover for non-stealthy intelligence, surveillance, and reconnaissance aircraft.

Those same F-22s could be equipped to bomb enemy air defenses and strike some of the ground targets.

Thus, the access problem in the lethal early going might be reduced to manageable proportions. There would be no requirement to base or protect a host of airplanes or ground troops. The B-2s and the cruise missiles do not need forward bases.

The F-22s would need only a few main operating bases around the perimeter of the theater, dispersing as the situation requires, and rearming at austere landing fields closer to the threat.

The Global Strike Task Force concept has a lot going for it, but it faces a number of hurdles.

To begin with, strategies that emphasize airpower do not set well with the other services. The Air Force will have to convince them that this concept gives them their best chance to survive and succeed.

There are resource questions, too.

There are only 21 B-2s. It was a huge mistake to cut production to that level. The capability of each B-2 is encouraging, but it would be far better if there were more of them. There are proposals to reopen the production line, but the expense would be formidable.

There is time, however, to avoid making the same mistake with the F-22. That program has been cut three times already, and there are people eager to cut it again.

The Air Force should also revisit the decision, made two years ago under budget pressure, to wait until 2013 to begin work on a new long-range bomber, which would not be operational until 2037. That made little sense then, and makes no sense now.

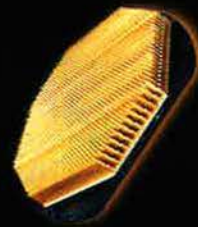
If the nation plans for its armed forces to operate in the most difficult battle arenas of the future, we had better stop undercutting the systems that will take us there. ■



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Pitsenbarger, Medal of Honor

Your February [issue features] a compelling photo of a young American. [See "Pitsenbarger, Medal of Honor," cover and p. 26.] We would like to think that he is typical, that they are all like that. We see a man whom we would like to be friends with, play ball with, go fishing with, go to church with, invite to the backyard [barbecue], and see him enjoy a long life among us.

We know from reading the story of his last hours that while he may have started out pretty much like the rest of us, he quickly proved that he was a man among men when his skills and determination were needed to help his brothers in arms. We can be glad that they got him suitable recognition, but our sorrow that he never knew of it is greater.

When the civilians are deciding to put our young people in harm's way, and the people in Congress are determining what their pay and living conditions will be, I would like for them to have this [image] of Pits before them. It might help them to do their job almost as well as he did his.

Garland O. Goodwin,
Former USAF Technical Sergeant
Columbus, N.C.

Recent articles about the very deserving award of the Medal of Honor posthumously to A1C William H. Pitsenbarger have a troubling facet. This is the Medal of Honor, and this brave young hero airman gets it at the Secretarial level? With all due respect to [former] Air Force Secretary Whitten Peters, who is deeply admired, this seems shameful. Am I alone in thinking that this nation's highest honor should be presented by the President as Commander in Chief? No excuses, no rationalizations, no regretful laments, only the President.

Lt. Col. Don M. Gulliford,
USAFR (Ret.)
Mercer Island, Wash.

Wearing Out?

James Kitfield's article on the Reserve Components, "Are We Wearing Out the Guard and Reserve?"

[February, p. 34], was an excellent piece of writing—but a poor choice of title. As the facts in the article reported, the answer to his question is a clear, No. Although the article's subtitle contends that we "have taken on a greater share of the military mission, but the strain has begun to show," a more accurate description is provided within the article, where you correctly note that professional satisfaction and retention have actually increased in units that are deployed on real-world missions. I am writing because the misperception that the Air Guard is "wearing out" can be damaging to the nation, particularly as we head into a major defense review.

While our tempo of operations has increased nearly 1,000 percent in the past 10 years—especially in contingency operations that support [commander in chief] requirements—the Air National Guard has sustained its high levels of skills, morale, retention, recruiting, safety, and quality. In fact, the Air National Guard continues to lead in retention figures, regardless of component, regardless of service. This is due in part to additional sustained funding and command emphasis, but a very significant factor in our ability to take on increased real-world tasking has been the Air Guard's strong community-based culture inherent in our units.

As a direct result of this increased Air Guard participation, we have reduced the deployment strain on our active duty force and their families by 10 to 15 percent in nearly every ma-

for mission capability area. We demonstrated the contributions our weapon systems bring in precision engagement, air superiority, global mobility, and power projection by contributing nearly 25,000 Guard men and women to the first [Aerospace Expeditionary Force] cycle, and we continue to be a full partner in the Expeditionary Aerospace Force. We certainly have had our challenges—especially in areas of modernization and recapitalization, where, like the active component, we continue to operate and maintain aging weapon systems often on the sheer ingenuity of our highly skilled and mature force. Air National Guard challenges in this area have and will continue to require leadership attention and increased funding.

In closing, I want to assure you that far from "wearing out," the Air National Guard continues to build its extraordinary record of success as a full-spectrum aerospace partner, protecting America's interests at home and abroad. Whether the mission involves combat, peacekeeping, or support, the Air Guard exceeds expectations every time. We owe our success to the high caliber of our people and the support they receive from their families, employers, and communities.

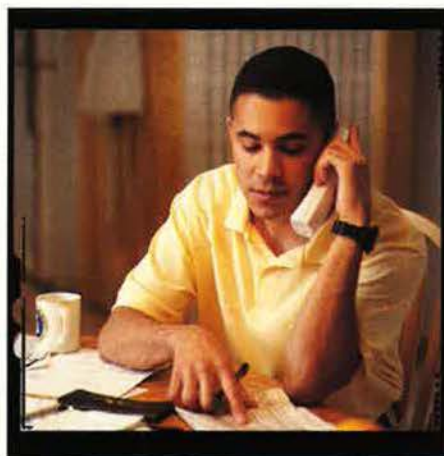
Maj. Gen. Paul A. Weaver Jr.,
Director, Air National Guard
Arlington, Va.

While I've never been impressed with your "reporting," you have hit new lows. Integrity and certainly facts have never gotten in your way of spouting whatever the "brass" wants to put out, but I was surprised to see you resort to outright lies. [Author Kitfield wrote,] "The biggest complaint you heard in the Guard was that they were bored. You don't hear that complaint today." What a load of crap!

Seamless integration is killing the Air Guard, and we are well on our way to supplementing the Regulars as the track to the airlines. You go into the Regulars, who teach you how to fly, then go into the Guard/Reserve for a couple years for additional income

Do you have a comment about a current article in the magazine? Write to "Letters," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. (E-mail: letters@afa.org.) Letters should be concise and timely. We cannot acknowledge receipt of letters. We reserve the right to condense letters. Letters without name and city/base and state are not acceptable. Photographs cannot be used or returned.—THE EDITORS

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[and] stability while you get hired by one of the "majors" and get through their probationary period. Then you put as much distance between you and the military as you can.

I know of multiple units where the pilots have started wearing left arm patches stating, "I'm a known quitter," implying, "I quit the Regular Air Force once, and if you make the Guard like what I left, I'll quit again."

Unfortunately, no one is listening. And the reason for that is that the days of the Guard being led by warriors, unafraid to tell the bureaucrats in the "puzzle palace" where to stick their latest idiocy, are gone. We are now led by the same careerist lapdogs as the Regulars. Our hangars are now adorned with such inspirational quips as "A Heritage of Quality," and we spend more time in briefings learning about equal opportunity than weapons employment. This autumn we head back once again to Kuwait, to put up with Regular Air Force BS, fly holding patterns while Regular F-16s take off, run out of gas, and land, and in the end, when we return we will probably lose two or three pilots (just like we did last time) who've had enough.

Print what you want; we in the trenches know better.

Maj. Patrick Foley,
103rd Fighter Squadron (ANG)
Willow Grove ARS, Pa.

The answer is a resounding, Yes! I recently retired [from] the Air National Guard. I was a recruiter for 13 years, so I feel I can speak intelligently on the subject.

When I first went into recruiting we tried to maintain a 60-40 mix of prior-service to non-prior-service personnel. This ratio was easily maintained and as a matter of fact the mix was usually more like 80-20. Then came Desert Storm. There was a massive influx of prior-service people into the ANG. Some got off active duty because they wanted to maintain military ties but did not want to go through any more "storms." Many in the years after the desert action got out of the military (all branches) because of the severe cutback in numbers of personnel and the loss of benefits.

In the mid- to late 1990s, when the Guard and Reserve began to act more like active duty, and Aerospace Expeditionary Force reared its ugly head for the reserves, I saw a very rapid decline in the number of non-prior-service people who were interested in reserve membership.

There were two common reasons

given to me why the people were not interested in continuing their military affiliation by belonging to the reserves. First of all, I was told that because active duty services had been cut so severely in number, people were simply worked to death, generally treated badly, and I heard multitudes of complaints about poor supervision, which I will not even attempt to go into.

The second, overwhelming reason was the fact that on their last tour to the desert there were a large number of reservists there, and they simply were not going to subject themselves to more desert tours, ongoing into the future, thanks to reserve commitment to AEF.

I hope, for the sake of our wonderful Reserve Components that something is done soon to take the pressure off.

MSGt. Rocky Leonhardt,
ANG (Ret.)
Columbus, Miss.

Just a note about the excellent article in the February issue. [It said], "In the four decades of the Cold War, Guard and Reserve forces faced two Presidential call-ups—for the Berlin Airlift and a tightly restricted call-up during the Vietnam War." How about 1962 and the Cuban missile call-up?

Many Guard and Reserve units were called, and I worked on the allocation of missions within our wing (445th Troop Carrier Wing) for the airdrop prior to the invasion, and believe me if an invasion had been required, the Guard and Reserve would have been a large part of the operation. We spent the 30 days of the call-up hauling troops and arms, in C-123s, from Ft. Bragg [N.C.] into south Florida, and many of us stayed on after being released to haul them back home.

It was thought by many people at that time that the decision to call the Guard and Reserve by President Kennedy was the deciding factor convincing the Russians that the President was deadly serious and caused them to start removing the missiles.

Maj. Gen. R. Gill Sloan,
USAF (Ret.)
Agoura Hills, Calif.

In the article on Guard and Reserve participation in ongoing operations, it was stated that [there were] two Presidential call-ups: for the Berlin Airlift and during the Vietnam War. Wrong! A number of Guard F-84s and RF-84s were called up in October 1961 and sent to Europe for a year in response to the Berlin Wall emergency. (I was among them.) Then



Publisher
John A. Shaud

Editorial aomag@afa.org

Editor in Chief
John T. Correll

Executive Editor
Robert S. Dudley

Senior Editor
John A. Tirpak

Associate Editor
Tamar A. Mehuron

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Research Librarian
Pearlie M. Draughn

Editorial Associate
Chequita Wood

Administrative Assistant & Staff Editor
Juliette Kelsey Chagnon

Advertising adv@afa.org

Advertising Director
Patricia Teevan
1501 Lee Highway
Arlington, Va. 22209-1198
Tel: 703/247-5800
Telefax: 703/247-5855

Industry Relations Manager
Nicola C. Whitlock • 703/247-5800

US and European Sales Manager
William Farrell • 847/295-2305
Lake Forest, Ill.
e-mail: BFarr80708@aol.com



in 1962, Air Reserve units were activated during the Cuban missile crises. They didn't leave the US; they didn't have to. They were deployed to southern Florida, preparing for a conventional attack on Cuba, if the crisis was not solved otherwise.

Col. Morton T. Eldridge,
USAFR (Ret.)
Huntsville, Ala.

Your background info on the Presidential call-ups during the Cold War has a few errors. There were no Guard or Reserve forces called up during the Berlin Airlift in 1948-49. The Korean War resulted in a major call-up of Air Reserve and Army forces, with units entering service from August 1950 through late 1951. About 45,000 Air Guard were called and many were deployed to the Far East and Europe.

Another Presidential call-up occurred in summer 1961, when 148,000 Air Reserves were called to active duty. A large number of these personnel were deployed to Europe in fall 1961. The call-ups caused by the capture of USS *Pueblo* in 1968 resulted in ANG units being deployed to Korea and Vietnam and Air Force units in Vietnam being manned largely by Air Reserve personnel.

Lt. Col. Hubert W. Ryan,
USAFR (Ret.)
Yalaha, Fla.

It was my impression that the very large call-up of Air Force reserve units and some activation of ANG units in 1950-51 occurred during the Cold War, although Kitfield seems to have overlooked them in his article.

Bill Blankfield
Belen, N.M.

Scrapbook Addition

Just finished reading the February issue. Particularly enjoyed the "Desert Storm Scrapbook" [February, p. 42], which was well done as all the scrapbooks have been. I do have one comment on a photo on p. 46. Maj. Robert Myers is not just stationed at NAS Pensacola, Fla.—he is the Air Force Association Pensacola Chapter president. This has been a very successful chapter and believe me not an easy feat in a "Navy town."

Marguerite Cummock
AFA Florida, Secretary
Daytona Beach, Fla.

Such a Cost

In reading Rebecca Grant's interesting article ["The Real Billy Mitchell," February, p. 64], I waited for the author to make the connection between [Maj.] Gen. [Billy] Mitchell's most profound statement and the cost to the

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United States for ignoring it. I am referring to his prediction in 1924 of a future war between Japan and the US.

With regard to his zealous advocacy for using long-range, land-based aircraft in an anti-ship role, it took 60 years for this to materialize and only partially. In 1984, Strategic Air Command's B-52s equipped with Harpoon missiles were given a collateral mission of attacking hostile naval vessels. "Jointness" comes slowly.

To understand Mitchell's behavior after World War I, one must appreciate where the US stood at that time. We had washed our hands of foreign entanglements, rejected the League of Nations, [and] adopted a totally isolationist and defensive posture. In the East we were secured by British and French control of the Atlantic. However, in the Pacific, our West Coast, Panama, and all of our island possessions were vulnerable to attack by hostile naval forces with or without embarked troops. Simply stated, Mitchell wanted the Army Air Service to have a big role in defending us from the only military threat we faced. He believed this role required a long-range, precisely navigated, accurate bomber capable of defending itself from carrier-borne fighters and able to carry the large, heavy bombs which his tests had shown necessary to sink armored warships.

In her article, the author mentions what could be described as Mitchell's ambivalence toward strategic bombing. In Europe where flying distances are short, he could see utility in strategic bombing. An intercontinental capability had to await the Cold War and the mating of the B-36 and nuclear weapons.

World War II in the Pacific proved Mitchell to be wrong about using large bombers to attack warships. Level bomb runs on moving ships with anti-

aircraft guns were ineffective. Gunfire forced the bombers so high that accuracy was degraded, and the ships had time to maneuver. This misjudgment on his part becomes insignificant in light of the tragedy resulting from our national leaders ignoring his conclusions after his nine-month tour of the Pacific area in 1923-24.

His detailed report mentioned the sorry state of our Pacific defenses. The 1941 devastation of our air and naval forces in the Pacific was the price we paid for ignoring his warning.

One Army Air Service officer who listened to Mitchell was 1st Lt. Albert F. Hegenberger, operations officer, 5th Composite Group, at Luke Field [Ariz.]. On Feb. 25, 1924, Hegenberger sent a letter to the commander of Luke Field requesting he, "in conjunction with air intelligence, be designated to study the possibility of establishing landing fields on islands between Kauai and Midway," since "these islands extend in a direct line toward Japan, ... and aerial patrols from these points could establish and maintain contact with an enemy fleet and keep the defending forces of Oahu posted as to enemy movements."

It was left to the Roberts Commission Report on the Pearl Harbor disaster to reveal for the first time the reconnaissance plan submitted on Aug. 20, 1941, by the commanding general, Hawaiian Air Force, which proposed using B-17s for daily patrols out to 833 miles and 360 degrees around Oahu. This plan was never staffed nor acted upon. If one rejects the conspiracy plot to invite the Japanese attack, one is left with the conclusion that the interservice war Billy Mitchell started in 1921 resulted in the Pearl Harbor disaster and the loss of our islands. While his airpower crusade may have lacked diplomacy, to reject logical predictions because of



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Government Relations grl@afa.org

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Information information@afa.org

Member Services service@afa.org

Policy & Communications (news media)
..... polcom@afa.org

Magazine

Advertising adv@afa.org

AFA/AEF Report afa-aef@afa.org

Editorial Offices afmag@afa.org

Letters to Editor Column.....letters@afa.org

Aerospace Education

Foundation aefstaff@aef.org

Eaker Institute eaker@aef.org

Air Force Memorial Foundation ... afmf@afa.org

For individual staff members

first initial, last name, @afa.org

(example: jdoe@afa.org)

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To promote aerospace power and a strong national defense.

To support the needs of the Air Force and Air Force people.

To explain these needs to the American people.

Letters

the manner presented can be hazardous to the nation's health.

Col. Robert F. Hegenberger,
USAF (Ret.)
Niceville, Fla.

Mule Train Memories

Walter Boyne's C-123 Mule Train article ["Mule Train," February, p. 70] was excellent and brought back many memories. The C-123 flew just about everywhere in Vietnam providing the things US and Vietnamese forces needed. I got to Saigon in July 1966 and flew as a pilot with the 19th Air Commando Squadron through June 1967. There were C-123 air commando squadrons at Saigo, Bien Hoa, Nha Trang, and Da Nang [South Vietnam].

The daily missions sent the Provider aircrews to lots of dirt airstrips (laterite) or to landings on a road, or old World War II pierced-steel planking, or aluminum matting, and sometimes to a hard surfaced runway. Assault landings were routine. During the rainy weather we'd land on the right side of the dirt airstrip until the rutting got too bad, then we'd land on the other side and ever farther down the airstrip until the rutting prohibited any more landings. We flew where, and when, the C-130s couldn't go.

We air-dropped troops, ammo, medical supplies, etc. We flew on the deck and pushed out empty sandbags and concertina (barbed) wire at special forces camps. At Quan Loi we landed without lights at night. One crew even had a baby born in flight.

Capt. Dick Nagel received the Air Force Cross for saving his aircraft, crew, and 52 US Army troops when he was shot down on takeoff at Dau Tieng in November 1966. His aircraft had an engine on fire, also fire in the cargo compartment, and the landing gear would not fully extend. His eyeglasses had been knocked off, and he landed the aircraft from the right seat (he was an [instructor pilot]).

The Mule Train crews did a fantastic job. Their can-do spirit continued on in later C-123 Provider crews until the war ended. For me it was the best year I ever spent flying an airplane. I knew every day that we were helping someone.

Lt. Col. Joseph J. Foster,
USAF (Ret.)
Huntington Beach, Calif.

[On] p. 74, the [photo] caption states that the C-123 loadmaster is holding a "Thompson machine gun." Technically, this is incorrect terminology. A machine gun fires a cartridge of at least rifle caliber; is usually belt-fed and

crew-served; and is commonly mounted on a bipod, tripod, or pedestal. Conversely, the easily portable, magazine-fed Thompson was a submachine gun. It fired a handgun-caliber round, the same .45 ACP cartridge used in the standard M1911A1 semiautomatic pistol of the time.

MSgt. James B. Walker,
USAF (Ret.)
Dayton, Ohio

The C-123 crews slept and ate under canvas at Da Nang in 1962, courtesy of the 5th Tactical Control Group. The so-called DOOM was the officers' and enlisted men's mess, which the writer called a three-barrel dip-and-wash facility. I say the food was good under the field conditions.

We arrived at Da Nang on Jan. 2, 1962, from Clark AB [Philippines] by C-124 [and] set up the control and reporting radars and communications [for] Panama Control, which lasted all through the war. [We] put up essential bare-base facilities and operated Da Nang on a [temporary duty] basis until April 1962. I was the commander of the operations.

Col. Tom B. Foulk Jr.,
USAF (Ret.)
Wheeling, W.Va.

Yeah, Right

In the wake of a current strategic review and an upcoming Quadrennial Defense Review 2001, one tired argument posing misleading and illogical claims of land supremacy through airpower must be put to rest. [See "In the Wake of the Storm," January, p. 2.]

The record must be kept straight regarding the effectiveness of NATO air forces in Kosovo during Operation Allied Force. To suggest airpower or any single military tool is a panacea for overseas contingencies is dangerous, increasing the potential for future failures.

Claiming airpower alone "won" the war creates a false impression of reality. This line of reasoning ignores the contributions of the Kosovo Liberation Army and the US Army's Task Force Hawk. The role of air forces in prosecuting a successful strategic bombing campaign is undisputed; however, NATO's air armadas failed to destroy or significantly damage the Yugoslav army in the field. Nor did air strikes stop Serbs from brutalizing Kosovar Albanians. The cessation of "ethnic cleansing" was not achieved until NATO ground forces entered Kosovo to re-establish civil order and the rule of law, a task

impossible to accomplish from an altitude of 10,000 feet.

It was not apparent that Milosevic was prepared to surrender after two months of bombing. He was content in the face of privation and economic loss to wait until NATO's resolve dissipated. Only after he saw clear indications that the United States was no longer willing to rely on airpower alone, and the support of his Russian patrons collapsed, did he give the order to withdraw.

Glossing over airpower's failure to save Kosovar lives and degrade Serb military capability may tempt American leaders to engage in extended but futile air campaigns against future stubborn opponents. It sets the stage for tragedy in which incremental and ineffective half-measures place the US military in harm's way longer than necessary to defend America's interests.

Mackenzie M. Eaglen
Woodbridge, Va.

The Osprey

Did it ever occur to Lt. Gen. Fred McCorkle, USMC [See "Aerospace World: Second Crash Clouds Osprey's Future," February, p. 8], and our USAF and USN that an aircraft that's "helped" to kill too many people may be of a bad design?

Lt. Col. Donald P. Taylor,
USAF (Ret.)
Ajo, Ariz.

Why Not a KC-17?

Regarding the C-17 airlifter, I am certainly no expert and have laid eyes on the plane only once—and that from quite a distance—but from all accounts it is a reliable, safe, and efficient airplane. There was quite a discussion ["Aerospace World: USAF, Boeing Commercial C-17," p. 9] in the February issue about keeping the C-17 assembly line open.

Why not build a KC-17 tanker variant? Any reasonable service life for the old KC-135s is rapidly approaching no matter how much alert it sat. And is it really fair to ask 25-year-old crew dogs to fly around in 50- or 60-year-old airplanes? It's time to get a new tanker, and a KC-17 might be just the airplane, 150 airframes minimum. Now there is some real insurance.

Michael W. Leahan,
Sun Prairie, Wis.

The Blast Door

The crew didn't close the blast doors to protect themselves from the flames. [See "Aerospace World: Fire Destroys Missile Alert Facility," February, p. 10.] The capsule blast door, and the larger blast door leading into the Launch

Control Equipment Building, are always closed. These blast doors are opened only briefly, for perhaps seconds at a time, to permit entry of the capsule crews, maintenance crews, and anyone requiring entry.

The whole concept of survivability of the underground launch center and its associated equipment depends on these doors being closed at all times to prevent outside forces from interfering with the mission, be those forces a fire, terrorists, or nuclear war.

Capt. Bill Sims,
USAF (Ret.)
San Antonio

Check Ergonomics

The paragraph about the crash of the T-6A turboprop trainer should light a fire under somebody's butt. [See "Aerospace World: News Notes," February, p. 24.] To shut down the engine accidentally when trying to lower flaps smacks of very poor ergonomics. Time for another look at the cockpit layout.

Elias Vujovich
Southington, Ohio

Fatal Flaw

The letters referring to the Lockheed F-180 Misawa tip tanks neglect to mention that the Misawa tanks had a fatal flaw that resulted in the deaths of quite a few F-80 pilots during combat missions over Korea. [See "Letters: The Tip Tank Issue," February, p. 6.]

The original Misawa tanks were constructed without internal baffles. When a pilot dove upon a target, all the tank's fuel flowed to the front of the tank, and then when he pulled out of his dive the fuel sloshed to the rear of the tank. This resulted in an overstressing of the aircraft's wingtips, which then tore off. One of two things then usually occurred—either the tank tore off the horizontal stabilizer, or if just one tank came off, the asymmetrical load threw the aircraft into a roll. In either case the aircraft became uncontrollable and immediately crashed.

The pilots [who died] were: 1st Lt. Ralph Ellis, 36th Fighter-Bomber Squadron, July 21, 1950, F-80 #49-698; Maj. Richard McNess, 36th FBS, July 18, 1950, F-80 #49-658; 1st Lt. Harry Sandlin, 80th FBS, Nov. 25, 1950, F-80; and 1st Lt. Willie Wall, 80th FBS, March 21, 1951, F-80 #49-1867.

David R. McLaren
Springfield, Ill.

In reference to the letters by retired Lt. Col. Norvin Evans and retired SMSgt. Watson Smith on the Misawa tanks, here is some info as to

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the genesis of those tanks. During the early spring of 1950, Lt. Edward Johnston of the 8th Fighter Squadron, 49th Group, came up with the idea of the ultra-long-range fuel tanks. He volunteered Corporal English and myself to work on this project. I do recall he had the long torque rods made by the 49th Maintenance Squadron, and he did all of the flight testing himself. There were some comments made about the baffles or lack of them at that time.

After the Korean War started, the 8th FS ended up at Itazuke AB [Japan]. I checked some of my old photos, and my F-80 #813 and SSgt. Edward Herb's #760 had the extended tanks on them. We stayed there till the Inchon landings then flew out of Taegu with Misawa tanks for most of the war. Weber Aviation Co. of Burbank, Calif., subsequently made thousands of these.

Sgt. Charles W. Vaughn
Lakewood, Calif.

Concurrent Receipt

[You haven't written about the concurrent receipt issue, for some time], but all veterans should be aware of House of Representatives Bill 303, introduced by Michael Bilirakis of Florida and co-sponsored by Gary A. Condit of California, Jim Kolbe of

Arizona, and Ronnie Shows of Mississippi. The bill will amend Title 10, United States Code, to permit retired members of the armed forces who have a service-connected disability to receive both military retired pay by reason of their years of military service and disability compensation from the Department of Veterans Affairs for their disability. Right now, the retirement pay of veterans with a disability is reduced by the amount of compensation paid by the VA.

Please ask your Congressmen to help correct this unfair practice by supporting H.R. 303.

CMSgt. John Paul Bednarz,
USAF (Ret.)
Washington, D.C.

More on Spaatz

The excellent article [*"Spaatz," p. 66*] in the December issue evoked a memory of a staff car stopping nearly in front of our 61st Bomb Squadron area on Guam in June 1945. A general officer stepped out, opening his own door. Several of the quite young gunners and radiomen alerted the rest of us. Some "older" tech sergeants yelled out, "Get this place in order, fast. General Spaatz is headed this way!" We were not nearly fast enough. Our debriefing had [just ended] an hour ago. Our cots were lined up OK, but our flight gear was still piled up where we had left it. Red dust had just piled up everywhere.

Out in the street, from nowhere arrived our squadron commander, Major Crumm, a West Point officer. Crumm somehow stopped the fast-moving general. The [major convinced] the general to see, possibly inspect, the nearly finished wooden mess hall across the street from [our] enlisted aircrew living areas. As the two officers entered the mess hall, we all worked feverishly to clean out our Quonset hut. We did it in record time, except that neither Spaatz nor Crumm returned for an inspection tour that day.

We went about completing our 35 missions (B-29s) in the great air offensive, but always while on the ground Crumm would receive our snappiest salutes, for we knew that he knew how to look after his enlisted personnel.

Lt. Col. Richard Barclay Vogenitz,
USAFR (Ret.)
Oceanside, Calif.

Moody Toted the Load

While many have or will claim the idea, the man who toted the load to the mountaintop was Moody Suter, fighter pilot! [*See "Letters: Red Flag," January, p. 6.*] Again, Red Flag has

many fathers, but there is only one who birthed it—Moody. Of this I am certain because at the same time, I was trying to make Fighter Lead-In a reality. Like Red Flag, many claimed Lead-In, but I know who wrote the 40+ papers I have in an old box among my Air Force treasures.

My project was easy compared to Moody's challenge. Almost everyone liked our proposals, but many had concerns that had to be answered or circumvented. The selling of an idea also gave us the opportunity to speak, frequently and often. I vividly remember facing the "long knives"—the three stars. I was pretty smart then, so I wore Randy Krumback's name tag; he was my boss in the tactical fighter shop. One of the fighter pilot generals, [Lt. Gen. Carlos M.] "Tote" Talbott, exposed me, much to my chagrin.

Many helped develop and sell Red Flag, but in the end, it was Moody who fought, scratched, and battled to make it happen. Moody and others like us had one concern: better prepare the pilot for the demands of combat with primary emphases on air-to-air and weapons on target. Ideas are easy; making it a reality in the Air Force is a challenge that takes a very special and extremely strong person like Moody.

Later, I had the privilege of leading my fighter squadron to what was the first or second Red Flag, depending on which exercise was considered the real exercise. I believe the present Chief of Staff of the Air Force was the A Flight commander during that exciting event. [Lt.] Gen. [James A.] Knight Jr., the ultimate boss of Red Flag, didn't think much of my Red Flag critique. I tried to remember how much better prepared the lieutenants and captains would be for combat as he chewed on parts of my anatomy. Knight, a strong believer in Red Flag, was concerned that surfacing problems might jeopardize Red Flag. Like Moody, I just wanted to make Red Flag better (Moody and I had talked before I wrote the critique.).

Moody was a very special person and always the dedicated fighter pilot. When we debriefed the MiG pilot who landed in Japan, I began to realize that we are all the same throughout the world. Unfortunately, Moody never had the opportunity to have a fighter wing—maybe because he believed in dirty flying suits, found it difficult to get a haircut, and [thought] Hershey bars were better than shoe polish for boots or shoes? Many of us tried to convince him or the system that some adjustments or compro-

mises were necessary. Unfortunately we weren't successful.

Moody was the developer, perpetrator, seller, or champion of two other significant warfighting enhancements in the Air Force. He quarterbacked (not cheerleadered) the development of the warfighting tools, Project Checkmate and the Enemy Capabilities Center at Kadena AB, Japan. Again, many will claim [credit for] creating these unique warfighting projects. However, I know that Moody was the "man" because I replaced him at Checkmate, and he put my name on the MiG in the center.

Moody and I were in [Air] War College during the era of "military leadership is bad" and "civilian management is good." We tried to drive them crazy, but they outfoxed us and offered us the opportunity to rewrite the curriculum, which we did. The new curriculum centered on the likes of Clausewitz, [Gen. William W.] Spike Momyer, [Maj. Gen. William P.] McBride, and other warriors. Peter Drucker, et al., were not included.

I sincerely hope that there still remains in our Air Force an atmosphere for the Moody Suters to develop, exist, dream, and make, or try to make, those dreams a reality. Moody made a difference! This is what has continued to make our Air Force special, unique, and the best.

Col. Barry Howard,
USAF (Ret.)
Placitas, N.M.

Corrections

In the March issue article "The Dangerous World of 2015," the colors in the graph titled "Global Population: 1950–2015" on p. 62 are reversed. Red denotes less developed countries and blue, more developed countries. The graph has been corrected in the version posted on the magazine page of the AFA Web site (www.afa.org).

Also in March, in the "Letters to Editor" column on p. 7, a word from Jim Harding's letter under the heading "Speaking of Subs and Ships" should read "uninformed" not "uniformed" reader. In pointing this out, Harding said, "Of course, there's concern for the uniformed reader(s). But the more dominant concern is about the uninformed, who read with little if any understanding of the whole picture, suffer the influence of the increasingly liberal media, and then go out and vote."

The Chart Page

By Tamar A. Mehuron, Associate Editor

The Shrinking US Nuclear Weapons Complex

From 1945 through 1991, the mission of the US nuclear weapons complex was to design, test, and build weapons of awesome power, safety, and reliability. Three national laboratories designed some 95 types of systems. The Nevada Test Site conducted roughly 900 tests to assure reliability. The active stockpile in 1990 contained approximately 21,000 weapons of 25 types, all of which had to be handled with utmost care and attention to detail. The job of managing this enterprise supported a 55,000-person contractor workforce.

This all changed in 1991, however. The collapse of the Soviet Union, along with superpower arms agreements, and unilateral US withdrawal of Army nuclear weapons from overseas bases fundamentally changed the Department of Energy nuclear weapons complex. In 1992 came a moratorium on US nuclear testing. The mission changed from producing, deploying, and testing weapons to prolonging the existing stockpile through "scientific study, simulation, and refurbishment."

The table shows the percentage changes in management and operating contractor employment from 1988 to 2000 at each DoE facility. Facilities that were shuttered and closed included Rocky Flats in Colorado, Pinellas in Florida, and Mound in Ohio. Employment plummeted to 24,500.

A Dozen Years of Downsizing

Nuclear Weapons Complex Site	Number Employed				Percent Change 1988–2000
	FY 1988	FY 1992	FY 1995	FY 2000	
Rocky Flats Plant, Colo.	4,990	5,332	935	0	-100
Pinellas, Fla.	1,565	1,386	511	0	-100
Mound, Ohio	1,754	1,305	679	0	-100
Oak Ridge/Y-12 Plant, Tenn.	5,615	5,384	4,767	3,612	-36
Savannah River, S.C.	16,616	14,796	7,618	1,714	-90
Pantex Plant, Tex.	2,462	2,529	3,007	2,706	+10
Kansas City Plant, Mo.	5,760	3,941	2,984	2,499	-57
Nevada Test Site, Nev.	4,609	4,216	2,406	1,670	-64
Lawrence Livermore Natl. Lab, Calif.	3,841	3,609	3,251	3,934	+2
Los Alamos Natl. Lab, N.M.	3,173	3,194	3,143	4,746	+50
Sandia Natl. Lab, N.M.	4,278	4,548	4,168	3,620	-15
Other	167	1,598	359	2	-99
Total	54,830	51,838	33,828	24,503	-55

Employment figures are for management and operating contractors.

Source: GAO, "Nuclear Weapons: Improved Management Needed to Implement Stockpile Stewardship Program Effectively," December 2000.

Aerospace World

By Peter Grier

Amnesty for Anthrax "Refuseniks"?

Two groups that claim to represent service personnel disciplined for refusing anthrax vaccine shots asked President George W. Bush to grant the personnel amnesty.

The organizations—Citizen Soldier and No Abuse—support the position that the shots can cause health problems and have pushed many persons with unblemished records to leave the military.

"President Lincoln gave amnesty to soldiers who fled under fire. It should be no problem for this Administration to grant compassionate amnesty for people whose health is under fire," said retired Air Force Reserve Col. Redmond Handy, the president of No Abuse, at a Feb. 12 news conference in Washington.

The Pentagon says that, while some people may experience minor adverse effects during the multishot vaccination sequence, the overall anthrax program remains a safe one.

A half-million military personnel have already received at least one shot. Estimates of the number of shot



A Predator Unmanned Aerial Vehicle flies above the test range at Nellis AFB, Nev., with a Hellfire-C laser-guided missile under one wing. On Feb. 21, said Maj. Ray Pry, Predator program manager, a Predator aimed and launched a live Hellfire-C that struck an unmanned, stationary Army tank at Indian Springs Air Force Auxiliary Field, Nev. The Predator is evolving from a nonlethal reconnaissance asset to an armed and highly accurate tank killer, according to Air Force officials. Phase II testing will pit the UAV against a moving target.



The Northrop Grumman Global Hawk UAV won the National Aeronautic Association's 2000 Collier Trophy. The award recognizes the UAV's performance in USAF, US Navy, and NATO exercises last year. Global Hawk is scheduled to fly this month—without refueling—from Edwards AFB, Calif., to a base near Adelaide, Australia, an 8,625-mile trip.

"refuseniks" are far from authoritative. DOD claims that as of August last year only about 441 have actually refused, and that includes 129 for the Air Force. Others believe the number is much higher.

A General Accounting Office study last year that focused on Guard and Reserve aircrew members found that 25 percent of 828 respondents said the anthrax shots were one of the main reasons they quit or changed to nonflying jobs.

Russia Stages New Missile Tests

Russian military forces on Feb. 16 carried out two test launches of ballistic missiles. Moscow later described the events as proof that Russia would be able to penetrate and defeat any US missile defense system.

An ICBM was fired from a facility in northwestern Russia, and a sea-based missile was fired from a nuclear submarine underwater in the Barents Sea.

Gen. Leonid G. Ivashov, chief of

the Russian Defense Ministry's international cooperation department, warned that if the US builds a National Missile Defense, "we shall find an adequate reply."

Russia has long opposed Washington's plans for NMD, claiming it would violate the 1972 ABM Treaty.

Ryan Worried About Recapitalization

With big budget increases now appearing less and less likely—at least in the near term—the problem of finding funds for recapitalization is looming ever larger for the Air Force, said Chief of Staff Gen. Michael E. Ryan on Feb. 8.

Under current long-range defense acquisition plans, the service is buying only about 100 aircraft per year. Of those, 50 are trainers or not full-up operational, said Ryan at an Alexandria, Va., seminar.

Lack of money for new airplanes means that the average age of the Air Force fleet will near 30 years. Older aircraft become more difficult to maintain.

"The older they get, both from a technology standpoint and from a rust standpoint, the cost of keeping that fleet is going up," said Ryan. "Over the past five years, the cost of operating the fleet at a fixed level of flying has gone up 40 percent."

More difficult maintenance means lower readiness rates.

"Our readiness started falling in 1997, and it has fallen by about 30 percent since that time," said Ryan. "We have been able to flatten that out, and we are holding on at about 65 percent in the top two categories, where we want to get to 92 percent," said Ryan.

F-22 Fighter Held in Limbo

The F-22 Raptor has completed all Congressionally mandated flight tests required for approval of low-rate production, but it has been trapped in limbo by President Bush's desire to put off all major Pentagon funding decisions until his national security team can complete its top to bottom military review.

"If you're talking about making a decision on a major acquisition program, ... you must complete your vision of where [you're] going in the early 21st century before you make decisions on the tools that [you] will buy to get you there," Pentagon spokesman Rear Adm. Craig Quigley told reporters Feb. 6.

The F-22 made the long-awaited jump over its final milestone Feb. 5, when Raptor 4006 made a first flight from Lockheed Martin's facility in



Photo by Judson Brohmer

An F-22 launches an AIM-9 Sidewinder during a test last summer.

Lawmakers Urge Rumsfeld To Proceed With F-22

A block of 59 members of Congress, saying they are worried that "further delay will effectively kill the Air Force's No. 1 modernization program," urged Defense Secretary Donald H. Rumsfeld to move the F-22 into production as quickly as possible.

In a March 2 letter to Rumsfeld, the Congressmen noted that bridge funding for the fighter—which kept the F-22 program going while the new Administration decided how it wanted to proceed—was set to expire March 31. If the program died from inaction, said the lawmakers, "We may forfeit something that should never be taken for granted and one of the greatest advantages our military currently holds—control of the air."

Among those signing the letter were Reps. Floyd Spence (R-S.C.), Dick Armey (R-Tex.), Norm Dicks (D-Wash.), Jim Saxton (R-N.J.), Pete Sessions (R-Tex.), Randy Cunningham (R-Calif.), Mac Thornberry (R-Tex.), and Sam Johnson (R-Tex.).

They reminded Rumsfeld that he himself and other former Pentagon leaders had signed an April 1998 letter urging Defense Secretary William Cohen to protect the F-22. The 1998 signatories argued that the Raptor "must be funded" and said, "It is essential that this program succeed."

Rumsfeld was urged not to defer the decision to move forward with the low-rate production of the F-22.

"The F-22 is the only program that will ensure total dominance of the skies for US combat forces well into the middle of this century, and it is ready to move into Low-Rate Initial Production," the Congressmen said.

The group noted that the F-15 "has served us well but is rapidly aging" and will be outperformed by foreign fighters now being developed. New surface-to-air missiles "proliferating among potential foes of the United States" will also threaten the F-15, they said.

The Joint Strike Fighter is "complementary" to the F-22 but is no substitute for it, the Congressmen noted. Optimized for ground attack, the JSF will "leverage technologies that have been developed for the F-22." Without the F-22, however, the JSF "will have to be redesigned and reconfigured to meet the requirements that our military will face in the future," adding delay and cost to the program.

The group pointed out that the F-22 has been 15 years and \$18 billion in development, with "strong bipartisan Congressional support." It also noted that, while the F-22 was "unpredictably delayed" in achieving the stiff criteria set by Congress for low-rate production, the criteria have been met.

"It is important to emphasize two important facts," the Congressmen said. First, they wrote, "no new fighter development program in history will have conducted as much testing prior to the LRIP decision," and second, "the F-22 program is sound and meeting or exceeding all technical requirements."

The F-22, the Congressmen said, "is a critical asset for our ability to fight and win future wars."



Aircraft like this F-16—landing at Prince Sultan AB, Saudi Arabia, after an Operation Southern Watch mission last November—were part of the force that recently struck anti-aircraft sites in Iraq.

New Raids Spotlight the Saddam Problem

Ten years after the Gulf War, President George W. Bush must deal with the foreign policy problem that most concerned his father: Iraq.

Air strikes launched by US and British forces on Feb. 16 were the first military action of the younger Bush's presidency and a reminder that the "Saddam Hussein problem" has now bedeviled a second Bush generation.

Military officials said the Feb. 16 air strikes were launched in response to a sudden increase in the ability of Iraqi anti-aircraft sites to "see" and target coalition aircraft patrolling no-fly enforcement zones in the north and south of the country. Post-raid reports that Chinese workers were helping install fiber-optic cables linking Saddam's air defense sites provided a further explanation for the need for coalition forces to act when they did.

This latest round of raids is unlikely to be the last word on the subject, Pentagon officials said Feb. 20. US forces will remain engaged in the area as long as political leaders deem it necessary.

Officials did not immediately provide detailed damage assessments for the five command-and-control nodes that were targeted by 24 USAF, RAF, and US Navy warplanes.

"But from what we know so far, we feel we had an impact in the overall goal of disrupting and degrading the Iraqi air defense system in the south," said Pentagon spokesman Rear Adm. Craig Quigley.

In the past, the Iraqis have always regenerated capabilities after such strikes, and they are likely to do so again. More confrontation is likely to follow.

"They have a very good internal capability to repair a variety of military systems, and that would include radars," said Quigley. "We [didn't] expect our strikes [on Feb. 16] to be the end of Iraqi air defense engaging coalition aircraft."

Marietta, Ga. "I had every confidence today's flight would be successful," Brig. Gen. Jay Jabour, F-22 system program director, said Feb. 5. "A carbon copy of Raptor 4004, it posed no technical challenges, but it is great to have this achievement behind us."

F-16 CSAR Unit Trains With Italians

USAF's 510th Fighter Squadron is training with the Italian air force's 83rd Combat Search and Rescue Squadron in Rimini, Italy, to prepare for a pioneering role in rescue operations.

The 510th is one of three F-16 units that have recently had CSAR added to their list of missions. The addition reflects the fact that there are not enough A-10s, the primary CSAR aircraft, to fill out all Aerospace Expeditionary Forces.

Other fighter squadrons adding the role are the 555th, also at Aviano, and the 18th from Eielson AFB, Alaska. The 510th will be the first to officially begin the CSAR mission when it deploys to Operation Northern Watch in Turkey in June.

"It's a very important and dynamic mission, and we're ready to step up to it," said Lt. Col. Steve Schrader, 510th FS commander.

So far the US unit has conducted two exercises with the Italians. In a four-day February maneuver, eight F-16 pilots and 20 Italian aircrew members and pararescuemen flew day and night sorties to locate survivors and coordinate pickup.

The complexity of the exercise rep-

Americans Believe Gulf War Was Worthwhile

The people of the United States, by and large, are pleased that this nation conducted the Persian Gulf War in 1991.

That is the conclusion of a new Gallup poll conducted Feb. 19-21, 10 years after the conclusion of the conflict.

Americans today believe, by a 2-to-1 margin (63 percent to 31 percent), the Gulf War was worth it.

Moreover, a majority (52 percent to 42 percent) told the Gallup pollsters they would favor sending US troops back to remove Iraqi President Saddam Hussein from power.

resented a step up from the 510th's previous training.

"We [had] a lot more simulated threats on the ground and a lot more sense of urgency to pick up the survivor, so that we're working within some time constraints," said Maj. Mark Moore, 510th operations officer and exercise coordinator.

Bases Face California Power Crunch

The Air Force's California bases have not been hampered by the state's electricity crisis—so far.

Power shortages have triggered rolling blackouts in many northern California communities, but conservation measures and the presence of backup generators have kept the lights on in the area's three Air Force installations: Beale Air Force Base, near Marysville; McClellan in Sacramento; and Travis in Fairfield.

"Some of the halls around here are a little dimmer because we're turning off some of the lights, and we're trying to conserve energy where possible," said SSgt. Katherine Garcia, a spokesperson for Beale's 9th Reconnaissance Wing.

Beale reduced its electricity consumption by about 15 percent, mostly through such traditional means as turning down thermostats, turning off lights, and unplugging unneeded appliances. That 15 percent saving translates into roughly 2.6 megawatts, enough to power 2,500 homes.

Beale's fellow bases show similar gains. Their biggest worry: an extended blackout that would force

Bush DOD Budget Marks Time

The Bush Administration on Feb. 28 asked Congress for \$310.5 billion in budget authority for the Defense Department in the 2002 fiscal year, which begins Oct. 1.

That amount represents a \$14.2 billion increase over the amount in the Clinton Administration's 2001 budget but was the same as Clinton's 2002 proposal, which he made as he left office.

In that amount is \$2.6 billion for a Bush Administration Pentagon research and development initiative "for missile defense alternatives and new technologies to support the transformation of US military capabilities," according to the White House.

The budget submission contained virtually no detailed programmatic information. That won't come until the completion or near-completion of the Bush Administration's major military review. The White House said it will determine final 2002 and future years defense funding levels only when the review is complete.

One of the few specifics was President Bush's vow to raise military personnel pay an average of 4.6 percent.

The five-year budget barely keeps up with the Administration estimates of future inflation. Bush's defenders say he will come back to Congress with a hefty budget proposal once Congress has dealt with the issue of a federal tax cut.

heavy use of backup power systems.

"You can only run the backup generators so many hours per year and continue to rely on them as your fail-safe emergency power source," said John Schopf, Travis's deputy civil engineer.

Natural gas supplies are also a concern. A sudden spike in demand has sent prices soaring and could portend a coming shortage.

Air Force Begins High-Tech Recruitment

The Air Force's new high-tech recruitment vehicle made its debut at

the Daytona 500 in Florida Feb. 17-18.

Nicknamed "ROVer," the recreational vehicle carries a more portable version of the "The US Air Force Experience" road show that now travels to high schools, special events, and malls across the country.

Four ROVERS will travel about the country this year in an effort to boost service recruiting. Exterior video screens show visitors highlights of job skills and Air Force technology.

Inside are three recruiters and a public affairs NCO to answer questions, take down names, and hand out embossed metal "dog tags" with the new Air Force logo to each visitor.

"We've found that one of the best ways to reconnect with the American public and showcase career opportunities is by reaching out and going to the public directly—especially in high traffic areas like high schools and shopping malls," said Brig. Gen. Duane W. Deal, Air Force Recruiting Service commander.

Ryan Says Coalition Partners Must Speak English

Friendly forces need to be able to use English if they want to fly and fight alongside the US Air Force, asserts the Chief of Staff, Gen. Michael Ryan.

What is more, they must have a command-and-control system that is compatible with US equipment, or they will wind up with some kind of peripheral duty, said Ryan at a February Air Force conference on unified aerospace power.

"That's simply the way it is," he



USAF Test Pilot School staff at Edwards AFB, Calif., recently flew the F-16 Variable Stability In-Flight Simulator Test Aircraft with two Maverick training missiles. The flights evaluated the ability of the VISTA to carry Mavericks to provide students with training in the differences between using visible and infrared sensors for acquiring and attacking ground targets.

said, adding that the Air Force is not going to stop its progress to wait for others to catch up.

The compatibility issue has become increasingly important as NATO has expanded and new partners show up for such efforts as Operation Allied Force.

Bush Review To Include Nukes

The Bush Administration's comprehensive study of the US military includes a review of the state of the US nuclear arsenal and seeks to determine what kind of unilateral warhead reductions might accompany a move toward reliance on missile defenses.

The review, carried out under the terms of White House policy directives, is intended to produce a coherent nuclear strategy that addresses defensive and offensive aspects of the issue in parallel.

The defense establishment has not conducted such a sweeping reassessment since the 1994 Nuclear Posture Review performed by the Clinton Administration.

The current US strategic nuclear arsenal contains around 7,500 warheads. Unilateral cuts could drop that below the 2,500-warhead level set in 1997 by Russia and the US as a goal for START III talks.

Such cuts could make a missile

House Veterans Chairman Unveils Veterans Benefits Package

Rep. Chris Smith (R-N.J.), the new chairman of the House Committee on Veterans' Affairs, on Feb. 28 introduced a wide-ranging burial, disability, and pension improvement bill.

The bill's provisions would increase the burial and funeral allowance from \$1,500 to \$2,000 for veterans whose deaths are service-connected and from \$300 to \$500 for vets with nonservice-connected disabilities.

The burial plot allowance would rise from \$150 to \$300.

Severely disabled vets would find their assistance allowance for automobile and adaptive equipment increasing from \$8,000 to \$9,000 and for specially adapted housing from \$43,000 to \$48,000.

The VA's means-tested pension program would no longer count the value of real property used for agriculture when figuring net worth, under the terms of Smith's legislation.

The bill would also extend the period for which transition counseling is available to those ending their military careers to as much as 18 months prior to departure, as opposed to the present 90 days.

Smith and the ranking minority member of the committee, Rep. Lane Evans (D) of Illinois, vowed they would put the measure on their fast track and push for full House passage as soon as possible.

defense deal more palatable for Russia. Russian leaders have long sought deep nuclear reductions, at least partly because their cash-strapped nation can no longer afford to support its existing atomic infrastructure.

Reservists Run Flight-Test Mission

The 339th Flight Test Squadron at Robins AFB, Ga., has become one of

the first Reserve units to take over aircraft test support and functional check flight duties for Air Force Materiel Command.

In late 1999 the Air Force said it would establish seven Air Force Reserve Command units to conduct AFMC flight-test support and functional check flights, once purely an active force responsibility.

The switch means that the 339th now gets to have a major impact on Air Force fighting forces. The 339th's work involves C-5, C-130, and C-141 airlifters and F-15 fighters that come to Warner Robins Air Logistics Center for programmed depot maintenance or other repair work.

The mission: Make sure an airplane is truly airworthy when it is ready to leave.

Pre-flight inspection by 339th engineers can take five hours. During test flights, crews run through a "test card" that lists items which must work before airplanes can be certified safe.

Pilots and crew must be well-qualified before joining the 339th "Rogues," and once in, they face three to five months of additional training before they are fully up to speed.

The other six AFRC flight-test units are expected to be set up before the end of Fiscal 2002 at Edwards AFB, Calif.; Hill AFB, Utah; Kelly AFB, Tex.; Randolph AFB, Tex.; Tinker AFB, Okla.; and a contractor site at Mesa, Ariz.

Space Based Laser Nets "Solid Success"

Team SBL-IFX on Jan. 25 announced they had successfully tested

Court Says US Owes Vets Health Care

A federal appeals court has ruled that the US government owes two elderly retired veterans free health care for life.

The court declared Feb. 8 that this obligation stems from the fact that recruiters promised the pair such a benefit when they enrolled—and that such a promise was, in essence, a contract.

The decision directly affects only two retired Air Force lieutenant colonels from Fort Walton Beach, Fla.: William O. Schism, who served in the Navy and Air Force, retiring in 1979, and Robert L. Reinlie, who served in the Army and Air Force and retired in 1968. The ruling says the government owes each man as much as \$10,000, which is the maximum they can claim from the federal government under breach of contract law.

However, their lawyer, Medal of Honor recipient Col. George E. "Bud" Day, USAF (Ret.), said he was trying to have the case declared a class action suit, potentially opening up free government health care for retired military members—and their spouses—who entered service prior to 1956. It was in 1956 that Congress passed a law that provided health care for military retirees on a space-available basis only.

"The retirees entered active duty in the armed forces and completed at least 20 years' service on the good-faith belief that the government would fulfill its promises," wrote the three-member appeals court panel. "The terms of the contract were set when the retirees entered the service and fulfilled their obligation. The government cannot unilaterally amend the contract terms now."

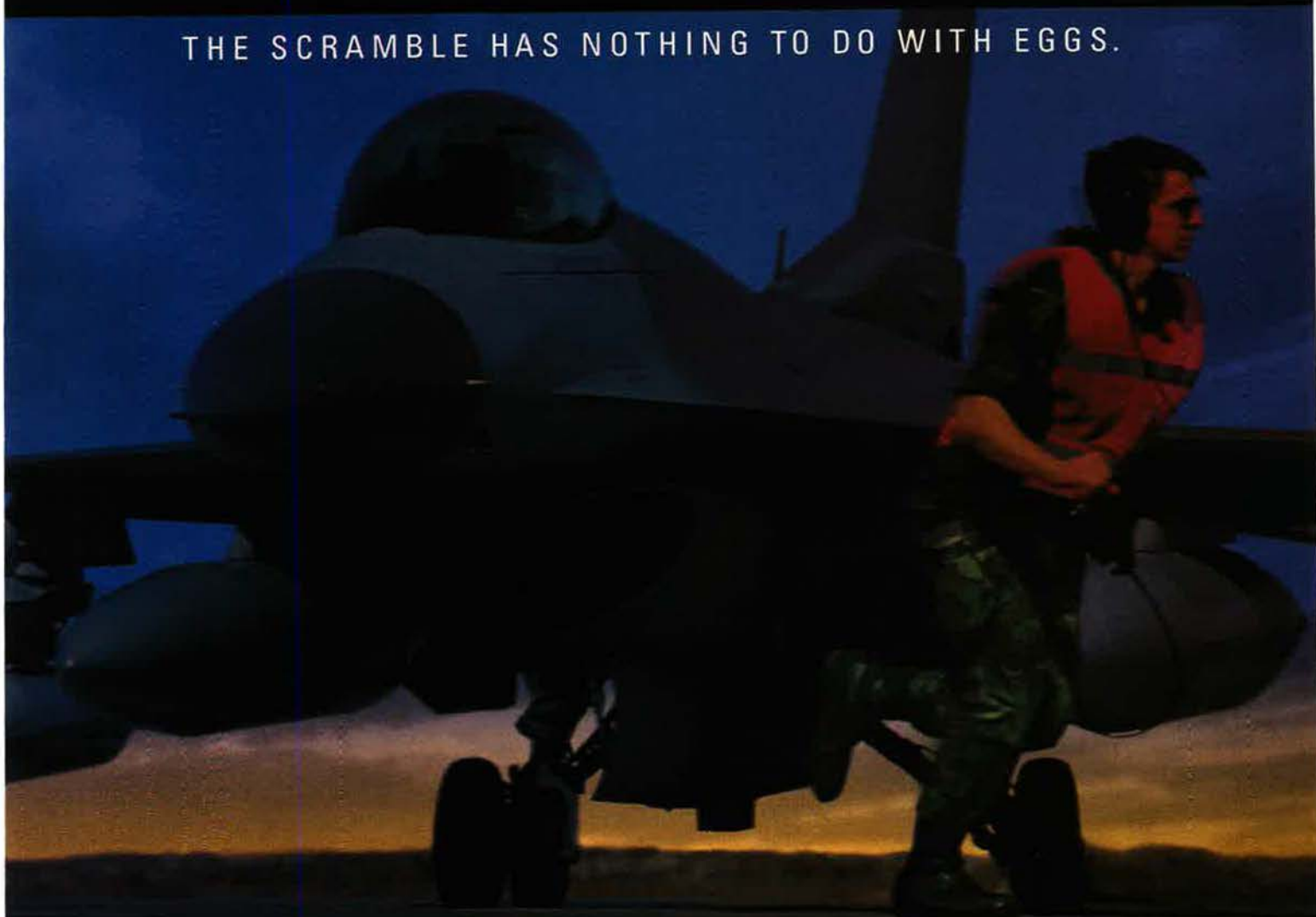
The US government does not deny that it had long promised free health care for life to those who would sign up. Its position is that such recruiter promises are not official, contractual promises and therefore do not obligate Uncle Sam.

The Justice Department was studying whether to appeal the ruling.



SOME MORNINGS

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For an American Submarine, Disaster at Sea

USS *Greeneville's* accidental crushing of the Japanese fishing boat *Ehime Maru* on Feb. 9 has strained relations between the US and Japan and raised questions about basic nuclear sub operations.

The key question the Navy must address: Why didn't the sub's highly trained crew spot a 190-foot fishing boat in its immediate area? The accident occurred while *Greeneville* was practicing a rapid emergency ascent. The maneuver, called an emergency main ballast tank blow, sends the submerged boat to the surface at high speed.

"The seriousness in which I view this tragic accident is reflected in the level of the investigation," said Pacific Fleet Commander Adm. Thomas B. Fargo on Feb. 17, announcing the convening of a rare Naval Court of Inquiry. Investigations into the accident "will provide a full and open accounting to both the American and the Japanese people," said Fargo.

Ehime Maru carried students from Uwajima Fisheries High School. Four teenagers, three crew members, and two instructors were missing and presumed dead after the collision.

The case caused a sensation in Japan, where many suspected the Navy of downplaying the role of 16 civilian observers on *Greeneville* at the time of the incident. Some of the civilians on board the sub were contributors to the USS *Missouri* Memorial Association, a nonprofit group that supports the maintenance of the battleship.

The outcry in Japan was such that Fuji Television was forced to cancel a scheduled broadcast of the movie "Titanic." Adm. William J. Fallon, the Navy's second-ranking officer, delivered a letter of apology from President Bush to the Japanese Prime Minister.

In the letter, President Bush said he "sympathizes with [victim's] families' desire" to raise the sunken *Ehime Maru*.

Navy officials discount any physical role on the part of the civilian observers, saying the sub's crew would have had their hands on crucial controls at all times. But it is possible the presence of so many observers in the sub's cramped quarters distracted crew members, causing them to miss sonar returns or other hints that a ship was in their operational area.

Other possible explanations: *Greeneville* did not rise high enough out of the water to provide its periscope a clear field of view during a pre-ascent examination of the area; the white fishing boat was coming straight at the sub and presented a narrow profile that blended easily with the background; or the emergency blow took longer than the standard 15 minutes to complete.

Ehime Maru now lies in about 2,000 feet of water, nine miles off Oahu's landmark Diamond Head. Navy officials said they are considering how to attempt the difficult task of raising the 500-ton boat from its deep-water resting place.

the Alpha high-energy laser with the beam director telescope and beam alignment and correction system intended for use on the anti-missile Space Based Laser.

The point: Can the beam director project and hold the focus of the laser across space to enable the laser to hit its target—a ballistic missile in boost phase?

"The test was a solid success," said Col. Neil McCasland, director of the Air Force's SBL-IFX program office.

Team SBL-IFX, for Space Based Laser Integrated Flight Experiment, is a joint venture by Lockheed Martin, TRW, and Boeing to develop the technologies that will lead to development of the SBL-IFX satellite that is currently set for launch in 2012.

The January experiment was carried out in TRW's California vacuum chamber that simulates the space environment.

Plans call for USAF to test the satellite's defensive capability against a live, boosting target in 2013.

Special-Needs Families Get Web Help

DOD's Special Needs Network, a Web site for military families with handicapped members or others with special medical or educational needs, went online Jan. 24.

The site (mfrc.calib.com/snn) is intended to link families to care coordinators, educational professionals, and other special-needs resources located near military installations. Menu options include assignment coordination and federal and state aid pro-

Americans Support Idea of Missile Shield

A recent Gallup poll declares that Americans support the concept of building a national missile defense system to ward off ballistic missile attacks.

The poll, results of which were released Feb. 15, found that 44 percent of Americans express support for developing a defense system against nuclear missiles while 20 percent are opposed, and more than a third (36 percent) say they are unsure.

grams. DOD itself has no formal special needs program, but the military takes such needs into account in its regular personnel process, said the Web site's founder, Rebecca Posante, program analyst at DOD's Office of Educational Opportunity.

"For example, if a service member going overseas has a wife who's in a wheelchair, we would try to find a place where facilities are wheelchair-accessible," she said.

Air Force Aids India Earthquake Victims

After a devastating earthquake hit western India on Jan. 26, US officials moved quickly to dispatch USAF aircraft carrying aid equipment and supplies.

A six-person communications, logistics, and medical support team from US Pacific Command flew in first to assess needs and potential areas of DOD support. It was followed Jan. 31 and Feb. 1 by two C-5 transports loaded with a two-and-a-half-ton truck, two forklifts, two 400-gallon water trailers, 10,000 blankets, 1,500 sleeping bags, and 92 large tents.

The C-5s landed in Guam and off-loaded their cargo to smaller airlifters that continued on to Ahmadabad in the heart of the disaster zone.

DOD Announces Web Site for Troops Leaving Service

Leaving the service? The Pentagon has a Web site just for you. On Jan. 26, officials announced the launch of the DOD Transportal, located at <http://www.dodtransportal.org>.

Inside one finds a wealth of job assistance advice and other information intended to ease the transition to civilian life.

Features include an overview of

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the DOD Transition Assistance Program, locations and phone numbers of transition assistance offices worldwide, and minicourses on such things as creating a resume and how to find corporate recruiting sites.

C-130 Pilot Gets Nonjudicial Punishment

The pilot who crashed a C-130 at Ahmed Al Jaber AB, Kuwait, in December 1999, killing three persons, was offered nonjudicial punishment proceedings by 21st Air Force commander Maj. Gen. George N. Williams on Feb. 16.

Under such Article 15 proceedings, the pilot, Capt. Darron A. Haughn, is entitled to present his side of the story to Williams.

Punishments could include a reprimand, forfeiture of half-pay for up to two months, 30 days' arrest in quarters, 60 days' restriction, or a combination of any of these options.



USAF photo

A severe thunderstorm with winds of more than 100 mph hit Columbus AFB, Miss., in February. Only one person was injured, but several buildings suffered damage. The base was without power for more than 13 hours.

AUSA Leader Cites Limits and Failures of Airpower

In a signed column in the *Washington Times* March 3, Gordon Sullivan, president of the Association of the US Army, declared that the Army "provides the decisive element" in the nation's capability "to respond across the spectrum of conflict—from deterring the use of weapons of mass destruction to waging effective and sustained operations to enforce the peace."

Sullivan, a retired four-star general, is a former Army Chief of Staff.

His case for the Army, however, was leveraged considerably on what he described as the limitations and failures of airpower, particularly in the Gulf War of 1991 and in Operation Allied Force in Serbia in 1999.

"Although the Persian Gulf War successfully demonstrated the ability of high-tech 'smart' weapons to destroy enemy equipment and facilities from long distances, some forget that despite massive air strikes the bulk of Saddam's armed forces remained intact and entrenched in Kuwait," Sullivan said.

"Although a good jab is important for a boxer to set up his opponent for a knockout blow, jabs alone do not win fights—and airpower alone does not win wars. Ground forces achieved in 100 hours what airpower could not achieve in six weeks of around-the-clock bombings."

Sullivan said that the experience of airpower has not lived up to theories about it. "Indeed, our experience bombing the Germans in Dresden, the Vietnamese in Hanoi, and the Serbs in Belgrade provides ample evidence that air campaigns do not generate effective pressure on target regimes. Instead, they often fortify enemy resolve, as the Germans also discovered in 1944–45 with their V2 rocket campaign against the British."

He added that "while the failure of overwhelming air superiority to force Saddam Hussein to withdraw from Kuwait during the Gulf War demonstrated the limited ability of airpower to coerce an opponent, more recent history demonstrates its limited ability to deter an enemy. Former Serbian President Slobodan Milosevic knew that efforts to ethnically cleanse Kosovo would result in NATO air strikes, but he used his troops to force hundreds of thousands from their homes. For weeks, the Serbs withstood extensive damage to their military and economic infrastructure. Mr. Milosevic only capitulated when he recognized that the United States was preparing to send ground troops into Kosovo."

The decision was made after a review by Williams of the recommendations of Brig. Gen. Paul J. Fletcher, the 314th Airlift Wing commander at Little Rock AFB, Ark., as well as the recommendations of a military judge who conducted a pre-trial investigative hearing and the accident investigation board report, said Air Mobility Command spokesman Capt. Jeff Glenn.

AIA Goes to 8th Air Force

On Feb. 1, Air Intelligence Agency became part of Air Combat Command.

AIA, which is headquartered at Kelly AFB, Tex., ceased to be a field operating agency of the Air Force and became a primary subordinate unit at ACC. AIA's two wings, the 67th Information Operations Wing at Kelly and the 70th Intelligence Wing, Ft. Meade, Md., were realigned under ACC's 8th Air Force. AIA's 690th Information Operations Group also joined the "Mighty Eighth."

"This is a natural evolution," said Gen. John P. Jumper, ACC commander. "It's an idea whose time has come. This integrates our information warfare skills and talents into the normal tactical and operational level of war just as we do fighters, bombers, and others."

News Notes

■ Former Secretary of Defense William S. Cohen has opened a new strategic consulting firm in Washington, The Cohen Group. The firm will advise US companies on international

JFK Considered Bombing China's Nuke Sites

A study of newly declassified documents contends that the Administrations of Presidents John F. Kennedy and Lyndon Johnson held extensive internal debates about ways in which they might prevent Communist China from testing its first nuclear weapon.

Among the possibilities were direct attacks on Chinese nuclear plants.

While historians have long known that Kennedy, in particular, mulled such a pre-emptive strike, the extent of US efforts to keep the atomic bomb out of the hands of Mao Zedong had never before been revealed, write William Burr and Jeffrey T. Richelson, senior analysts at George Washington University's National Security Archive.

Their article was published in the journal *International Security*.

William Foster, Kennedy's Arms Control and Disarmament Agency director, said JFK occasionally would say something like this: "You know, it wouldn't be too hard if we could somehow get kind of an anonymous airplane to go over there, take out the Chinese facilities—they've only got a couple—and maybe we could do it, or maybe the Soviets could do it."

US concern about the possible acquisition of nuclear arms by China predated Kennedy's election, but it was only in the early 1960s, Burr and Richelson write, that U-2 flights and new spy satellite imagery combined to produce hard evidence of Chinese facilities involved in nuclear production.

Kennedy officials worried that a nuclear China could become dangerously assertive in East Asia, increasing its power and prestige at the expense of the United States while adding to the problem of nuclear proliferation.

By early 1963, U-2 flights carried out by Nationalist Chinese pilots had revealed a nuclear complex at Baotou and a fissile materials plant at Lanzhou, among other facilities. But US officials had little information about the pace of the Chinese program.

One track of US policy was to try to enlist the Soviets in some sort of joint action against the Chinese. The USSR had recently broken with Beijing, but Soviet Premier Nikita Khrushchev rebuffed the US overtures.

In a September 1964 meeting with McGeorge Bundy, Soviet ambassador Anatoly Dobrynin blamed the Sino-Soviet split on Mao's "personal megalomania," according to US documents, but then went on to argue that a Chinese nuclear capability had "no importance against the Soviet Union or against the US."

The second track—unilateral action—entailed the study of an array of options. A study produced by Air Force Gen. Curtis E. LeMay, the acting chairman of the Joint Chiefs of Staff, weighed infiltration, sabotage, or invasion by Chinese Nationalists, as well as maritime blockades, conventional air attacks, and use of US tactical nuclear weapons on a selected Chinese target.

But the dangers of such action were many and obvious. The Nationalist Chinese themselves did not have the men or equipment to carry out an attack. US air attacks would require many sorties to ensure target destruction. To the world, the US would appear the aggressor. Even if successful, a sabotage operation would only delay, not prevent, China's acquisition of nuclear arms.

Authors Richelson and Burr point out that LeMay himself, in a memo, concluded that it was "unrealistic to use overt military force" in this situation.

Johnson was less alarmist about China. Facing a general election against hawkish Republican Barry Goldwater, he wished to appear the candidate of peace. He also worried that such a move could cause a dangerous escalation of the Vietnam War.

In the end, the US settled for simply trying to steal some of China's thunder. On Sept. 29, State Department spokesman Robert McCloskey announced that a Chinese nuclear test might occur in the near future. He was more right than he or any other US official knew at the time—the test took place on Oct. 16.

growth and general strategy, said Cohen.

- The Air Force announced Jan. 23 that it plans to assign 13 of its new C-17 Globemasters to McGuire AFB, N.J., beginning in July 2004, pending a favorable environmental impact analysis. Alternative bases would be Charleston AFB, S.C., which already has C-17s, or Dover AFB, Del.

- Northrop Grumman has begun production of 55 replacement wings for Air Force T-38 Talon supersonic trainers. Replacement wings will ensure that the 40-year-old T-38s remain in the air while Northrop is designing a completely new wing, scheduled to enter production in 2006. The replacement and new wing are expected to extend the T-38's service life another four decades.

- On Jan. 30, a Boeing Delta II rocket successfully placed a Global Positioning System satellite into space.

- An accident report released Feb. 2 said the Sept. 14 crash of an RQ-1 Predator unmanned aerial vehicle near Indian Springs Air Force Auxiliary Field, Nev., was caused by pilot error. The pilot inadvertently cleared the aircraft's primary control module's

More Problems for V-22

Crucial flight tests that might have shed light on rapid descent problems were cut from the V-22 development program to save money, according to two critical reports made public in February.

Such rapid descent "vortex ring state" phenomena are thought to have been a major factor in the April 8, 2000, V-22 crash in which 19 Marines were killed. This disclosure of the curtailed test regime is yet another blow to a weapons system that is already troubled by reports of falsified maintenance records and hydraulic failure.

Only a third of the planned vortex ring-related tests were actually flown, according to a Defense Science Board report. In fact, the DSB said some extremely critical test points were not flown at all.

Vortex ring state can occur if a helicopter drops very quickly while moving forward slowly, causing a loss of lift of the propeller rotors. Other terms for the effect are rotor blade stall and power settling.

A single-rotor helicopter can ride out some vortex ring events with a hard landing or controlled crash. But with the dual-rotor V-22 it is possible for one rotor to lose lift, and not the other, resulting in a very dangerous situation.

Thus the V-22 "appears to be less forgiving than conventional helicopters," according to a General Accounting Office report. The consequence of a too-rapid descent for Osprey "appears to be excessively grave," continued the GAO.

A Marine investigation of last April's crash found that the pilot did indeed violate flight manual descent procedures, likely plunging the aircraft into a vortex ring state.

The DOD Inspector General's office officially took over the investigation of allegations that the V-22 squadron commander falsified maintenance records in an effort to conceal the amount of upkeep the aircraft requires.

Marine leaders remain adamant in their support of the V-22 as being important to the Corps' future ability to deploy rapidly in a high-threat environment.

random access memory, severing its data link connections with ground control.

■ Two Air National Guard F-16 pilots survived a midair collision Jan. 30 and landed safely with minor injuries. The pilots were on a night vision goggles upgrade mission and were flying side by side when the accident occurred.

■ Investigators have determined that a circuit breaker panel was the most likely origin of a fire that destroyed a Minot AFB, N.D., missile alert facility Nov. 30. The fire gutted the 8,000-square-foot above-ground facility.

■ On Feb. 5 Boeing announced completion of the flight-test program for the X-32A Joint Strike Fighter concept demonstrator. Since first flight Sept. 18, the X-32A has completed 50.4 flight hours under the control of six different pilots. All test objectives were met, said Boeing officials.



Tennessee Air National Guard photo

Tuskegee Airmen spokesman Leonard Hunter (right) talks with Air National Guard officer candidates Christopher Walters, Christopher Andreychik, and Sydney Savion after a Black History Month ceremony in February at the I.G. Brown ANG Training and Education Center in Knoxville, Tenn.

Double Agent Ransacks US Secrets for Russia

By all accounts, FBI Special Agent Robert P. Hanssen—who was arrested Feb. 18 and charged with espionage—had no sympathy for Communism as an ideology. He professed disinterest in money, although he did allegedly accept payments of up to \$1.4 million for passing along secrets gleaned through his own counterintelligence work for 15 years.

The only aspect of his spying that really stood out was Hanssen's reveling in the execution of tradecraft and his ability to carry out espionage without attracting attention. He was so deft that he continually refused to adopt the Soviet, or Russian, way of doing things, insisting on his own. His own handlers did not learn his name until the day his arrest was announced.

He was "a very, very experienced intelligence officer," said FBI Director Louis J. Freeh.

The 100-page FBI affidavit filed in court on Hanssen's activities and made public upon his arrest is a virtual bible of spy trade secrets. When arranging exchanges, Hanssen always encoded places and dates. His computer diskettes were likewise encrypted. Signals for "dead drop" exchanges were kept simple—one vertical strip of white tape meant he was ready to pass along some documents. If there was any flaw in his approach it was perhaps only that he worked too hard, arranging more exchanges of small numbers of documents than the Russians thought wise.

"My security concerns may seem excessive," he wrote in a letter to his handlers. "I believe experience has shown them to be necessary."

Court documents allege that Hanssen provided Moscow with the identities of three Russians who had been recruited to spy for the US. Two were subsequently tried and executed.

If true, the allegations against Hanssen would establish him as one of the most damaging, and certainly one of the longest-surviving, moles to ever betray the US government. He may have escaped detection for many years by working in the "slipstream" of Aldrich H. Ames, the CIA agent caught in 1994 who apparently spied mainly for the money.

Hanssen largely kept to himself in his Vienna, Va., neighborhood in the Washington suburbs. He did not live lavishly—he drove a Ford, whereas Ames drove a Jaguar. The only trait he had that bothered some neighbors was his tendency to let his dog run off a leash after dark.

Former FBI Director William Webster will head an official inquiry into how Hanssen evaded detection for 15 years and how future Hanssens can be prevented.

■ On Jan. 25, Lockheed Martin completed assembly of the first "stretched" C-130J-30 airlifter for the Air Force. Five extended fuselage C-130s are currently on USAF order.

■ The Defense Commissary Agency will close six Stateside stores this year in an ongoing effort to streamline operations. Marked for closure are stores at Pope AFB, N.C.; Kelly AFB, Tex.; Defense Supply Center in Richmond, Va.; Sierra Army Depot, Herlong, Calif.; Cutler Naval Computer Telecommunications Station, Machias, Maine.; and Brooks AFB, Tex.

■ The Air Force Academy is now accepting nominations for a new award jointly established by the academy and its Association of Graduates. The award is intended to honor academy grads who have made exceptional contributions to the nation and their communities, via either military or civil an accomplishment.

■ The Air Force has removed the Red Cross emblem from the service's fleet of C-9 aircraft. Under international law, aircraft bearing such a symbol can fly only medical missions. Removal thus allows expanded use of the fleet. The emblem can be re-applied as needed.

■ DOD's first Reserve Component Family Readiness Award has gone to the family readiness office at Homestead ARS, Fla. The office won the award primarily due to its efforts to ease the difficulties of separation during deployments.

Growing Problems With Nuclear Stockpile

A report issued Feb. 1 by a Congressionally mandated panel warned of growing deficiencies in the nation's nuclear weapons production complex, including morale problems, maintenance problems, and continued delays of needed weapons refurbishment.

"It is the panel's view that major steps are needed to put the [nuclear] weapon program on a path that represents our best efforts toward sustaining confidence in the safety and reliability of the stockpile over the coming decades," wrote panel chairman John S. Foster Jr., a former senior Department of Defense official.

The study of the Panel to Assess the Reliability, Safety, and Security of the US Nuclear Stockpile made recommendations in a number of areas. Among them:

- Missing nuclear-related production capabilities should be restored and the production complex refurbished.
- Slippage in stockpile life-extension programs and production readiness campaigns should be ended.
- Surveillance capabilities intended to find defects in the stockpile should be increased.
- National labs need to respond to deep-seated morale problems, as well as redefine their missions and address long-standing management concerns.
- The Defense Department needs to become a "more informed customer" of the National Nuclear Security Administration, which was formed in the wake of alleged Chinese pilfering of nuclear know-how from Los Alamos National Laboratory.
- The NNSA should determine the cost and feasibility of shortening the nuclear test response time to below the current Congressionally directed one year.

■ The US Air Forces in Europe Construction and Training Squadron at Ramstein AB, Germany, has become the third educational institution in the world to receive international accreditation for a fire academies rescue technician course. The accreditation will allow the group to take its course on the road and serve as a mobile training organization for rescue certifications at US bases throughout Europe.

■ Pentagon officials are planning to send investigators to two crash sites in the Himalayas—sites that may hold remains of US airmen lost during World War II. One of the sites has been linked to the disappearance of a C-46 transport March 27, 1944, on a flight from Kunming, China, to far northeastern India.

■ There is no hiring freeze at the Pentagon, but DOD officials are reviewing their civilian workforce requirements and hiring procedures, per a memo from Secretary of Defense Donald Rumsfeld to that effect issued on Feb. 9.

■ Recent publicity detailing evidence that the first US pilot shot down during the Gulf War may have survived the crash resulted in many new leads in the case, Sen. Pat Roberts (R-Kan.), a member of the Senate Intelligence Committee, told the *Los*

Angeles Times in February. Navy Lt. Cmdr. Michael Scott Speicher was declared dead after the war, but discovery of his F/A-18's wreckage and

The Iron Lady Would Like Another Whack

A full decade has passed since Britain joined the United States and other coalition nations to expel the Iraqi forces from Kuwait in the 1991 Gulf War.

Even so, time has not cooled the debate about whether the victors should have dispatched Iraqi strongman Saddam Hussein when they had the chance. The wartime British Prime Minister, Margaret Thatcher, certainly has no doubt.

"I wish I could have stayed on [in power] so that we could have finished the job," said Thatcher, who was quoted in the *London Times*. "Perhaps we would not be where we are today if we had acted then. Saddam is a cruel and terrible man. He should not be allowed to remain in power."

Thatcher spoke at the British embassy in Kuwait during a Feb. 25 commemoration of the liberation of that nation.

Thatcher was in office in the months immediately after Baghdad's Aug. 2, 1990, invasion, but she soon lost the leadership of the Tories to John Major, who replaced her as Prime Minister before the conclusion of the war.

Senior Staff Changes

RETIREMENTS: Brig. Gen. Randall C. Gelwix, Maj. Gen. Robert J. Winner.

NOMINATIONS: To **AFRC Major General:** James D. Bankers, Marvin J. Barry, John D. Dorris, Patrick J. Gallagher, Ronald M. Sega.

To **AFRC Brigadier General:** Fred F. Castle, Thomas A. Dyches, John H. Grueser, Bruce E. Hawley, Christopher M. Joniec, William P. Kane, Michael K. Lynch, Carlos E. Martinez, Charles W. Neeley, Mark A. Pillar, William M. Rajczak, Thomas M. Stogsdill, Dale Timothy White, Floyd C. Williams.

CHANGES: Brig. Gen. Daniel J. Darnell, from Cmdr., 31st FW, USAFE, Aviano AB, Italy, to Cmdr., 57th Wg, ACC, Nellis AFB, Nev. ... Brig. Gen. Donald J. Hoffman, from Cmdr., 52nd FW, USAFE, Spangdahlem AB, Germany, to Cmdr., 31st FW, USAFE, Aviano AB, Italy ... Brig. Gen. David L. Moody, from Cmdr., 57th Wg, ACC, Nellis AFB, Nev., to Special Asst. to Cmdr., Air Warfare Ctr., Nellis AFB, Nev. ... Brig. Gen. Robin E. Scott, from Cmdr., 366th Wg, ACC, Mountain Home AFB, Idaho, to Dep. Cmdr., CAOC 7, Air South, NATO, Larissa, Greece.

COMMAND CHIEF MASTER SERGEANT RETIREMENT: CMSgt. Michael C. Reynolds.

CCMS CHANGES: CMSgt. Cheryl Adams, to CCMS, AFRC, Robins AFB, Ga. ... CMSgt. Robert V. Martens, to CCMS, AFSOC, Hurlburt Field, Fla.

SENIOR EXECUTIVE SERVICE RETIREMENT: Timothy F. Deerr.

SES CHANGES: Tommy B. Jordan, to Exec. Dir., San Antonio ALC, Kelly AFB, Tex. ... Lyle H. Schwartz, to Dir., AF Office Scientific Research, Arlington, Va. ■

other clues and pressure from Roberts and other lawmakers has led the Pentagon to reclassify him as missing in action.

■ Four sets of remains of unidentified World War II and Korean War casualties were disinterred from Hawaii's National Memorial Cemetery of the Pacific on Jan. 30. Officials intend to use DNA tests to attempt to establish identities.

■ President Bush will call for a new round of military base closings, perhaps as early as next year, Sen. Phil Gramm (R-Tex.) told the *San Antonio Express-News* on Jan. 26. "I know they're going to ask for it at some point," said Gramm.

■ The Bush Administration's strategic review is a good thing—but it is incomplete, according to Sen. Carl Levin (D) of Michigan, ranking member of the Senate Armed Services Committee. "Missile defense ought to be included in this review—it seems to be left out," he told reporters.

■ The Defense Science Board says all of the services place low priority on training. It should be made an equal partner in the acquisition and testing process, said a DSB report.

■ A new phased-array radar went into operation at Clear AFS, Alaska, on Feb. 1. The new equipment replaces an old mechanical radar and will help the 13th Space Warning Squadron carry out its mission of space surveillance and missile launch early warning.

■ Navy Reserve personnel helped Air Force counterparts make improvements to the north auxiliary airfield at Charleston AFB, S.C., Feb. 2 to 4. Naval Mobility Construction Battalion 14, from NAS Jacksonville, Fla., saw the effort as a way to extend a hand to another service while gaining realistic unit practice in rapid response for contingency construction.

■ McChord AFB, Wash., suffered minimal damage in the strong earthquake that rocked the Pacific Northwest on Feb. 28. There were no injuries and no aircraft were damaged in the temblor, said base officials.

Obituary

Maj. Gen. **Richard W. Davis**, the national security space architect, died suddenly Feb. 27 on his way to a meeting at the Pentagon. The official cause of death for the 53-year-old was cardiac arrest.

Davis, who entered the Air Force in 1970, commanded USAF's Wright and Phillips laboratories. He also was a founding member of the Strategic Defense Initiative. ■

Four New Names for the Aviation Hall of Fame

The National Aviation Hall of Fame on July 21 will enshrine four new air and space pioneers at its Dayton, Ohio, facility, adjacent to the USAF Museum at Wright-Patterson AFB, Ohio.

This year's inductees are:

Marion E. Carl

He was the first Marine ace of World War II, who also became the Corps' first helicopter pilot. Oregon native Carl earned Navy wings in 1939. In addition to his other major achievements, Carl piloted U-2s on spy flights over China and made some of the first takeoffs and landings of jet aircraft on carriers. The retired major general was killed in 1998 by an intruder in his home.

Joe H. Engle

He was an X-15 pilot and the nation's youngest astronaut. Born in Abilene, Kan., Engle received Air Force wings in 1958, attended test pilot school at Edwards AFB, Calif., and served as a backup in the Apollo space program. He commanded two space shuttle flights, in 1981 and 1985. He retired as a major general.

Robin Olds

Olds was a World War II ace and flew P-80s in the first jet-equipped USAF squadron, serving as wing man on the first aerobatic jet team. Olds was an All-American football star at West Point and later an Army Air Corps ace, fighter wing commander in Vietnam, and commandant at the US Air Force Academy. He retired as a brigadier general.

Albert Lee Ueltschi

He was the founder of FlightSafety International and Project Orbis. Ueltschi's FlightSafety firm is one of the world's top flight training organizations with 42 facilities worldwide. Project Orbis, a flying hospital and teaching facility, provides the capability for eye surgery in underdeveloped nations.

Rumsfeld Comments Irk Russian

Gen. Leonid G. Ivashov, the head of international cooperation in Russia's Defense Ministry, suggested that Moscow had a bone to pick with Donald H. Rumsfeld.

In his Feb. 16 press remarks, the general complained that President Bush's new Defense Secretary struck a belligerent tone toward his country.

Ivashov said that Russia had been watching a concerted information war on Russia's prestige and its international position. He said the tone of the comments "smacks of Cold War rhetoric."

Russia took particular exception to Rumsfeld's claims that the Kremlin continues to operate as an active supplier of ballistic missile technology to rogue states.

"They are selling and assisting countries like Iran and North Korea and India and other countries with these technologies, which are threatening other people, including the United States and Western Europe and countries in the Middle East," Rumsfeld said.

Rumsfeld noted in public remarks that it makes no sense for Moscow to export missile technology and then complain about US efforts to protect itself from that same technology.

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Air Force leaders report on the state of the force.

Providing Vigilance,

MODERNIZATION, readiness, and sweeping new strategies dominated discussion at the Air Force Association's annual Air Warfare Symposium, held Feb. 15–16 in Orlando, Fla. Senior officers and civilians came together to offer status reports on the day-to-day challenges facing the Air Force, how the service is faring in ongoing joint strategy reviews, and the development of a new concept of operations.

Gen. Michael E. Ryan

The Air Force continues to face a “huge challenge in readiness,” despite an increased flow of spare parts and some “respite” from the frantic pace of operations the service maintained throughout most of the 1990s, according to Gen. Michael E. Ryan, Air Force Chief of Staff.

In the past 10 years, overall mission capable rates for Air Force aircraft have dropped by 10 percent.

Reach, and Power

By John A. Tirpak, Senior Editor

from about 83 percent to about 73 percent, Ryan reported, and much of the problem has to do with the aging of USAF aircraft.

The average age of USAF's fleet now is 22 years and will rise to 30 years by 2010, even if all programs now on the books are carried to completion, he added. Meanwhile, the cost to maintain older aircraft has risen by 41 percent, Ryan noted, further reducing the funds available

for investment in modernization.

"If we want to turn this around, quite honestly, we would have to buy aircraft at a rate of 170 a year," Ryan asserted. The current annual buy is about 100 a year, but half of those are inexpensive trainers and not full-up operational aircraft.

Ryan also provided bleak news about pilot retention. Prior-year predictions that USAF would by now have a sufficient number of pilots

have proved to be overly optimistic.

"We are going to have to live with a shortage of pilots over the next few years," Ryan noted, but he quickly added that the service will not be "crippled."

Measures are being taken to use rated officers only where they are most needed. Moreover, the Air Force is acting to bring back "fairly current" retirees and to use contractors wherever practical, he explained, to



More maintainers will be upgrading to alleviate a shortage of 5-level crew chiefs. Here, A1C Lamont L. Guillory checks a 555th Fighter Squadron F-16. The Aviano AB, Italy, unit won the DOD Phoenix Award in maintenance.

“keep our edge not just in the fighting force, but our edge in the planning force.”

USAF is also 25 percent short on highly experienced crew chiefs. The “5-level ... journeyman” crew chiefs “are the ones that we put the greatest stress on,” Ryan said.

On the positive side, recruiting goals for mechanics have been met this year.

“Yes, we do have shortages,” said the Chief of Staff. “Can we live with them? Yes. We hope for not too long.”

Regarding mobility operations, Ryan said USAF’s “No. 1 requirement is to continue that [C-17] buy.” The Air Force will look at ways it can continue to use the expertise of those who now operate the C-141 but whose units will not be upgraded with the C-17 when the C-141s are retired.

Another Ryan topic was the so-called Space Commission, a blue-ribbon panel of defense experts that spent six months taking a hard look at the way the United States has organized its military space effort. The panel had numerous recommendations to streamline and upgrade USAF’s management in this area.

Ryan said the Air Force supports the panel’s recommendations and is “rapidly moving out to implement those ... we have control over.” Some structural changes must be approved by Congress. However, said Ryan, he expects the commission’s recom-

mendations could be put into effect by the end of May.

In a controversial step, the Space Commission strongly suggested that effective military space operations will require a new military department or corps within the Air Force. Ryan emphasized that he doesn’t believe a space corps or full space service will be needed until everyday commerce goes beyond Earth orbit. He expects there will be conflict in space before then, and the Air Force will “need to be prepared.” For the foreseeable future, however, USAF will continue to focus on “integration of what happens in the air and on the ground and at sea.”

Gen. John P. Jumper

The F-22 fighter, B-2 bomber, and a new multipurpose Intelligence, Surveillance, and Reconnaissance airplane together will form the basis of a new joint operational concept aimed at guaranteeing access to heavily defended theaters of war, said Gen. John P. Jumper, commander, Air Combat Command.

The basic concept is called Global Reconnaissance Strike. GRS is expected to provide a way to bypass an enemy’s means for holding American power at bay with cruise and ballistic missiles and Weapons of Mass Destruction. Air Combat Command is developing the concept’s Air Force element, which is called Global Strike Task Force, Jumper explained.

A few squadrons of F-22 fighters, he said, could be based just outside the reach of an enemy’s missiles. Given their range, speed, and stealth, the F-22s are capable of clearing the skies of enemy fighters and making precision attacks against anti-aircraft threats, thus paving the way for the stealthy, high-payload B-2s to make day and night raids from well outside the theater—often from the continental US.

“The F-22’s job is to take out those threats that would endanger the B-2 as the B-2 focuses its capabilities on the Weapons of Mass Destruction,” including WMD manufacture, storage, and launch facilities.

As the F-22s and B-2s destroy enemy access denial capabilities—such as coastal anti-ship missile batteries, air defense systems, and warning radars—more air, as well as naval and ground forces, can enter the theater to begin counterpunching the enemy in more dimensions, Jumper said.

“They take out those Weapons of Mass Destruction further in, and as that threat rolls back, it makes available the airfields that are required to provide that persistent force over the battlefield,” Jumper said. He described the combination of F-22s and B-2s as a “kick down the door” force. The combination of Joint Strike Fighters and nonstealthy aircraft would make up the “persistence” force, which is also the “war-winning force.”

Jumper noted that B-2s grabbed headlines by flying from Whiteman AFB, Mo., to Kosovo and back on one mission. However, F-15Es flying from Britain and Germany routinely carried out long-duration missions of thousands of miles, he said, pointing out that the Air Force is experienced at attacking from a distance.

The GSTF “will be extracted from the first leading elements” of the structure of an Aerospace Expeditionary Force, Jumper said. “If called upon, they can deploy quickly and merge quickly” to force a way into a theater. More of the AEFs would “flow” to the theater as soon as the way was clear, he noted.

Jumper envisions the future deployment of a “common wide-bodied aircraft” having the combined capabilities of AWACS, Joint STARS, Rivet Joint, and Airborne Command, Con-

trol, and Communications aircraft. This aircraft would collect information on the enemy, manage the battle, and handle pop-up targets such as mobile missiles.

The ISR common wide-body will combine the capabilities of as many other ISR platforms “as science and technology will allow,” Jumper said. At a minimum, however, the aircraft will have to have “machine-level conversations” with overhead satellites and Unmanned Aerial Vehicles to present real-time information to commanders who must make quick decisions about where to best apply airpower.

“The people at the console don’t know and they don’t care from whence the information is coming,” Jumper said. “All they know is that they have a complete picture” of what is happening in the battlespace. This concept would eliminate the stovepipes and the need to speak the “tribal” language of the various ISR communities to obtain a complete picture of what is happening, he added.

Gen. Richard E. Hawley (Ret.)

The time is right for the Global Reconnaissance Strike concept because available technology and the anti-access threat have conspired to require it, said retired Gen. Richard E. Hawley, former ACC commander.

For a “couple of billion dollars a year,” any country could, within a decade, gain the technology that



The satellite-guided JDAM, unleashed by B-2s and F-22s, will help roll back the threat of enemy theater ballistic missiles and air defenses—crucial to the Global Strike concept. A1C Chris Cowgill transports a JDAM to a waiting B-2.

would make access to a theater of war a problem for the US, Hawley said, paraphrasing a Defense Science Board study on future threats. Cruise missiles, theater ballistic missiles, and Weapons of Mass Destruction are proliferating at the same time that “you can buy very good photo intelligence off the Internet,” to see where forces are building up and to aid in targeting.

The GRS concept “is a direct counter to the anti-access threat, and we need one of those,” Hawley maintained. “We need a counter to this problem because it is real.”

The timing is right since the US will obtain the high-flying, super-cruising, stealthy F-22 fighter within a few years and because the stealthy B-2 bomber has recently obtained the power to strike many targets on a single mission with extreme accuracy.

In Kosovo, B-2s typically hit about 15 aim points per mission and destroyed 90 percent of their assigned targets “on the first strike.” “That is incredible,” Hawley said. “We demonstrated that we can operate from very long ranges and be effective.” With new, smaller munitions that have just as much accuracy and much more explosive power for their size—and a new “smart rack” to hold them—the B-2 will soon be able to hit 80 separate targets on a single sortie.

Hawley insisted that GRS is not an exclusively Air Force proposition. “It can’t work in a unilateral context, either US only or US Air Force only,” he said.

The strategy will depend on forward deployment of some units, such as naval forces equipped with cruise missiles that can help with rolling back the anti-access threat. Carrier-based jamming aircraft will also be needed to help with protecting certain kinds of aircraft. Special operations forces will be needed as “eyes and ears on the ground” to assist with targeting mobile missiles and other threats.

Fast-deploying ground forces that



Reports of an end to the pilot shortage were premature. USAF will have to live with a shortfall in pilots for at least a few more years. Bringing back retirees, using contractors, and rethinking desk jobs for rated officers can help.

USAF photo by SrA. Debra A. Castillo

USAF photo by SrA. Jessica Koehman



Star of the 21st century USAF and transformational strategies, the F-22 distills into one airframe a sky-sweeping fighter, a suppressor of enemy air defenses, attacker of enemy command and control, and defender of ISR platforms.

are “light and lethal” will also play a role, Hawley noted.

“We need our forces on the ground in order to force the enemy to concentrate and present us with targets that we can destroy from the air,” he explained.

Likewise, anti-ballistic missile systems from all the services—the USAF Airborne Laser, Army Theater High Altitude Area Defense System, and Navy Upper Tier—will be required to protect the units that initially deploy.

While there is a role for all the services and coalition partners to play in the concept, Hawley acknowledged that it is not yet “generally accepted.” However, briefings that he has had on other services’ transformation strategies—particularly the Navy’s—feature many of the same elements.

The concept relies utterly on the F-22, however, with its unique ability to reach any target, attack with precision, and clear the skies of enemies, Hawley noted. The F-22 distills into a single airframe the ability to control the skies, suppress or destroy enemy air defenses, attack centers of gravity, and protect the bombers and ISR platforms that are also key to making the concept work.

Modern surface-to-air missiles will present a virtual “brick wall” to fighters of the F-15 and F-16 vintage and deny them the ability to operate when and where they wish, but the F-22 will be able to slip between the de-

tection range of those missiles and enjoy “12 times more unthreatened airspace than conventional airplanes have today.”

Under the GRS concept, Hawley said, it will be possible to “operate on Day 1 or 2 with a very small force—three or four squadrons—for-

ward based, using that long-range strike power from outside the theater and from the sea in order to do your work.” No longer will the Air Force be sending “20 or 25 fighter squadrons forward and spending weeks getting them built up before you can begin to engage the enemy.”

Gen. Gregory S. Martin

The Kosovo operation demonstrated that the air forces of NATO’s European members are lacking in capabilities crucial for future success, asserted Gen. Gregory S. Martin, commander, US Air Forces in Europe.

Efforts to modernize the air forces of NATO allies and make them more interoperable with USAF are “lagging behind,” Martin said, explaining that the chief culprits behind the delay are defense budgets in NATO that are “somewhat flat.”

In addition, the NATO allies are “wrestling right now with the concept of the European security defense identity.” Furthermore, the allies are worried about losing their national industrial capabilities in the area of defense, and these priorities “appear to be taking precedence over

Ground Troops Will Engage Quickly, Says Kernan

The vestigial US style of war has to be replaced with a quicker, more parallel, and joint strategy that affords the enemy fewer options, asserted Army Gen. William F. Kernan, Supreme Allied Commander Atlantic and commander in chief, US Joint Forces Command. He laid out a concept that would see ground troops engaged almost from the start of any conflict, but said extensive experimentation over the next few years will iron out the idea and help establish service agreement.

Kernan said he has been “tasked to lead transformation” in his role as the supplier of most CONUS-based forces and as the chief implementer of joint doctrine.

Desert Storm-style strategies in which sea and air control are established, forward ports are seized, there is a buildup of forces, and battle is joined are “very sequential” and “very predictable” and give the enemy “opportunities that we would like to deny him,” Kernan said. “I think we can do it differently.”

Kernan laid out a strategy patterned on Operation Just Cause in Panama, where ground troops are airlifted almost directly to the areas of battle, and the air, sea, and land battles are engaged simultaneously. “We simultaneously strike across the width, depth, and breadth of that battlefield,” Kernan offered.

“We bypass intermediate staging bases,” he said. “We use our asymmetrical capabilities, our strategic lift” and “position forces into contested and uncontested areas. ... We use a combination of kinetic and nonkinetic systems out there to attack his centers of gravity, to situationally take down his integrated air defenses, to disrupt his power bases, to interrupt his command and control, to hit his power grids.”

Psychological operations would be run to “break the national will” of the enemy, and the assault would come from all directions.

“We are coming at him direct from CONUS with airborne forces or assault landing in the Army’s new medium-weight force,” Kernan said. There would be “synchronized” operations with air units, Marine amphibious units, and naval forces, he added.

This strategy, dubbed “rapid decisive operations,” will “take some doctrinal changes,” Kernan said.

alliance standardization and interoperability.”

At issue, too, are “hot spots” in Europe that threaten to sweep the allies into “long-term engagements that could drain their limited resources.”

Martin said progress has been slow in implementing the NATO Defense Capabilities Initiative, to which the allies agreed in April 1999 as a means of redressing the growing gap in capability between the US and its NATO partners in areas such as stealth, aerial refueling, air mobility, and precision attack.

“There is no schedule and priority” to the 58 identified initiatives, which also include logistics issues, ability to operate in a chemical/biological environment, and communications links, Martin said.

He urged that NATO pursue common upgrade projects—common aircraft, communications systems, etc.—not only to obtain systems at more affordable costs, but also to ensure interoperability. Such programs will have to be carefully structured in a way that the country coming up with the winning design in any category reaps a benefit, but that work share is distributed and measures taken to “protect the industrial base of each nation that participates.”

The problems of interoperability and fighting together “effectively” will not get better quickly and will “get worse in the future” unless a “partnering and cooperative effort” is launched, Martin warned. He also suggested that the first such programs chosen for partnering be of manageable size, in order to get some successes under NATO’s belt before it tackles the hard issues.

“It might be useful ... to not bite off the most challenging one, something like air-to-air refueling,” he said. “Because, when you bite off the most challenging [one] and you get a cooperative arrangement going, ... then the program slips and it begins to grow in cost [and] the next thing you know, you begin to shed your partners and pretty soon, you either have a program of one [participant] or the program dies.”

For the Air Force, the war in Kosovo could be boiled down “to about 15 ... ‘bone marrow’ issues,” Martin noted. One was the need to be able to operate at “all altitude, all weather.” Another was the ability to



USAF photo by S.A. Jeffrey Allen

B-2s weren't the only combat types that made long-duration flights to hit Yugoslav targets. RAF Lakenheath, UK, F-15Es flew some long-range missions directly from their home base, while others, such as this one, flew from Aviano AB, Italy.

pipe digital targeting data into cockpits in real time.

Yet another was the need to “develop technologies that will complement stealth,” Martin said. Though not very specific on what these might be, he suggested they have to do with providing better targeting information to stealth aircraft.

“We have invested a lot of money in stealth and we now know that it is a superb capability,” Martin said. “No one else has it. We like it. It opens up avenues of approach to targets ... that we’ve never been able to strike before. But ... we know it is also not invisible.” The Air Force must “have an integrated and appropriate support mechanism to enable stealth even further.”

Precision targeting is no longer “a special capability; it is a standard and required capability,” given heightened concerns about collateral damage, Martin noted. To further limit damage only to those things that must be destroyed, it’s essential that “we also have the right measure of ordnance to give us the effect that we need,” he said, in a reference to smaller precision guided bombs in the 250-pound class.

Gen. Patrick K. Gamble

An Air Operations Center is being built at Hickam AFB, Hawaii, and will be operational by the end of this year, reported Gen. Patrick K. Gamble, commander, Pacific Air Forces.

The Navy had planned to put the

joint force air component commander for the Pacific aboard USS *Coronado*, Gamble said, but as high-tech as the ship is, it was insufficient to the tasks of running an air campaign.

There are only “about 80 workstations on that ship,” Gamble noted. Even with double 12-hour shifts, “that is about 180 people,” whereas an Air Operations Center can run as high as 1,400 to 1,500. The situation demanded “reachback,” but “we didn’t have anything to reach back to.”

The AOC at Hickam will be across the street from PACAF headquarters and is being patterned on the AOCs at Vicenza AB, Italy, and Prince Sultan AB, Saudi Arabia, Gamble noted.

The huge distances involved in the Pacific mean air forces will be stressed to carry out operations there if a war breaks out, Gamble said, adding that it’s impractical to use aerial tankers to move whole AEF’s worth of airplanes across the ocean. For this reason, “lily pads” such as Wake Island and Guam are taking on vital strategic significance.

Gamble said that “we have an opportunity right now to get it exactly right or exactly wrong with China” and create either an adversary with whom the US could have a Cold War for 70 years or a partner in commerce and stability for the region.

China considers Taiwan of crucial national importance and is “willing to fight” over it if sufficiently pro-



Gen. Michael Ryan doesn't see a space corps being necessary anytime soon, but USAF has pledged to move swiftly to implement Space Commission recommendations. Defense of space assets will become increasingly important.

voked, Gamble asserted. However, he sees China as being amenable to constructive engagement with the US, because it has an economic vision for the Pacific that would be hampered by appearing militaristic or aggressive.

Russia is an economic "basket case, right now. They are not even on the radarscope," Gamble commented. Russia is presenting a problem by selling its most sophisticated military hardware around the region, but again, Gamble believes that continued military-to-military engagement will maintain good relations with Russia in the Pacific.

Gamble said North Korean forces are still poised to unleash "an artillery barrage of biblical proportions" against South Korea and that if the US were to be involved in a fight there, "it would be a war that would shake us to our very foundations."

Airpower is "very highly leveraged in blunting that attack" and creating the conditions for a counterattack, he went on, and "anything that detracts from our ability to win that one means the war will go on longer and ... the casualty rate will become higher."

Talks between the two Koreas have the benefit of lessening tensions on the peninsula, but the US is not much involved in the "dialogue," and carefully developed strategies for defending South Korea could be undone by even small changes in the military posture there.

"The minute you ... start moving forces away from the border as confidence-building measures, ... you begin to unravel that plan," Gamble said. More than a little revision could easily make it impossible "to rebuild" the plan, and the strategy of fighting in place would have to shift to one of expeditionary force, he said.

Brig. Gen. David A. Deptula

The Bush Administration's decision to hold off making a big infusion of cash to the Pentagon pending the outcome of a major strategy review is just what the Air Force had

in mind, said Brig. Gen. David A. Deptula, USAF National Defense Review director.

"That is exactly what we wanted," he asserted. "We wanted to begin with an overarching strategic look at what is going on before we delve into the programatics."

The benefit of such a review is that it will force the Pentagon to look more closely at new capabilities already or becoming available and not necessarily cling to old strategies that have been overtaken by technology and world conditions.

"We face a situation where our capabilities, some would suggest, far outpace the way we currently plan to conduct our military operations," he observed.

The Air Force's main goal in the 2001 Quadrennial Defense Review is to obtain the resources necessary to properly fund a modern aerospace force, Deptula said. Toward that end, it also wants to "explain to people ... how we fit into the overall national security equation. ... We want to ensure that we participate effectively in each one of the QDR sessions and debates."

USAF does not view the QDR as a choice between making strategy fit the money available or vice versa.

"I would suggest to you that there is a third option," Deptula said. "That is to capitalize on the capability resident in our aerospace power forces to enhance our joint concepts of operations. ... If you do that, we can



Photo by Paul Kennedy

Korea poses a tricky situation, per Gen. Patrick Gamble. Confidence-building measures that shift opposing militaries away from the border might unravel carefully crafted defense plans for South Korea. The strategy relies on airpower.

retain the ability to engage in multiple operations around the world.”

The national security strategy is due to be completed by mid-June, while the QDR, though officially slated to be delivered in September, may well slip to December to give the new Administration time to incorporate its new thinking, Deptula reported. That timeline would bring the QDR alongside the Nuclear Posture Review, also slated for completion in December.

New for the 2001 QDR is an accompanying assessment of the review and the level of risk inherent in whatever strategy is reflected in it by the Chairman of the Joint Chiefs of Staff, Deptula added. No details have yet been released about the nature or timetable for a review of major aircraft programs also set for this year.

The Air Force’s new strategies encompass operational concepts like Global Reconnaissance Strike but more broadly incorporate leap-ahead technologies in many fields, including information warfare, Deptula noted. New organizational structures also play a role, such as the AEF, he said.

“There you have the three elements of the revolution in military affairs,” he said: technology, changing operational concepts, and organizational change.

The Air Force is setting a goal for “near-real-time global force application,” Deptula said.

He explained that “when the National Command Authority decides they want to achieve a particular effect, within minutes of that decision being made, those effects are being accomplished.”

Enabling that long-term goal will be systems like a space maneuver vehicle, computer network defense and attack, and the space based laser, he said.

In the near term, Deptula emphasized that, despite persistent press reports to the contrary, the Joint Strike Fighter is vital to USAF strategy.

“The F-22/JSF team is another concept that some people seem to have difficulty understanding,” he said.

“Their interdependency is key to leap-ahead ability to operate effectively in any environment around the world. ... You need each one of



Photo illustration by Erik Simonsen

USAF leaders said the service is developing unmanned aircraft at the right pace, and despite reports to the contrary, has no prejudice against them. An unmanned combat aerial vehicle offers high promise in high-risk missions.

the pieces for this whole thing to operate.”

Lawrence J. Delaney

The Air Force leadership has done a good job finding a balance, within its limited means, between hardware and people issues but is entering a period when critical decisions must be made regarding both, with ramifications that will affect the service for decades to come, said Lawrence J. Delaney, acting Secretary of the Air Force.

Right now, the Air Force enjoys the status of being “the crucial component of joint and coalition operations. We are the ‘first to the fight’ service.”

However, the next five to 10 years “will be critical in determining the long-term contribution of aerospace power,” Delaney asserted. The service has a unique opportunity to “positively affect the impact and influence of aerospace power for the many decades to follow” because there is no “single dominant threat” to US security right now. Meanwhile, the spread of technology is spawning a host of potentially formidable foes, he added.

At the same time, the Air Force’s aircraft and facilities are getting old and hard to cost-effectively maintain, and as yet there are no new funds to replace them. And, the cost of operations and maintenance is climbing every year.

Delaney argued that the challenges

are “not insurmountable” because the Air Force has always been good at finding innovative new technologies and practices to do things more efficiently. He cited UAVs and directed energy weapons as two areas where USAF is pioneering new concepts that will ease the burden on older systems. The service must be willing to occasionally take some risks, he added.

USAF is “ahead of schedule” in moving toward its recruiting goals for this year and is bringing in more recruits than last year, Delaney reported. While there has been “some success” with retention efforts, the service is not relaxing its efforts.

“We need to continue our attack because the problem is far from solved,” he warned. The Air Force plan is to “keep quality of life for our people and their families at the top of our priority lists” because USAF is a “retention-based force” that depends entirely on the expertise and experience of its people, he said.

In hardware, the Air Force wants to move out smartly and introduce new technologies that will vastly increase its capabilities.

“There is not a single space system that we are not currently modernizing,” he noted. In the case of the F-22, its capabilities so far outstrip its predecessor, the F-15, that “we have, in effect, skipped a generation in technology with stealth, supercruise, integrated avionics, and unchallenged maneuverability.” ■

The Air Force and the Army square off over warfighting approach.

The Halt Phase Hits a Bump

By Elaine M. Grossman

SELDOM have two little words caused such controversy among military officers at the most senior ranks. But when the Air Force succeeded recently in getting the term “halt phase” into two joint documents on warfighting, a high-stakes test of wills ensued, one that has yet to be resolved.

Since the mid-1990s, Air Force officials have speculated that airpower could be used quickly and effectively to stop the advance of enemy forces into friendly or allied territory. Rather than wait through the weeks or months it may take ground forces to assemble in a theater to reverse enemy aggression—as the United States and its allies did when Iraq invaded Kuwait in 1990—strike aircraft and missiles could be brought to bear quickly to blunt and even turn back an aggressive adversary, the theory goes.

Especially in the case of the second of two overlapping Major Theater Wars, a halt phase could help compensate for shortfalls in airlift and buy enough time for heavy ground forces to deploy to the region and retake and hold territory, aerospace advocates say.

In early February, Joint Staff officials drafting a new revision of Joint



The Hard Way. In the Gulf War, Iraqi vehicles (such as these destroyed at Khafji) became object lessons in the use of airpower to halt an armored thrust. Some US theater commanders now include a “halt” option in their war plans.

Publication 3-0 on "Doctrine for Joint Operations" signaled their agreement that such an approach is viable for warfighting commanders. "A possible halt phase is necessary when decisive combat operations are required to terminate aggression and achieve US objectives," according to a close-hold "final coordination" version of JP 3-0, in the works for more than two years.

Ample Precedent

The wording actually draws off of ample precedent in the Defense Department's 1997 Quadrennial Defense Review report and the National Military Strategy that followed, according to military officials.

In arguing behind closed doors in favor of a halt phase, Air Force officials even found themselves backed up by some unified warfighting command representatives, who said their war plans now include a halt approach—primarily using aircraft and missiles—at the outset of major hostilities.

But it was not until early this year that the halt language was first inserted into the campaign-plan phasing section of the nearly 200-page doctrine publication. Initially, Air Force officials avoided pushing to include a reference to halt operations. The turnabout came when the Air Force Chief of Staff, Gen. Michael E. Ryan, decided he would go to the mat over the issue, if necessary, at the level of the Joint Chiefs.

How did the rather inconsequential realm of doctrine suddenly become so important? After all, while commanders have traditionally regarded joint warfighting doctrine as "authoritative," they are free to disregard it at their discretion in executing wartime operations.

Military documents that may prove more critical to the way in which operations are carried out are the National Military Strategy and unified commanders' warfighting plans. Their references to a halt phase have already helped the Air Force argue for a stronger operational role and a meatier budget for weapons platforms over the past several years.

But were "halt" to remain absent as a campaign phase from the newly revised overarching doctrine publication, the Army or Marine Corps might just gain a foothold in persuading the Bush Administration that ground forces play a unique role in stopping an enemy landgrab. A logical next step would be to suggest that some amount of resources be diverted from aerospace assets and toward them.

Doctrine's central importance to the services is being reaffirmed at the Pentagon in real time. When the Joint Staff released the new halt-phase wording for JP 3-0 in February, the Army reacted swiftly with a powerful counterstrike.

A top Army officer reportedly sent a message to the Joint Staff leader-

ship indicating that his service would protest any reference to the halt phase in joint publications. At immediate issue was a draft report on the Joint Strategy Review. As the military's latest take on how to approach future threats, the JSR is meant to serve as part of the analytical foundation for the 2001 Quadrennial Defense Review.

Army officers were particularly concerned by the JSR's reference to a "rapid halt," sources said. The adjective only adds to the impression that heavy ground forces could not deploy in time to execute such a phase.

In response, Army Gen. Henry H. Shelton, the Chairman of the Joint Chiefs of Staff, personally ordered that the halt-phase language be excised from the JSR, at least for the time being. Officials close to the Chairman explained that Shelton thought it inappropriate to send the Joint Strategy Review to Donald H. Rumsfeld, the new Defense Secretary, before the services had a chance to sort out pending disagreements over the halt approach in the doctrine document, which was on a separate track for completion.

With both the Air Force and Army indicating they would "nonconcur" if the halt-phase issue did not go their way, it will likely take a session of the Joint Chiefs in their secret "Tank" meeting facility to resolve the matter.

Ryan's Support

As in the case of JP 3-0, no halt-phase wording appeared in the main body of the JSR draft report until recently, sources said. The Joint Staff had been drafting the JSR for several months, but only when it became apparent how strongly Ryan felt about the issue did the Air Force push to include the halt phase in the Joint Strategy Review's discussion of approaches to major warfighting.

Yet top officers in the ground services feel just as strongly about the matter. The Army—and possibly the Marine Corps as well—will likely protest the new wording up to the top of the military hierarchy, sources said.

To one senior Army officer, an airpower-dominated halt phase may lack the capability ground forces offer to "preclude or deny" an adversary's ability to take friendly territory. "If you could get land forces in



House Divided. Army Gen. Henry Shelton, Chairman of the Joint Chiefs of Staff, excised from the Joint Strategy Review all reference to the "halt" concept. The Joint Staff had inserted the option at the insistence of Gen. Michael Ryan, USAF Chief of Staff.

USAF photo by SSgt. Angela Stafford

as part of joint force, along with air, ... I think you present the enemy a lot more challenges in what he would face [than] if he was only facing a single-dimensional solution or a single-dimensional attack," the officer said in a Feb. 1 interview.

As it stands, JP 3-0 supports the use of a halt phase in fairly definitive terms, at least under certain scenarios. To bolster the notion that a halt phase may prove "necessary," the draft doctrine explains that "an adversary may deploy a sizeable invasion force and seek to delay a US response. Moreover, an adversary's use of information attacks, terrorism, urban warfare, or anti-access strategies may complicate US response options. This phase seeks to obtain full-dimensional control of the operational area and achieve dominant joint force levels to deny an adversary political or military objectives."

JP 3-0 language does not appear to limit the execution of a halt phase to aerospace forces, though. "When authorized and appropriate," the document now states, joint force commanders may "use all available joint force capabilities (air, land, sea, space, and special operations) to seize the initiative, stop further aggression, and take immediate action to initiate unrestricted decisive operations."

A key Air Force backer of the halt-phase approach agrees the potential is there for any service to contribute, if it can bring range, speed, and flexibility to bear early in a conflict. "Rapid halt is a joint construct," said Brig. Gen. David A. Deptula, USAF's National Defense Review director, in a Feb. 26 interview. "It is not proprietary of any one service."

But a commander might also act before the full joint force can get in place, the draft doctrine suggests. The joint force commander "may apply combat power at the very outset of an adversary's aggression in an attempt to halt the adversary's initial advance," the wording states. "Such a [course of action] could potentially assure and expand friendly freedom of action, stop the adversary's advance, al-



Fast Halter. Long-range B-1B bomber awaits action in Operation Allied Force. Army officers were particularly concerned by the Joint Strategy Review's reference to "rapid halt," which seemed to imply that heavy ground forces could not deploy fast enough.

low access to the theater infrastructure, and provide time to build up theater forces in order to conduct decisive operations."

Deptula—whose tour of duty in Turkey had him commanding forces from all of the services in support of air combat patrols over northern Iraq—said the need to act quickly to halt enemy aggression may preclude more traditional employment strategies in this initial campaign phase. The "transformational" halt approach, he said, "challenges the legacy construct for the conduct of conflict and is therefore viewed as threatening to the forces and force structures that contribute little to this capability."

The senior Army officer remained confident that a warfighting commander would choose to bring in the broader capabilities of a joint force if he has that option. Although airpower offers "tremendous" effects, "there are a lot of low-tech solutions that the enemy can use against high-tech capabilities," noted the Army officer. "If you've got an enemy that's presenting a great target, you can do some pretty good damage against him [from the air]. [But] if he's rooting himself down into some tough terrain, or he's in an urban area, or you've got somebody that wants to

use human shields," that is potentially a much greater challenge for attack from the air.

Similar Problems


Advocates of airpower counter that if an adversary digs in or uses civilians to protect his military forces, such tactics could present as serious a challenge for ground troops as they do for air forces.

The more challenging the situation, the greater the need to use a full toolbox of forces, responds the Army officer. "I think if you can go in with a joint force, and take a more flexible, adaptive capability with you, you just present [an adversary] with a hell of a lot more problems than you do if he's only facing one particular problem at a time," the officer said. "It's the joint capability that gives you that synergy."

But will future enemies wait until a joint force has been assembled before threatening US and allied interests? "What they can't win in real life, they try to win in doctrine," said one airpower supporter in reference to Army officials.

While the JSR should be completed this spring, the bureaucratic battle over "Doctrine for Joint Operations" could be a bit more prolonged. Service comments on the doctrine are due back to the Joint Staff this month, but military officials say a final decision on the fate of the halt phase could still be several months off. ■

Elaine M. Grossman is senior correspondent for "Inside the Pentagon" in Washington. Her most recent article for Air Force Magazine, "Airpower Gains in the Doctrine Wars," appeared in the March 2000 issue.



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Retirees look forward to the new benefits eagerly—but warily.

Here Comes Tricare for Life

By Tom Philpott

LIKE tens of thousands of Medicare-eligible military beneficiaries, retired Air Force MSgt. Robert Hall of Hillsboro, Tex., is impatient to know whether, after years of broken health care promises, the military truly is about to deliver a health care benefit that he can count on.

The word from the government: Yes, it is.

Plans call for the new benefit to arrive in two distinct parts: Tricare Senior Pharmacy (TSRx) on April 1 and, on Oct. 1, Tricare for Life—at least that portion of TFL being described as the “golden supplemental” to Medicare.

Combined, the two programs have the potential to turn the health benefits package of 1.4 million military elderly into one of the best in the country. In fact, they will require an increase in spending on military health care of roughly \$60 billion over the next decade. This prospec-

tive cost has got Pentagon and other federal government leaders wringing their hands, unsure how they will pay for this "fully funded entitlement" and still protect programs, like weapon systems, that have a more direct impact on readiness, but pay they must. The new benefits are enshrined in law and, Tricare officials said, beneficiaries like Bob Hall can turn from questioning whether the benefits are real to understanding the details and how to take full advantage of them.

They are about to see their access to care improved and their out-of-pocket costs reduced, said Tricare officials.

Steve Lillie, director of 65-and-over benefits for the Tricare Management Activity, headquartered in Falls Church, Va., estimates that health care costs for a typical Medicare-eligible beneficiary who has Medigap insurance should drop by about \$2,000 a year when TFL officially begins next fall.

Hall, 68, and his wife each pay monthly Medicare Part B premiums of \$50. That is a requirement for using TFL. He also pays \$187 a month for Medicare supplemental insurance. Hall doesn't plan to drop that coverage until TFL has been operating a few months and delivering the benefits promised.

"We were promised free medical care for life back in 1953, and they couldn't deliver," Hall said. "I'm afraid they might do that again."

Tricare's Pharmacy

To enjoy the first important benefit, however, Hall won't have to do more than begin using it. Starting April 1, all Medicare-eligible beneficiaries—retirees, spouses, or survivors—will have the same pharmacy options as those now available to under-65 beneficiaries enrolled in Tricare Prime, the military's managed care program. That includes the National Mail Order Pharmacy program, a Tricare retail drug benefit, a nonnetwork drug benefit for those residing outside a managed care network, and continued access to cost-free medications on base.

Beneficiaries such as Hall, who turned 65 before April 1, automatically qualify for the pharmacy benefit, even if they are not currently enrolled in Medicare Part B. Those who turn 65 on or after April 1 must

be enrolled in Part B to use TSRx.

However, Medicare-eligible individuals won't be the only group of military beneficiaries to see pharmacy benefits change on April 1. Everyone—active duty family members, under-65 retirees and their dependents, and 65-and-over beneficiaries—will see the start of a new co-payment scheme for prescriptions not filled at a Military Treatment Facility. It is part of a Defense Department initiative to simplify the benefit and encourage greater use of generic over name brand drugs.

How It Works

Here's how the "standardized two-tiered" benefit will work: Anyone using the National Mail Order Pharmacy—regardless of age, beneficiary category, or Tricare enrollment status—will pay \$3 for a 90-day supply of a generic drug or \$9 for a name brand drug. Active duty family members had been paying \$4, so their costs will fall by \$1 per prescription if they buy generic and rise by \$5 if they buy a name brand drug. Mail order is best for persons on maintenance medications for, say, high blood pressure or cholesterol problems.

Beneficiaries who have prescription drug coverage under another health insurance plan cannot use the mail order program unless the medication is not covered under their plan or until they exceed the other plan's dollar limit.

For short-term illnesses or when medicines are needed fast, beneficiaries can use the Tricare retail network. Again, the co-pay will be \$3 for generic, \$9 for brand medicines, but only for a 30-day supply. In other words, mail order still delivers triple the value over the retail network. Active duty family members enrolled in Tricare Prime had been paying \$5 per prescription through the retail network, and eligible retirees and their families paid \$9. Both stand to save on generic drugs under the new co-payment plan, but active duty families will pay \$4 more than they did before on name brands.

Users of Tricare's retail network who are not enrolled in Tricare Prime now have a co-pay on each prescription of 15 or 20 percent, depending on whether they are an active duty dependent or a retiree or a retiree's dependent. After April 1,

these groups, too, will pay only \$3 for a 30-day supply of generic medicine and \$9 for 30 days of a brand name.

Beneficiaries who must rely on a nonnetwork pharmacy will pay \$9, or 20 percent of the cost, for a 30-day supply, whichever is greater. Under this option, they first must pay an annual deductible of \$150 per person, or \$300 per family.

The great unknown for pharmacy beneficiaries is the impact of the Defense Department shifting to a uniform formulary later this year or in 2002. If the formulary selection is tightened, costs could rise. The modest co-pays, of \$3 on generic or \$9 on brand name drugs, will not apply to nonformulary medicines. With the health system struggling to control costs, tightening the inventory of drugs available by mail order and in the Tricare retail network would cut overall costs.

As of April 1, however, all drugs available through NMOP and the retail network were considered formulary medicines. If that changes, the redesignated nonformulary drugs, whether filled by mail or through the retail network, will carry a hefty co-payment, likely 20 percent of cost.

Plans called for mailing TSRx information packets to Medicare-eligible beneficiaries by mid-February. Those who did not receive them are urged to make sure their names and addresses are current in the Defense Enrollment Eligibility Reporting System. (See box on p. 42 for details on contacting DEERS.)

Questions about any aspect of the Defense Department pharmacy program, including TSRx, can be answered by calling toll-free: (877) DODMEDS (363-6337).

Tricare for Life

On Oct. 1, Hall and other Medicare-eligible beneficiaries—retirees, their spouses, and survivors—can begin to use Tricare Standard (formerly known as CHAMPUS) as a supplement to Medicare. No enrollment is required. Beneficiaries only need to have Medicare Part B and be sure their DEERS information is correct.

For 2001, the Part B premium is \$50 a month. Seniors also might face a surcharge, or penalty, of 10 percent for each year they delayed past

Continued on p. 42



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- visiting a Military Treatment Facility.
- e-mailing changes to: addrinfo@osd.pentagon.mil.
- faxing changes to: (831) 655-8317.
- mailing changes to: DEERS Support Office, Attention: COA, 400 Gigling Road, Seaside, CA 93955-6771.
- making changes online at the DEERS address change Web site: <http://www.tricare.osd.mil/DEERSAddress/>.

For more information, call the DEERS Support Office at its toll-free numbers: (800) 538-9552; (800) 334-4162 (California only); or (800) 527-5602 (Alaska and Hawaii).

age 65 to enroll in Part B. Exempt from the surcharge are persons who were covered by employee health insurance instead of Medicare.

For 25,000 elderly beneficiaries living overseas, the arrival of Oct. 1 means they can begin using Tricare Standard as their primary medical insurance. They, too, must be enrolled in Medicare Part B, even though the Medicare program isn't available overseas.

Tricare doesn't have the staff or time to do more than implement the most critical phase of the Tricare for Life, the so-called "golden" supplement to Medicare. But the law also requires that the elderly have an equal shot, with under-65 beneficiaries, to enroll in Tricare Prime, the military's managed care program. Officials expect to comply with that more complex requirement sometime next year.

In the meantime, elderly beneficiaries already enrolled in military managed care programs will be able to stay in them after Oct. 1, said J. Jarrett Clinton, acting assistant secretary of defense for health affairs.

This beneficiary group includes 33,500 enrollees in a Tricare Senior Prime demonstration program who likely will become the first elderly population enrolled in Tricare Prime.

Also, beneficiaries now enrolled in Tricare Prime can now stay in the program as they turn 65. "We're not going to age them out," said Clinton.

The Tricare staff still can't say

when they will be prepared—or funded—to open Tricare Prime enrollment to many more Medicare-eligible retirees. Indeed, Clinton cautioned hospital commanders and Tricare managers about the higher costs and greater time needed to care for the elderly, suggesting the right age mix of enrolled beneficiaries will have to be determined locally, based on readiness and available resources.

The elderly, Clinton told a conference of Tricare managers in January, require "two to three times more medical care than the population we are traditionally associated with."

Frank Rohrbough, a health benefit expert speaking for The Military Coalition, an umbrella group of service associations, estimated that, because so many retirees have been "disenfranchised" for years from the military system, only about 200,000 elderly out of 1.4 million will want to enroll in military managed care, if allowed. Comfortable with their civilian providers, most will elect to use Tricare as second payer to Medicare.

Clinton challenged that view, advising conference attendees to "give great thought to how many do we want in and how many will come." He added, "There are those that argue very few will come. I don't believe that."

Tricare Standard as a second payer plan to Medicare will be comparable to a category "F" Medigap plan, said

Tricare executive Lillie. "F" plans are the most popular on the "A-to-J" spectrum of standardized plans health insurers can offer under Medicare rules.

Like most Medigap plans, TFL will cover all routine Medicare copayments and deductibles, including the 20 percent cost share for physician services and the \$792 deductible for inpatient hospitalization.

Superior on Two Fronts

TFL will be superior to Medigap plans in at least two ways, Lillie said. First, there will be the "unlimited pharmacy benefit" of the TSRx. "Even the most expensive Medigap plans—those that include pharmacy—cap expenditures at no more than \$3,000 a year per beneficiary," Lillie said. Tricare doesn't impose such a cap for its drug benefit.

Second, and more importantly, said Lillie, Tricare Standard users won't have to pay Medigap premiums on top of Part B. That will save an average of \$1,500 a year. Hall and his wife, for example, would save \$2,244. With TFL, most out-of-pockets costs will be limited to Part B premiums and modest drug co-pays for prescriptions not obtained through base pharmacies.

Medicare and Tricare are expected to work well in tandem. For services by both plans, Medicare will pay its allowable amount and Tricare usually will cover what remains, including routine patient cost shares and deductibles. If the care—for example, certain types of chiropractic care—is covered by Medicare but not Tricare, Medicare will pay its normal amount and the beneficiary will pay deductibles and cost share. If care is covered by Tricare, but not by Medicare, Tricare will provide its traditional Tricare Standard coverage with the beneficiary paying any required cost shares and deductibles. Example: For network hospital stays beyond 150 days, Medicare coverage is exhausted, but Tricare pays 80 percent of the cost and patients pay 20 percent.

What all this means, said Rohrbough, is that, except for Medicare Part B premiums, TFL should cover all health costs for most elderly patients. "Tricare for Life is potentially better than any Medicare supplement that's out there," Rohrbough said.

The risk to beneficiaries of rely-

Draft Overview of Tricare for Life Coverages

The following matrix provides a general overview of the covered health care benefits that will become available for military beneficiaries who are age 65 and over and eligible for both Medicare and Tricare. This chart is not an all-inclusive summary of your benefits.

Whenever a benefit is covered by both plans, Medicare will pay first and Tricare will pay second. If the care you receive is both a Medicare and Tricare benefit, Tricare will pay applicable Medicare deductible and cost-sharing amounts. You will have no

out-of-pocket expenses, after meeting the Tricare deductible of \$150.

The amounts listed below that display what Medicare and Tricare will pay are based on your use of a Medicare participating provider. If your provider does not accept Medicare assignment, Tricare will cover up to your legal liability (115 percent of Medicare-allowed amount).

If enrolled in Tricare Prime, there are penalties for going outside the network.

		Medicare Pays	Tricare Pays	What You Pay
Inpatient Services				
Inpatient hospitalization (medical-surgical)	Days 1-60	100% (after \$792 deductible)	Remaining beneficiary liability	Nothing for Medicare-covered services
	Days 61-90	All but \$198/day	Remaining beneficiary liability	Nothing for Medicare-covered services
	Days 91-150	All but \$396/day	Remaining beneficiary liability	Nothing for Medicare-covered services
	Days 150+	Not covered	80% if network hospital 75% if nonnetwork hospital	20% of allowable charges if care delivered in a Tricare network hospital 25% of allowable charges if care delivered in a nonnetwork hospital
Inpatient mental health (psychiatric facility)	Days 1-190 in a life-time	Same as above	Remaining beneficiary liability	Nothing for Medicare-covered services
	Days 190+	Not covered	Extra: 80% if Tricare network hospital Standard: 75% if nonnetwork hospital	20% of allowable charges if care delivered in a Tricare network hospital 25% of allowable charges if care delivered in a nonnetwork hospital (up to a maximum of \$3,000 per family, per year)
Skilled nursing facility	Days 1-20	100%	Nothing	Nothing for Medicare-covered services
	Days 21-100	All but \$99/day	Remaining beneficiary liability	Nothing for Medicare-covered services
	Days 101+	Not covered	75% of allowable	25% of allowable
Home health care		100%	Remaining beneficiary liability (if any)	Nothing for Medicare-covered services
Hospice care		Call about benefits	Remaining beneficiary liability (if any)	Nothing for Medicare-covered services
Outpatient Services				
Doctors visits (outside MTF)		80%	Remaining beneficiary liability	Nothing for Medicare-covered services
Emergency room visit		80%	Remaining beneficiary liability	Nothing for Medicare-covered services
Mental health visit		50%	Remaining beneficiary liability	Nothing for Medicare-covered services
Laboratory services		100%	Remaining beneficiary liability (if any)	Nothing for Medicare-covered services
Radiology (X rays)		80%	Remaining beneficiary liability	Nothing for Medicare-covered services
Home health care		100% for approved services	Remaining beneficiary liability (if any)	Nothing for Medicare-covered services
Durable medical equipment		80% of approved amount	Remaining beneficiary liability	Nothing for Medicare-covered services
Outpatient hospital services		80% of approved amount	Remaining beneficiary liability	Nothing for Medicare-covered services
Prescription Drugs				
MTF-provided prescriptions		Not covered	100%	Nothing
Mail order pharmacy		Not covered	Generic: all but \$3; brand name: all but \$9 (90-day supply)	\$3 for generic; \$9 for brand name
Network pharmacy		Not covered	Generic: all but \$3; brand name: all but \$9 (30-day supply)	\$3 for generic; \$9 for brand name
Nonnetwork pharmacy		Not covered	\$9 or 20%, whichever is greater of the allowable charge	All amounts not covered by Tricare (if enrolled in Tricare Prime, you will pay 50% of the costs of prescription drugs from a nonnetwork pharmacy)

ing solely on Medicare and TFL, he said, "is very, very low," particularly because Congress last year improved the catastrophic cap on out-of-pocket health costs for service families, lowering it from \$7,500 to \$3,000. In other words, even if a family faces a medical catastrophe, total exposure to medical costs is \$3,000. This does not include custodial care for aged or infirm.

Defense officials estimate that 6 percent of the 65-and-older population have delayed enrollment in Medicare Part B and therefore face a surcharge, or late enrollment penalty. For every year past 65 that they waited to enroll, the \$50 a month premium rises by 10 percent. For example, a 75-year-old retiree who waited 10 years will pay a 100 percent penalty or Part B premiums of \$100 instead of \$50. Exempt from the surcharge are elderly covered by employer-provided health benefits and who therefore had no need to enroll in Part B at age 65.

Military associations will press this year for legislation to waive the Part B penalty for beneficiaries who didn't enroll in Part B because they expected to be able to rely on military doctors and hospitals for care. Stiff resistance is expected from lawmakers who are longtime guardians of the Medicare Trust Fund. Even some military retirees who have been paying for Part B for years oppose the move, arguing that, if their peers are granted waivers, they should be reimbursed for premiums they have paid since turning 65.

Details on how health care providers who treat TFL patients will be reimbursed aren't firm, Lillie said, but the goal is to keep the process as simple as possible for providers and virtually invisible to patients. The hoped-for scenario is that patients will only have to present providers with their Medicare card. Providers will file the claim with Medicare, which will pay its share and, using DEERS enrollment information, forward the remainder to Tricare. Doctors and hospitals will get two checks, one drawn on the Medicare Trust Fund and one from Tricare.

In deciding how to implement TFL, Tricare officials sought input from health benefit experts from military associations and veterans groups. Lillie said the TFL Working Group

Additional Coverage

(From TFL Working Group)

Medicare (Part B) or Tricare also cover the following care (check the Medicare and Tricare Health Benefits Handbook for specific cost-sharing responsibilities):

Speech language pathology services

Artificial limbs and eyes

Arm, leg, back, and neck braces

Chiropractic services (limited)

Ambulance service (limited)

Preventive services

Medicare does not cover health care services delivered outside of the US. For persons residing or traveling overseas, Tricare will be the only payer for care, and beneficiaries will have the same co-payments as all other Tricare Standard retired beneficiaries overseas.

has been invaluable for policy-makers in understanding and addressing concerns of beneficiaries. One effort of the group is to design a matrix that will show at a glance what Medicare covers, what TFL will cover, and what beneficiaries will have to pay. A draft version of that chart is shown on p. 43.

Don't Drop It—Yet

Beneficiaries are urged not to drop their Medigap coverage before Oct. 1 and indeed, like Hall, to keep such coverage past Oct. 1, if important issues regarding the transition to TFL aren't clarified.

There are continuing talks between Tricare and the Health Care Financing Administration, which oversees Medicare, on issues such as the ability of beneficiaries with pre-existing conditions to restore Medigap coverage if, for some reason, TFL doesn't meet their needs. Another issue raised by The Military Coalition is whether HCFA should declare TFL an approved Medicare supplement. Such a designation would bar other Medigap insurers from selling insurance to TFL beneficiaries that only duplicate TFL benefits.

Retirees like Bob Hall aren't alone

in worrying about the permanence and strength of Tricare for Life. Tricare managers and medical professionals who attended the Tricare Conference in January also wanted reassurance.

They listened to a panel of Congressional staffers who helped write TFL legislation. Panel moderator, Mary Gerwin, a deputy assistant secretary of defense for health affairs, said retirees "can put those feelings of broken promises behind [them]. ... This is a mandatory-constituted program. So we're going to implement it and the dollars will simply have to be there for us."

Robert Henke, a staff member for the Senate Appropriations Committee, said the question for lawmakers this year is "how we pay for it, not shall we pay for it. ... What weapon system or systems do we defer?"

Lawmakers "asked us collectively to develop a plan to provide care for disenfranchised Medicare-eligible beneficiaries," said Charles S. Abell, a senior staff member for the Senate Armed Services Committee. "They wanted it to be as comprehensive as possible and yet try to keep the cost within bounds."

He quipped, "One out of two is not that bad." ■

Tom Philpott, the editor of "Military Update," lives in the Washington area. His most recent article for Air Force Magazine, "Tricare for Life," was published in the December 2000 issue.

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Firing for Effects

By Brig. Gen. David A. Deptula

IN the predawn darkness of Jan. 17, 1991, Air Force Maj. Greg Biscone piloted his huge B-52 bomber toward Wadi Al Kirr airfield, a fighter base in central Iraq and one of the Gulf War's prominent first-night targets. Nearby, another Air Force B-52 also was speeding toward the base.

The BUFFs' aim points on that night were the taxways linking Wadi Al Kirr's runway and hardened aircraft shelters. The bombers dropped low for the approach and, in a matter of minutes, the B-52s executed a textbook multi-axis attack, crippled the airfield, and turned for home.

By that time, stealthy F-117s already had struck targets in downtown Baghdad. Tomahawk cruise missiles followed, blasting electrical and communication systems in the capital.

F-15E fighters over western Iraq attacked launch facilities from which Scud missiles could hit Israel or coalition nations.

As Biscone's B-52 turned toward home, coalition raids commenced at four more fighter bases. Elsewhere, 13 F-117 attack aircraft bombed command bunkers, communications ex-

changes, interceptor operations centers, and satellite downlink facilities.

In western Iraq, 30 aircraft attacked chemical weapon facilities. Thirty-eight others shut down Shaibah airfield north of Basra. Forty-four blasted surface-to-air missile sites near Al Taqqadum airfield, Habanniyah oil storage area, and three chemical weapons precursor facilities.

Republican Guard headquarters came under attack. Suspected biological weapons storage sites were hit. So were critical oil storage facilities.

Conventional air launched cruise missiles—launched from B-52s after an epic flight from the US—hit key electrical facilities at Al Mawsil in the country's northern reaches.

This all happened in the first few hours of the Gulf War. And by the end of the first day, coalition warplanes also had hit bridges, military support factories, and naval facilities.

Coalition aircraft forces had in a single 24-hour period flown some 1,300 offensive sorties against 152 targets—the most separate-target air attacks in the history of air warfare. Indeed, the Gulf War began with

strikes against more targets than were hit by the entire Eighth Air Force in 1942 and 1943.

It was not just the sheer number of sorties that made Day 1 so unusual, however. Just as important, if not more so, were the specific effects produced by this bombing activity. The war's first night demonstrated that the conduct of war had changed. It marked the birth of "effects-based"

Shock Wave. *In the Gulf War, swift attacks with precision weapons paralyzed Iraq's ability to act. Here, an aircraft engine lies in front of a demolished fighter shelter at Jalibah air base in Iraq.*



DOD/AFMAG

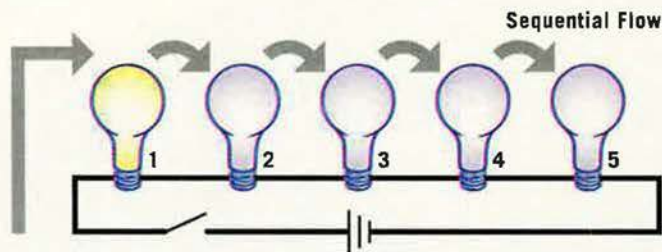
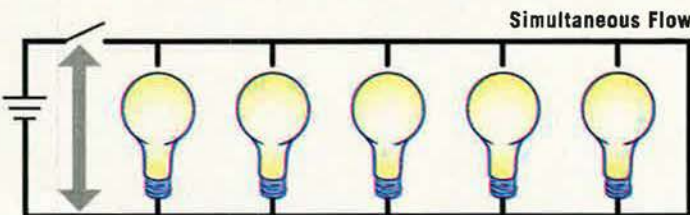


Fig. 1

The word "parallel" in "parallel warfare" comes from basic circuitry. A series circuit is shown at left. When one closes the switch, electrons flow from a source to five light bulbs. However, electricity must pass through *each* light before lighting the next—setting up the danger of single-point failure. This is called "sequential" flow.

Fig. 2
This figure shows a parallel circuit. The switch closes and electrons flow to all bulbs at the same time, in simultaneous flow. The system is not vulnerable to a single-point failure. Applying the same concept to the application of force in war yields the terms serial (sequential) and parallel (simultaneous) warfare.



operations, or EBO, as a principal means of conducting warfare.

The air campaign capitalized on emerging capabilities and was built around highly adaptive attack plans. These plans were shaped to paralyze Saddam Hussein's ability to control his forces, neutralize the ability of those forces to fight, undermine their will to fight, reduce the size of Iraq's military production base, and create conditions needed for control of Iraq's capacity to build weapons of mass destruction.

This approach allowed coalition forces to avoid Iraq's principal strength—its vast, heavily armored defensive armies—and thwart Baghdad's ability to inflict massive casualties.

It is a concept that has come to be known as "parallel warfare" and was based upon the coalition's ability to achieve specific effects on, not the absolute destruction of, targets.

The concept can best be understood through an analogy. Electrical circuits are of two basic types—serial and parallel. In the series circuit (Fig. 1), one closes a switch and electrons flow from the power source to the first bulb. Current must pass

through each light before it can light the next.

In the parallel circuit (Fig. 2), closing the switch sends current to all bulbs simultaneously, and each lights up in an independent way. The concept, in war, describes an operation in which forces attack all major targets at more or less the same time, to attain cascading effects.

The object of parallel war is to achieve effective control over the set of systems relied on by an adversary for power and influence—leadership, population, essential industries, transportation, and forces.

Before the Gulf War, air campaigns took on targets sequentially, striving to "roll back" enemy defenses so aircraft could attack targets of highest value. Area and point defenses had to be eliminated before war planners could gain access to what they really wanted to attack.

In Fig. 3, depicting sequential attack, the early warning sites, airfields, operations centers, anti-aircraft artillery, and SAM systems are targeted. Each target clears the way for the next until, finally, a target of value—in this case, leadership—can be hit. The effort and time

required to suppress enemy defenses limits the number of targets that can be attacked at one time.

Fig. 4 depicts simultaneous attack against the same set of targets. Hitting all pieces of a defense system eases the attack on high-value targets but still leads to a somewhat sequential application of force. The majority of targets are defenses en route to and in the area of the target of value. Such a partial simultaneous attack can be accomplished with large force packages of nonstealthy aircraft in discrete areas or in a one-time attack on a limited target set. However, the large force packages to suppress enemy air defenses tend to limit the total number of areas that can be struck.

Simultaneous attack on all objectives opens a door to major changes in warfare. It permits surprise at the tactical level, a larger span of influence, fewer casualties, paralyzing effects, and reduction in time required to gain control over the enemy.

Fig. 5 depicts simultaneous attack against a wider array of critical targets. Leadership facilities, refined oil and electricity, transportation



Series Warfare – Sequential Attack

Fig. 3

Before the Gulf War, airmen applied force sequentially to "roll back" defenses. They had to eliminate area and point defenses to gain access to what they really wanted to hit. Each step cleared the way for the next until, finally, a target of value—in this case, leadership—was hit. The huge effort made simultaneous attacks on targets impossible.

Fig. 4

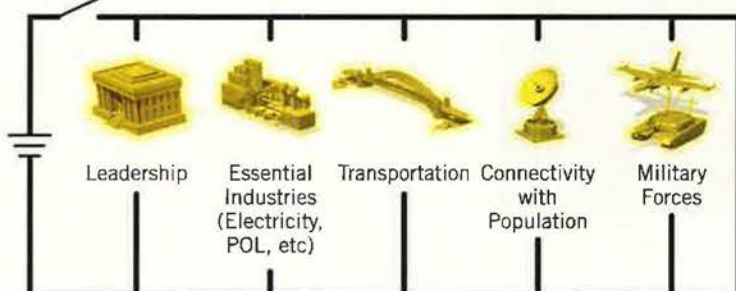
Hitting air defense elements simultaneously eases attacks on main targets but still yields a somewhat sequential force application. Nonstealthy aircraft can conduct attacks only in large force packages in discrete areas or on a one-time attack against a limited target set. This produces little shock effect.



Parallel Warfare – Simultaneous Attack (Weighted Against Air Defense)

Fig. 5

Stealth and precision permit airmen to strike a wide array of key targets all at once. This capacity to attack the entire array of high-value objectives with little or no effort to suppress enemy defenses produces tactical surprise, a wide span of influence, fewer casualties, paralyzing effects, and shorter wars.



Parallel Warfare – Simultaneous Attack Against All Vital Enemy Systems

nets, connectivity between the leadership and the population, and fielded military forces are attacked at the same time. This dramatically expands the ability to control enemy actions.

Parallel war entails more than compressing sequential attacks into a single multifaceted attack. Parallel war exploits time, space, and levels of war to achieve rapid dominance. In the opening hours of the Gulf War, coalition forces exploited all three dimensions.

Time. Coalition aircraft struck more than 50 targets in the first 90 minutes of war and more than 150 in the first 24 hours.

Space. Attacks ranged over the entirety of the Iraqi battlespace. Distance did not bar attack on any target.

Levels of war. The allies mounted simultaneous attacks on targets of tactical, operational, and strategic significance.

Vigorous exploitation of time, space, and levels of war to achieve specific purposes is the essence of EBO. Rendering an enemy force useless is just as effective as eliminating it altogether.

Traditionally, military forces have achieved their goals through destruction of enemy forces. Centuries of surface warfare created a common view that such destruction was the intrinsic purpose of military forces and combat.

However, war's ultimate purpose is to compel a positive political outcome. Use of force to control rather than destroy an opponent's ability to act opens up new possibilities.

Control—the ability to eradicate the strategic freedom of the adversary—does not necessarily mean eliminating all of that enemy's tactical actions. In the Gulf War, Iraq never lost the capability to fly individual aircraft sorties. However, these air sorties were of little or no consequence to the outcome of the conflict.

Critical to the concept of control is the ability to affect essential systems on which an enemy relies. Using force to inject incapacitating effects in an entire system can yield effective control over that system. You could also “control” a system by destroying it, but it would require much more military force for no better or more useful result.

Pursuit of effective control conserves military forces otherwise needed for destruction. This in turn expands the number of systems subject to control through force application. Case in point: It takes a certain amount of force to obliterate the air defense system around Baghdad but a much smaller amount to shut down a power grid supplying electricity to the system. Attacking in this way frees up aircraft for other purposes.

Effective control of enough of the adversary's enabling operational-level systems will paralyze his ability to function at the strategic level. Ultimately, the enemy will be compelled to acquiesce to the will of the controlling force.

In the Gulf War, coalition forces attacked in parallel at rates so high that Iraq had essentially no chance to repair lost assets or find alternatives and continue its resistance.

Military planners have always seen the desirability and value of simultaneous attacks, but they had never been able to produce them. This was due to three factors:

- Effective air defenses, which forced the attacker to divert aircraft away from the main attack.
- Inaccurate weapons, which produced a need to mass aircraft and bombs in order to have a chance of hitting the target.
- Lack of an operational-level concept focusing on the use of effects rather than destruction.

The first two shortcomings required technological solutions—namely, stealth and precision guided weapons—which did not mature until the late 1980s. When they were in hand, planners were able to tackle the third factor.

For decades, airpower theories suffered from weakness in execution. The World War II campaigns against German ball-bearing and air-



Silver Bullets. Stealthy F-117s flew two percent of Gulf War combat sorties but hit 43 percent of targets. In the war's first 24 hours, F-117s hit 76 separate, high-value targets.

craft industries took seven months. The anti-transport campaign took five months, and the oil campaign took six months. These relatively long operations gave the enemy time to recover in other systems and escape a rapid paralyzing blow.

In the Gulf War, however, precision munitions obviated a need for mass. Coalition forces dropped 9,000 laser-guided bombs, but that understates their impact. In some cases, a single aircraft and one Precision Guided Munition produced the same result as a World War II raid of 1,000 airplanes delivering 9,000 bombs.

In short, the arrival of PGMs offset the need for mass attacks to achieve a high probability of success.

By the 1970s, radar detection and radar-guided surface missiles and guns had become a lethal fact of the battlespace. Experience in Vietnam and the 1973 Arab-Israeli war indicated that highly defended targets would yield to successful attack only when protected and attacked by large "force packages" to get strike aircraft into and out of a target area.

A typical force package during the 1972 Linebacker I campaign consisted of 62 combat aircraft (less air refuelers) to get 16 fighter-bombers into and out of a target area. This cut down the number of targets that could be attacked at any time.

Stealth—in the form of the F-117—provided the solution to this prob-

lem. Stealth radically reduced the number of aircraft, supporting personnel, and infrastructure required to effectively strike a large number of targets. In the Gulf, F-117s flew less than 2 percent of combat sorties but attacked 43 percent of targets on the master target list.

In a typical attack comparison, a nonstealth package of 41 aircraft was needed to hit a single target with three aim points in the Basra area. At the same time, 20 F-117s were sent against 37 aim points in areas of equally high threat, with no losses.

Conventional planners and intelligence personnel tend to think about targeting in terms of "required number of sorties" to achieve "desired damage against each target." An intelligence evaluation of Gulf air war progress demonstrates how one can be misled by a focus on individual target damage.

On Feb. 15, 1991, the coalition target-planning cell received a report on the electric target set. Not all targets included in the primary and secondary electric target set had been destroyed or damaged to a specific percentage. Thus, the analysis concluded, the coalition had not met its objective.

In reality, Baghdad's electricity system had ceased to function. The planning cell knew the true situation and reduced the number of planned strikes. Some Iraqi power plant managers even shut down their plants to avoid attack. Coalition air forces

achieved their goal without exposing themselves to danger.

The Gulf War's initial attack plan called for shutting down Iraq's air defense command-and-control system through complete destruction. However, it was determined that there were not enough stealthy F-117s to destroy each of the nodes of the air defense system simultaneously.

The solution lay in effects-based targeting. Not all nodes had to be destroyed; attacks needed only to make them ineffective and unable to conduct operations during specific periods.

The attack plan was rewritten in a way that allocated fewer F-117 loads to some targets. This greatly multiplied the number of stealth/precision strikes available for use elsewhere.

The opening 24 hours of the air war saw the fleet of F-117s carry out attacks on 76 separate targets. For comparison, under the traditional destruction-based way of war, plans called for the F-117s to attack only two targets on the first day.

Planning for effects raises complex issues. Planners, working with intelligence officers, must determine which effects on each enemy system will contribute most to the attainment of military and political objectives of the theater campaign. This depends upon the specific political and military objective, enemy vulnerabilities, individual target systems, and weapon systems capabilities.

A campaign plan is highly dependent on the weapon systems available. Thus, an effective plan squeezes maximum impact from those systems—not in terms of absolute destruction of a list of targets but in terms of effects desired upon target systems.

Strategy means matching means and ends. Assigning certain air assets (means) to certain target systems to achieve specific effects (ends) is the basis of the new-style air campaign. It is generally articulated in a Concept of Operations that describes friendly force intentions and integration of operations to accomplish a commander's objectives.

Of concern here is not so much the CONOPS process or format but rather the philosophy underlying the air strategy.

In Vietnam, the Air Force devel-

oped a command-and-control organization to plan and execute air-to-surface attack. Known as the Tactical Air Control System, it emphasized allocating sorties to individual targets in support of ground operations. At the center of the TACS process was the Tactical Air Control Center. To a large extent, targets processed through the TACC were chosen and prioritized not by airmen but by ground commanders.

Battle damage assessment focused on destruction of individual targets. The function and organization of the TACS led many to confuse the efficiency of hitting individual targets with the effectiveness of achieving campaign objectives.

TACS was established in doctrine as the air command-and-control system for conventional war. Post-Vietnam change focused on expediting responsiveness, enhancing sortie generation rates, and incorporating modern systems to quickly process large Air Tasking Orders. The process received great emphasis, while development of air strategy got almost none.

In the 1980s, USAF's Tactical Air Command and the Army's Training and Doctrine Command developed extremely close ties. This helped elevate the Army's doctrine of AirLand Battle as TAC's de facto air strategy in regional conflicts.

In time, USAF attitudes changed. Basic Air Force instructional documents on target planning boasted a



DOD photo

Instant Gridlock. To achieve coalition goals, its aircraft didn't have to attack individual tanks or troop formations. Dropping a bridge, as shown here, would effectively halt the enemy's advance or block his line of retreat.

full chapter on targeting for AirLand Battle but contained no principles or guidelines for conventional strategic attack.

In short, the Air Force's largest and most influential conventional air command, TAC, entered the 1990s with its vision of conventional war almost totally focused on supporting the Army—a critical but by no means only capability of conventional airpower.

These thought patterns and views were apparent among TACC planners and intelligence personnel who were assigned to Central Air Forces

in Riyadh, Saudi Arabia, in the summer of 1990. Attention was focused exclusively on tactical operations. The prevailing procedures for designing an ATO produced a purely mechanistic application of sorties to targets in sequence.

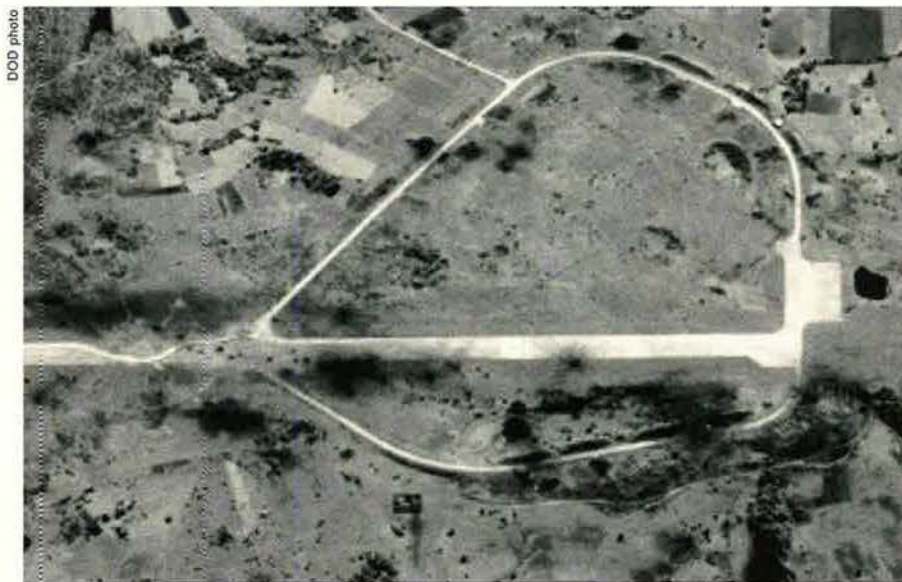
They called it “servicing a target list.”

Fortunately, the architects of the Gulf air campaign, who began work in late August 1990, did not limit themselves to the servicing-a-target-list approach. The design of the air campaign grew out of thinking about how to hit an enemy's systems to achieve specific effects contributing to the military and political objectives of the coalition.

Planning was based on a “center-of-gravity” approach. It began with a critical examination of potential strategic centers of gravity, their constituent operational systems, and led to identifying the set of individual targets making up each system.

Decisions about whether to stop or continue an attack depended on whether the coalition had achieved a specific effect. Individual targets were important only if the system was still operating. If the effects desired were achieved, it did not matter that individual targets may not have been hit.

Figs. 6 and 7 illustrate the subtle but significant difference between “destruction-based” and “effects-based” operations. Fig. 6 shows two



DOD photo

Out of Action. In Operation Allied Force, this Serbian airfield was hit repeatedly with precision weapons, which kept it out of operation. Note the bomb craters on the runway and nearby sites.

serial-targeting approaches—the single prioritized list and the multiple target set lists prioritized in sequence. The serial approach targets elements of an adversary's defenses that restrict access to certain targets—early warning radars, air defense systems, command-and-control nodes, and airfields. They are to be hit before production, government, and leadership facilities.

Series methodology can be applied to an entire target base or group of individual targets. However, attacking one system at a time allows the others to continue operations or recover from previous attacks.

Fig. 7 shows the parallel attack scheme, application of force against all targets in each target system at one time. With correct identification of target systems, the desired effect is likely. The simultaneous application of force in such a manner would enable friendly control over the adversary systems. When a force faces a target set too large to be struck through single attack, then planners should first focus on hitting those aim points that will produce the greatest impact.

Early attack operations are weighted to paralyze the air defense areas in which nonstealthy assets would operate. This is the reason for the skewing depicted in Fig. 7 toward the target sets A, B, C, etc., notionally representing air defense, airfield, and command-and-control target sets.

However, intelligence about the enemy never will be total. Moreover, an enemy will attempt to ne-

gate the effects of attacks. As a consequence, parallel war may involve more than one case of force application, even if there are sufficient resources to attack all known elements.

The advent of EBO calls for a basic realignment in war planning. The combination of stealth and precision redefines the concept of mass. Classical mass—that is, a large agglomeration of forces—is no longer required. Surface forces will always be useful, but massing surface forces to overwhelm an enemy isn't required to gain control of an enemy.

Nor is it necessarily the smartest course. It takes more aircraft to transport a single light infantry division to a war theater than it took to move all of the PGMs used in the Gulf War of 1991.

Early deploying forces should be those with a demonstrated ability to effectively influence an adversary. If the measure of merit for service transformations became one of desired effect per unit of lift—the degree that combat effectiveness increases for each quantity of lift expended—future lift requirements might actually be reduced.

Massed forces—air, ground, or sea—present a lucrative target to an enemy. Therefore, the traditionally accepted concept of “mass,” a valued principle of war, becomes in some situations a vulnerability. Potential adversaries may capitalize on the massing of forces and associated build-up time to deny US access to a war theater. These anti-access strategies become more probable as de-

livery systems such as accurate ballistic missiles, cruise missiles, and weapons of mass destruction proliferate among potentially hostile states.

Since the ability to impose effects is independent of the massing of forces, the projection of force becomes more important than the development of force. The object of presence or mass is influence. The operative element of achieving influence is the threat or actual use of force to achieve a particular effect. If the same effect can be imposed without physical presence or mass, then in some circumstances deployed forces can be replaced by power projection.

Systems-based intelligence analysis is critical to the application of EBO. Planners need to know what an enemy needs to exert influence and conduct operations. Without that information, parallel war won't be effective. Exploiting advances in space-based systems, communications technology, and rapid information transfer can reduce this potential vulnerability by reducing the need for forward-based organizational elements.

Redefining the concept of mass, relying to a greater degree on force projection rather than force deployment, and aiming to control adversary systems rather than destroy them requires changes in the current approach to force management. The changes needed may include more reliance upon out-of-theater command, control, communications, computer, and intelligence organi-

Series Attack

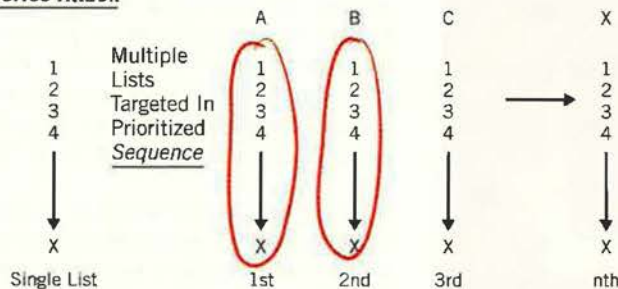
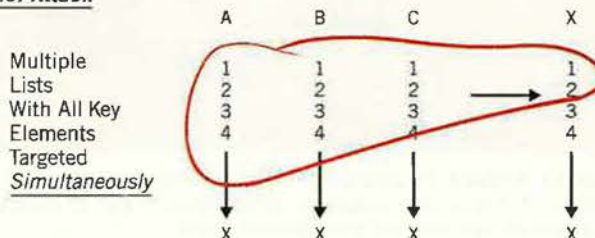


Fig. 7
This parallel attack scheme applies decisive force against all targets in each target system at once. If each target is hit, effects desired within each system will likely occur. If all aim points cannot be hit in one attack, those of greatest significance in each set are hit first. This accounts for the skewing toward target sets A, B, C, etc., representing air defense, airfield, and command and control.

Fig. 6

Shown at left are two methods of serial targeting—single prioritized list and multiple target set lists in sequence. The serial approaches initially target elements of an adversary's defenses. Attacking one target system at a time allows the others to continue operation or recover from previous attacks.

Parallel Attack



zations, distributive intelligence architecture, and "off-board" systems that can provide information direct to the user.

We are in a transition phase of the ongoing revolution in military affairs. Parallel war achieved through EBO departs from traditional strategies, but we fight with the tools available today. We must carefully manage the transition to the new instruments of war to assure their development is not restricted by the theories of the past and to adapt current systems to more lucrative strategies.

It is proving to be a difficult transition. The tendency to retain orthodox concepts and doctrine is strong when the means on which those concepts and doctrine were based still make up the bulk of the inventory. Military doctrine is invaluable in establishing a basis for force application, but it must not be allowed to constrain effective forms of application just because they are different and nontraditional.

EBO provides a useful construct on how to conduct war that can bridge the gap between the weapons of today and the weapons of the future. It allows useful application of current weapon systems as we acquire a new generation of tools needed to fully exploit the concept.

The air campaign in the Gulf War and the air war over Serbia used bombs and missiles on individual targets to achieve a specific effect within the parent system. These air campaigns gave us a view of the leverage that stealth, precision, rapid and secure information transfer, ready access to accurate positional information, and other cutting-edge technological systems can provide. However, while the aircraft/PGM match of the 1990s far exceeded the capability of the systems used during World War II, it still is crude compared to the ideal means for the conduct of EBO. We must continue to develop systems that will provide even higher leverage effects.

As technological innovation accelerates, "nonlethal" weapons and



USAF photo by Scott H. Spitzer

The Edge. The Gulf and Balkan air campaigns revealed the kind of leverage offered by stealth, precision, rapid and secure information transfer, accurate positional information, and other cutting-edge technologies.

cyberwar enabled by information operations will become operative means in parallel war.

The ability to achieve effects directly against systems without attacking individual components would allow a concept of parallel war preferable to that of today. Indeed, the ultimate application of parallel war would involve few destructive weapons at all; the objective is effects, not destruction. Nonlethal weapons, information warfare, miniaturized highly accurate munitions, and space-based systems might make such concepts a reality.

While nonlethal weapons and information warfare will allow us to further capitalize on the concept of targeting for effects while continuing to limit casualties, only new organizations and doctrine aiming to exploit EBO can fulfill the full potential of this concept. Nonlethal weapons and information warfare should enhance the ability of our forces to conduct operations to directly achieve desired effects. In this respect, recent attempts to develop and write joint military doctrine are helpful when their focus is on weapon systems capabilities and effects-based planning rather than employ-

ment environment or presumptions of attrition and annihilation.

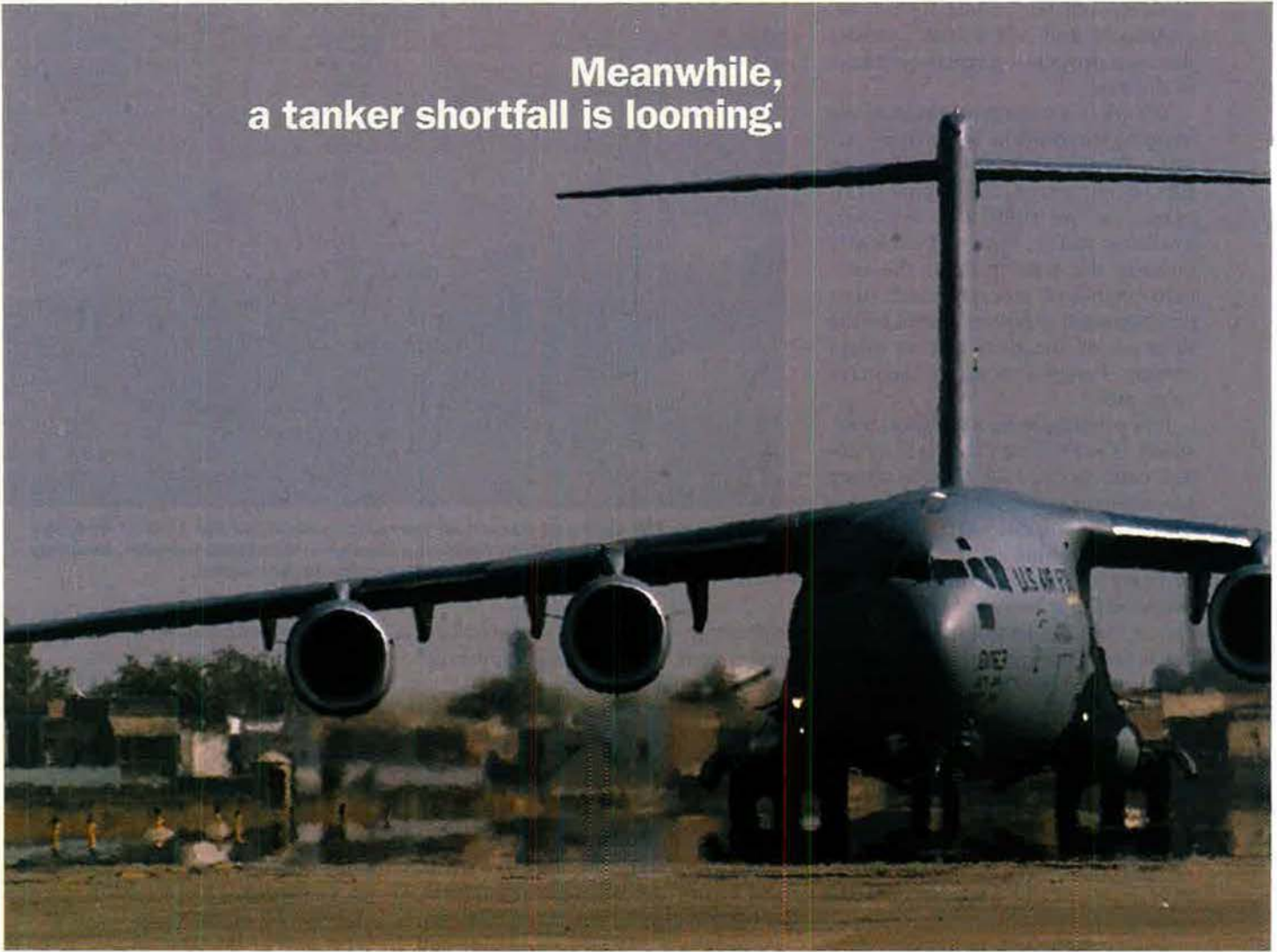
Parallel war through EBO does not exclude any force component in time, space, or level of war at the outset of any political-military challenge. However, that does not equate to each force always participating in every operation or to a degree in some proportion to their size or presence. Whoever can perform the operations to achieve the desired effects best at the time should have it assigned to them.

Optimum parallel war is dependent upon a functional organization encompassing not just the air component but the entire theater campaign (i.e., a joint force land component commander, a joint force naval component commander, as well as a joint force aerospace component commander) with a true joint force commander (not dual-hatted as a component commander as well) orchestrating the synergies of the entire force.

EBO can be applied in every medium of warfare. Even so, aerospace power's relative advantages—speed, range, flexibility, precision, perspective, and lethality—fit hand in glove with this new strategic construct. Joint aerospace power has the potential to achieve effects at every level of war directly and quickly. As a result, it will remain the dominant means for conducting parallel war through EBO in major regional conflicts in the future. ■

Brig. Gen. David A. Deptula is the Air Force National Defense Review director. During Desert Storm, he was the principal planner for the coalition air offensive. This article is adapted from a longer paper, "Effects-Based Operations: Change in the Nature of Warfare," which is available on the Air Force Association Web site (www.afa.org).

Meanwhile,
a tanker shortfall is looming.



The Airlift Shortfall Deepens

By John A. Tirpak, Senior Editor

The Pentagon's latest assessment of airlift requirements takes into account changing strategies, a new emphasis on speedy deployments, special operations demands, and nonmilitary missions such as humanitarian relief. The upshot is that more C-17s are needed, regardless of whether the C-5 fleet gets an upgrade or not. Here, a C-17 lands badly needed supplies to victims of a major earthquake in India.



AFTER more than two years of study and analysis, the Pentagon has determined that the Air Force lacks about 10 percent of the minimum amount of airlift that it needs to carry out the national military strategy with only “moderate risk.”

In 1994, a review conducted by the Clinton Administration said the Air Force needed airlift capacity totaling 49.7 Million Ton Miles per Day. According to a new Pentagon study, however, the actual requirement is quite a bit higher—54.5 MTM/D.

This is the main finding of Mobility Requirements Study 2005, a broad-scope look at the condition of one of the nation’s most precious military assets.

The conclusion could signify that the Air Force needs to procure a total of, or as many as, 180 C-17 transports—60 more than are now on contract—in combination with

improvements to the rest of the airlift fleet, former Clinton Administration Defense Secretary William S. Cohen said in releasing the findings to Congress in January.

The Bush Administration, however, is in the midst of sweeping reviews of all mission areas, coinciding with the 2001 Quadrennial Defense Review. The MRS-05 study findings will likely highlight the issues confronting the airlift fleet, but the benchmark lift requirement will almost certainly change again this year, senior Pentagon officials said.

The Pentagon has had a long-standing goal of being able to fight and win two Major Theater Wars in close succession. However, the strategy has become controversial. If the Bush Administration abandons it, the objective figure could actually fall below 54.5 MTM/D. There is mounting airlift demand from all services, however—the result of a basic shift

toward a rapid expeditionary posture. This by itself suggests that there will be no decline in requirements. (See “A Clamor for Airlift,” December 2000, p. 24).

Moreover, declining reliability and Mission Capable rates on the pivotal C-5 Galaxy fleet mean Air Mobility Command’s true gross tonnage capacity may already be below the level of 49.7 MTM/D, Air Force officials noted, suggesting the actual shortfall could be close to 10 MTM/D.

Could Be Higher

Finally, the MRS-05 estimate was not the highest by any means. The missions and variations in assumptions that were examined in the study generated a range of postulated airlift demands and went as high as 67 MTM/D. The 54.5 MTM/D figure would provide adequate airlift only for “high priority missions.” It is “the minimum moderate risk capability to support the national military strategy.”

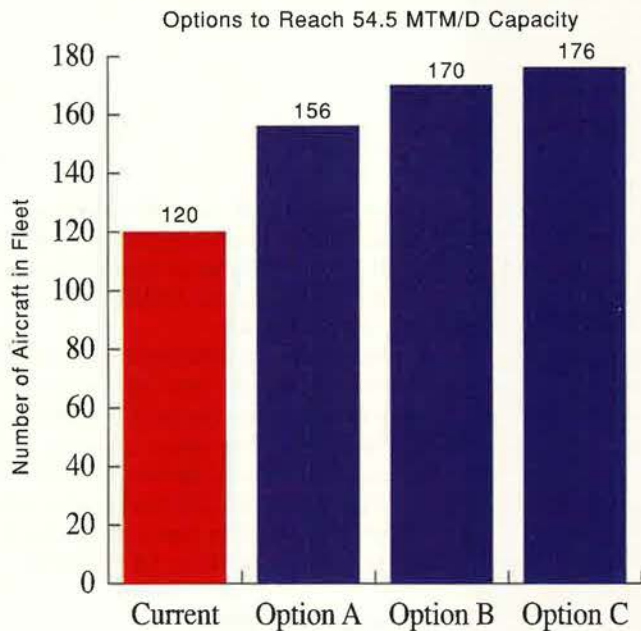
The MRS-05 analysis was the “most comprehensive mobility study undertaken by the department to date” and took into account the input of “the Office of the Secretary of Defense, the Joint Staff, unified command (CINC) [Commanders in Chief] staffs, and service staffs,” the Pentagon said in its executive summary of the mobility report.

“The Chairman of the Joint Chiefs of Staff, the service Chiefs, and CINCs have reviewed the MRS-05 study, and they support the establishment of a requirement of 54.5 MTM/D of airlift capability as the minimum moderate-risk capability to support the national military strategy,” said an unclassified version of the MRS-05 summary.

Providing the main impetus for the new benchmark was the two-MTW strategy itself. It alone accounted for 51.1 MTM/D of the revised airlift requirements.

However, analysts for the first time cranked into the airlift equation the possibility that some airfields might be hit with chemical weapons, tak-

How Many C-17s Are Needed?



The baseline of MRS-05 was USAF's plan to buy 120 C-17s (red bar), but all agree more are needed. How many more? The study raised the requirement to 54.5 MTM/D of capacity. Reaching that level could entail addition of 36 to 56 C-17s. The key variable is what happens to the C-5 fleet. Declining reliability and Mission Capable rates reduce its carrying capacity. In Option A, USAF puts all C-5As and C-5Bs through a major refurbishment, resulting in a fleetwide MC rate of 76 percent. The C-17 fleet could level off at 156 aircraft. Option B calls for refurbishment of C-5Bs but not older C-5As, a situation that would require 170 C-17s. Under Option C, USAF forgoes any C-5 fixes and moves instead to a 176-airplane C-17 fleet. The exact mix will be determined primarily by cost factors.

Source: MRS-2005 Executive Summary.

ing some cargo aircraft out of action or slowing down loading and unloading as the troops labored in cumbersome protective gear.

They also looked at the ongoing lift requirements of forces not engaged in the two MTWs, effects of the US military having become more reliant on reserve forces, lift assets needed to support the requirements of allies in coalition operations, and the needs of Special Operations Forces.

A further consideration was the use of what are considered "strategic" airlifters in an "intratheater" role, exemplified by the use of C-17s in Operation Allied Force to transport heavy, outsize Army gear to small, forward strips.

Together, these "other" demands added to the total airlift requirement some 3.4 MTM/D of capacity. That is the equivalent of about 30 C-17s' worth of cargo-carrying capacity on any given day and at notional ranges.

The study did not recommend a specific inventory of C-17s "to meet these higher airlift demands," Cohen said. "Instead, the study identified a range of possible programmatic outcomes from 126 to nearly 180 C-17s," Cohen explained, a figure that includes the fleet of 120 already on contract, but not a further 14 deemed necessary to accomplish the Special Operations Forces mission.

The QDR, Cohen noted, will "determine the appropriate number of C-17s based on judgments about the

level of airlift capability that can be provided in the context of other defense priorities, the desired mix between organic and commercial airlift capability, and the right level of investment in C-5 enhancements."

Modest Gains Needed

Overall, MRS-05 determined that the United States needs to make "modest improvements" in pre-positioning of equipment, surge sealift, intertheater lift, and transportation within the continental US but that these areas "are largely satisfactory." The big shortages were found in air transportation within theaters and in meeting the needs of whatever forces are not engaged in an MTW.

Congress included language in the Fiscal 2001 Defense Authorization Act instructing the Air Force to conduct a separate review of the airlift requirements generated by the two-MTW strategy, calling airlift "the most compelling deficiency" faced by regional Commanders in Chief in carrying out their wartime plans. Lawmakers wanted the Air Force to take into account the Army's new strategy of deploying forces quickly, by air, so as not to be left sidelined in a fast-moving conflict, as happened in Operation Allied Force.

The Air Force had already been working on an Analysis of Alternatives presenting an array of options to meet the increased airlift requirement established by MRS-05. Plans called for the completion of this AOA

Military Mobility Forces

Projected Inventories Through End of Fiscal 2001

Airlift (operational)	
C-17	58
C-141	88
C-5	104
C-130	418
Aerial Refueling (operational)	
KC-135	472
KC-10	54

Source: DOD's Annual Report to the President and the Congress, 2001. Comprises active, Guard, and Reserve.

study in April. It will include estimated costs as well as qualitative pros and cons of each option presented.

The alternatives under review include purchase of up to 60 additional C-17s, re-engining and updating the C-5B or C-5A fleets (or both), and the expansion of the Civil Reserve Air Fleet program, in which commercial carriers agree to lease their cargo aircraft for military operations in time of national emergency in return for consideration in government contracts.

Anticipating two of the choices, USAF is lending assistance to Boeing, maker of the C-17, in marketing the aircraft to civilian carriers. If such sales took place, the Air Force would enjoy unit cost savings on future C-17 buys due to a busier

production line and would also have access to outsize/oversize aircraft in the CRAF. Such aircraft have never been available in the CRAF program before, but their presence would ease the pressure on Air Force's lift requirements growing out of the two-MTW strategy.

The deal is contingent on the Air Force itself buying at least 50 more C-17s from Boeing for \$150 million a copy under a new multiyear contract. (See "USAF, Boeing Commercial C-17," February 2001, p. 9.)

Alternatives involving the C-5 fleet will be scrutinized for cost-effectiveness, considering that some of the C-5A fleet has been in service for more than 30 years. The C-5's reliability has worsened considerably over the past few years, but industry believes an upgrade would pay for itself in maintenance savings and improved on-time takeoff reliability.

20 More Years?

Air Mobility Command programmers told Air Force officials that they see the re-engineing of the KC-135 fleet in the 1980s as a model the C-5 could follow. The C-5 fleet has only used up about a third of its airframe service life and could potentially continue in service—with upgrades—for another 20 years. If



USAF photo by TSgt. Cary Humphries

Airlift choices have to be made soon, as the C-141 fleet is steadily being retired to the "boneyard," and the long-term C-17 contract is ending. Here, a C-141 in a protective coating rests alongside the Boeing C-14 research aircraft.

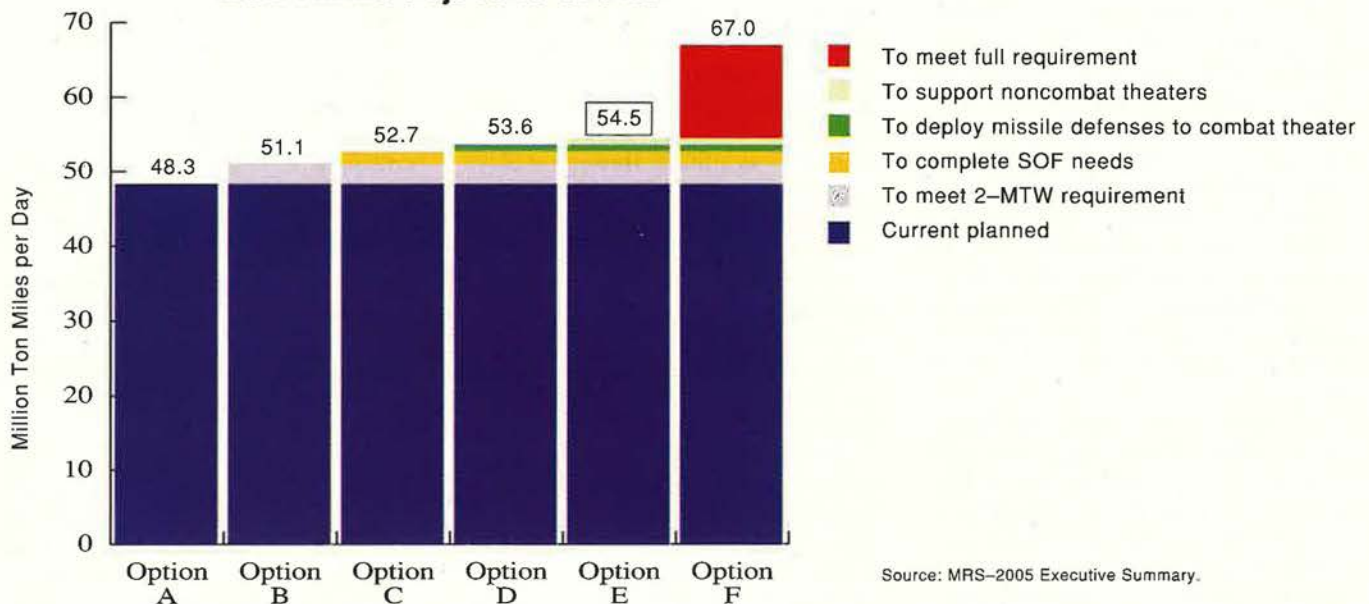
the upgrade goes ahead, the modifications would be done during normal depot maintenance at a rate of about 12 aircraft per year, creating no operational impact on normal availability of Galaxy's for missions. As they were upgraded and returned to service, the C-5s would offer an immediate mission capability improvement of 76 percent, up from the present 56 percent. The upgrade would include engines and engine

mounts, hydraulics, and cockpit instrumentation.

Some of the MRS-05 recommendations dealt with improved procedures, such as "the early reallocation of airlift forces to a second theater of conflict and the early activation of civilian sealift assets," Cohen told Congress. Other such improvements concern access to host nation facilities.

The Pentagon described MRS-05

How Airlift Objective Grows



Source: MRS-2005 Executive Summary.

Under current plans (Option A), USAF in 2005 will be able to provide 48.3 Million Ton Miles per Day of airlift. But the Air Force, just to meet the nation's two-war needs (B), must increase airlift capacity by 2.8 MTM/D—to 51.1 MTM/D. An additional requirement to support Special Operations Forces (C) adds another 1.6 MTM/D, bringing the total to 52.7 MTM/D.

On top of that comes another 0.9 MTM/D to transport missile defenses to a combat theater (D) and another 0.9 MTM/D to support theaters not engaged in combat (E), raising the levels, respectively, to 53.6 and 54.5 MTM/D. Under various credible scenarios, the total airlift requirement (F) reached as high as 67 MTM/D, the study reported.



Notorious for its reliability woes, the C-5 could make a big dent in the airlift shortfall if given up-to-date engines and other improvements. USAF leaders are reluctant to go with an all-C-17 force in case of a fleet-grounding problem.

as being an “end-to-end” study, looking at how equipment moves within the continental US to its embarkation points, and from the continental US to overseas theaters, and then within the theaters themselves.

The “inability to attain acceptable warfighting results” in wargames based on the current fleet of equipment-moving aircraft, trains, and ships “motivated the investigation of alternatives to current mobility programs,” the Pentagon noted in the study summary.

The new, more robust 54.5 MTM/D figure was judged the minimum level of airlift necessary to lower the risk involved in prosecuting two MTWs. Gen. Charles T. Robertsor Jr., CINC, US Transportation Command and commander of USAF’s Air Mobility Command, told Congress that the lack of sufficient airlift assets constituted a “high risk” in terms of national strategy. His assessment was later echoed by Gen. Henry H. Shelton, Chairman of the Joint Chiefs of Staff.

The assessment of risk, according to the MRS-05 summary, stemmed from a measurement of “the ability of US/coalition forces to achieve measurable warfighting objectives” in the sophisticated models and simulations played to evaluate the size and capacity of the airlift fleet.

The simulations and wargames were run using a notional war in the Middle East that was then closely followed by a war on the Korean

peninsula, and vice versa. An Air Force official familiar with the models said shortages of aircraft in the wargames “cost us time, and that led to ... setbacks which might have been avoided” if more air freighters were available to move fighter squadrons and outsize Army equipment, such as Patriot missile batteries and multiple launch rocket system vehicles.

Increasing CRAF Not Enough

The size of the CRAF was not deemed to be a significant problem, and sharply increasing the size of the civil fleet was also not considered a sufficient step in and of itself in addressing the airlift shortage. Increasing the number of civilian passenger airplanes available through CRAF raised the number of troops that could be deployed, but their equipment would have lagged behind.

“A big CRAF increase ... was not a balanced approach” to fixing the airlift shortage, the official said. Moreover, ramp space at forward airfields was a “pacing factor” in determining proper sizing of the CRAF, he added.

This mismatch between passenger capacity and outsize/oversize cargo-hauling capacity was one of the reasons the Air Force agreed to help Boeing explore the creation of a civilian market for C-17s. Even a small handful of C-17s in CRAF would make a big dent in the airlift shortfall.

The report made no recommendations on how to address the airlift shortfall, but it did outline some no-

tional alternatives on how the Air Force could get to 54.5 MTM/D.

If the C-5 fleet were to remain at a Mission Capable rate of 65 percent, a total of 176 C-17s would be needed, the study found. Re-engining and updating only the C-5B fleet would not substantially change this figure; 170 C-17s would still be needed with a C-5B-only refit. Upgrading the entire C-5 fleet—both A and B models—would produce an overall Galaxy Mission Capable rate of 76 percent, and this would translate to a need for 156 C-17s.

When the C-17 program was initiated, planned inventory totaled 210 aircraft. That figure was lowered to 120 in the Major Aircraft Review of 1990, undertaken by Dick Cheney, then Defense Secretary and now vice president.

Not included in MRS-05 was an analysis of the tanker situation. The 40-year-old KC-135 fleet is suddenly experiencing substantial maintenance problems stemming from its advanced age. The average KC-135 now spends approximately 400 days in depot maintenance. Oklahoma City Air Logistics Center at Tinker AFB, Okla., performs the work, but it has actually had to turn away aircraft because its ramp has been full.

The Air Force is already deep into another study focused solely on tankers. It is called Tanker Requirements Study 2005, and it should trail the MRS-05 by a few months, service officials said. However, TRS-05 is classified, and the Air Force does not expect any release of its results. The study will determine USAF’s course in pursuing a KC-135 replacement, dubbed KC-X, which had been tentatively slotted to begin entering the inventory in 2013.

As early as this spring, the Pentagon may make a decision about whether to proceed into the development phase of the C-5 Reliability Enhancement and Re-engining Program.

Given that the 2002 defense budget prepared by the Clinton Administration is being submitted essentially without change by the Bush Administration, the earliest the new airlift requirements could be translated into buying mandates would be the fall, when the Pentagon and service officials begin serious work on the budget that will go into effect in October 2002. ■

The problems begin with too few jammers and go on from there.

Electronic Warfare Is Dragging

WHAT follows is extracted from "Airborne Electronic Warfare: Issues for the 107th Congress," a 26-page paper released Feb. 9 by the Congressional Research Service of the Library of Congress. The principal author is Christopher Bolkcom, a CRS national defense analyst.

Electronic Warfare has been an important component of military air operations since the earliest days of radar. Radar, EW, and stealth techniques have evolved over time as engineers, scientists, and tacticians have struggled to create the most survivable and effective air forces possible. ...

The downing of an F-117 Night-hawk in the 1999 conflict in Yugoslavia by a Serbian surface-to-air missile illustrates that the struggle for control of the electromagnetic spectrum is an ongoing endeavor for US air forces.

Operation Allied Force may be an important watershed in the debate over current and future US airborne EW. It appears that every air strike on Serbian targets was protected by radar jamming and/or SEAD [Suppression of Enemy Air Defenses] aircraft. ECM [Electronic Countermeasures] self-protection systems such as towed radar decoys were credited with saving numerous US aircraft that had been targeted by Serbian SAMs.

Gen. Wesley Clark, the operation's military leader, described how critical a role EW played in the allies' success. He testified that "we couldn't have fought this war successfully without the EA-6B contribution. We really need the Electronic Warfare capacity that we have there." The value of the F-16CJ SEAD aircraft was also widely touted.



Staff photo by Guy Aceto

New and Old. The new EGBU-15, shown here on an F-15E aircraft, is a GPS-enhanced version of a guided bomb. At right, an F-16CJ with HARM Targeting System (under intake) and AGM-88 HARMs, carries on the "Wild Weasel" SAM-killer tradition.

Table 1

Duration of conflict, in days	78
NATO aircraft seeing action	900
Sorties flown	38,000
SAMs fired at NATO aircraft	700
NATO aircraft shot down	2

[The 1970s-vintage Navy/Marine Corps EA-6B Prowler is currently the US military's sole tactical radar-jamming aircraft. USAF assigns crews (pilots and EW officers) to serve in five joint Navy/Air Force Prowler squadrons. USAF has equipped F-16C aircraft with High-speed Anti-Radiation Missiles for the SEAD mission—designating them F-16CJs.]

Table 1 suggests the impact of EW and SEAD on NATO aircraft survivability during the Kosovo cam-



USAF photo by SrA. Greg L. Davis

paign. By using this metric, one can assert that DOD's EW and SEAD efforts effectively protected US aircraft from Serbia's integrated air defenses. Yet, despite the low number of NATO aircraft destroyed during Allied Force, concerns have been raised over a number of EW and SEAD issues.

Few and Overworked

In the area of Electronic Attack, the main concern raised by the Kosovo conflict is that DOD currently has too few jamming aircraft in its inventory to support more than one conflict simultaneously. Although Allied Force was considered by many to be a small-scale contingency, [an Oct. 14, 1999, Pentagon statement said that] "US systems such as RC-135 Rivet Joint electronic intelligence aircraft and EA-6B tactical airborne Electronic Warfare aircraft were employed in numbers roughly equivalent to those anticipated for a major theater war, and even then were heavily tasked." Further, the number of aircraft that could be fielded at any one time may have been unnecessarily decreased by several operations and maintenance shortfalls—such as a shortage of spare parts and too few

aircraft trainers. Also, the effectiveness of jamming aircraft may have been degraded by their lack of key technologies such as night vision devices and advanced communications. Finally, experience in Allied Force suggests that the Electronic Attack community would benefit from additional training and experience in supporting Low Observable aircraft.

There are 235 F-16CJs in the total active inventory, and this number appears to have been sufficient to adequately pursue the SEAD mission in Kosovo. However, Allied Force did suggest some numerical shortfalls that may have hindered SEAD operations. According to the commander [Col. Daniel J. Darnell] of the Air Force's 20th Fighter Wing, the lack of HARM Targeting System (HTS) pods (a key system on the F-16CJ) in Kosovo may have reduced the Air Force's ability to generate SEAD sorties. "In Allied Force, there were more F-16 aircraft capable of carrying the pod than there were pods to go around." He also said that a lack of personnel also limited SEAD operations.

Perhaps a greater SEAD concern [in] Kosovo was the great difficulty

US forces had detecting, tracking, and destroying Serbian SAMs that minimized their radar emissions or used "shoot and scoot" tactics. Part of the challenge is that the primary SEAD weapon, the HARM, quickly loses its guidance once an adversary turns off his radar, even for a short period of time. A compounding problem is that the targeting cycle for mobile SAM sites takes too long. ...

Secretary of Defense [William S.] Cohen and Chairman of the Joint Chiefs of Staff [Gen. Henry H.] Shelton stated in their Kosovo after-action report that the United States must reduce the time between detecting targets and attacking them. The difficulty of destroying Serbia's SAM launchers can be derived by looking at a different set of Allied Force numbers [as arrayed in Table 2 on p. 61].

Worrisome

This inability to destroy Serbia's SAM launchers is particularly worrisome because, according to Cohen and Shelton, "the FRY (Federal Republic of Yugoslavia) air defense systems did not represent the state of



Sparring Partner. SAM-killing Air Force fighters regularly practice against high-quality simulated threats. Here, a Russian-built US Army SA-8 system from Ft. Bliss, Tex., awaits incoming aircraft during an exercise.

the art. Much more capable systems are available for sale in the international arms market. In the years ahead, we may face an adversary armed with state-of-the-art systems, and we need to prepare for that possibility now.”

Despite these perceived shortcomings, forces involved in Allied Force employed their aircraft and refined tactics in ways that may hint at future solutions to the problem of destroying elusive SAMs. For example, the Air Force paired different variants of the F-16 aircraft together to exploit their various strengths. Like the HARM, the F-16CJ’s sensors are optimized to find and attack radiating radars. Also like the HARM, the CJ has difficulty finding and targeting the radar if the adversary is careful to limit its emissions. The F-16C/D Block 40, however, has an all-weather precision strike capability and carries laser-guided bombs. By using their data link capability, F-16CJ pilots in Kosovo passed bearing information on SAM radar sites from their HTS to Block 40 F-16s. The Block 40 aircraft were then able to launch precision guided munitions at the fleeting and non-emitting targets. ...

This experience suggests to many observers that rapid target detection, identification, and geo-location will be important to the success of future SEAD missions.

The primary topic of ECM-related

Table 2

Serbian SAM batteries	22
NATO SEAD sorties flown	4,500
SAM batteries destroyed	2

conversation following Allied Force was widespread praise of towed radar decoys. Although they did not debut in Kosovo, towed decoys were used more pervasively in this conflict than in the past. These ECM were credited with saving several aircraft, such as the B-1B bomber, from Serbian SAMs. Some have described towed decoys as “one of the key enablers of [the Allied Force] bombing campaign.”

However, there were ECM deficiencies as well as successes. The ALE-39 countermeasures dispenser, for instance, was not sufficiently reliable. The ALE-39—which is found on [US Navy and US Marine Corps] EA-6B, F-14, F/A-18, and AV-8B aircraft—at times did not dispense countermeasures (flares or chaff) when it was supposed to. Conversely the dispenser also ejected countermeasures without prompting, leaving the pilot with none available when they were needed.

The ALQ-126 self-protection jammer’s performance was also found unsatisfactory during Kosovo. Navy and Marine Corps aircraft that used this jammer—F-14s and F/A-18s—

were not allowed to fly over land where the most hostile threats were located. Only those Navy and Marine Corps aircraft protected by more modern jammers were allowed to fly these missions.

Allied Force flight operations also suggest that passively guided SAMs are a self-protection concern that may merit close scrutiny. Shorter range SAMs can exploit infrared or electro-optical guidance to target low-flying aircraft. Because these missiles do not emanate radar signals, they are difficult to detect. When asked which surface-to-air threat concerned him most, one Marine Corps officer replied, “The unobserved missile.”

Air forces that must fly at low altitudes—such as Army helicopters and special operations forces—have been forced to focus on this threat and are seeking to develop effective countermeasures. Aircraft that don’t have to fly low, often reduce this threat by flying high. Allied air forces in Kosovo were able to reduce much of the threat posed by shorter range surface-to-air systems by flying at altitudes above 15,000 feet. But large transport aircraft that need to deliver men and material to the theater are vulnerable to short-range SAMs. It was reported that “during Operation Allied Force, ... Yugoslav anti-aircraft threats forced AMC [Air Mobility Command] planners to sometimes choose less efficient air routes for AMC aircraft to ensure crews’ safety.”

Electronic Attack

In the aftermath of Kosovo—where EA assets played an important role—the decision to retire the Air Force’s EF-111 Raven and to give responsibility for airborne radar jamming to the Navy and Marine Corps has been questioned in the press, defense academia, and government. The Air Force has also questioned its current footing in Electronic Attack and has revamped its overall policy, doctrine, and budgetary positions on EW. On July 7, 2000, for instance, the Air Force’s highest ranking officers held an “EW Summit.”

Many of the Air Force’s recent activities have been organizational changes that may greatly affect the service’s Electronic Attack capabilities in the mid- and long term. For



Different Strokes. USAF's EF-111 aircraft (top), which were retired in 1997, served as a dedicated standoff and escort jammer. The HTS-equipped F-16 took the EF-111's place on the ramp but did not assume its specialized role.

example, the Air Force has created a new organization on the Air Staff—called XOIE—to more effectively develop and coordinate operational EW requirements. This office, in turn, has developed an EW roadmap and action plan that will address the balance between current systems and future technologies. The Air Force has also established EW offices in its major commands ... to better rationalize EW resources and priorities across all programs.

In November 2000, Chief of Staff of the Air Force Gen. Michael E. Ryan announced his new position on EW: "USAF is committed to a support jamming capability adequate to sustain the AEF [Aerospace Expeditionary Force] and joint air, ground, sea, and space operations across the spectrum of conflict. To fulfill AEF CONOPs [Concepts of Operations], the Air Force will define adequate AF EW force structure required to meet projected AEF deployments."

In addition to these organizational changes, the Air Force has also embarked on activities designed to improve, more immediately, their EA capabilities. For instance, the Air Force continues to maintain its only EA asset, the EC-130H Compass Call. The Air Force has an inventory of 14 of these communications jamming aircraft. According to the Air Force, the Compass Call "has achieved some significant performance advances as part of several

classified upgrade programs" over the past several years.

The Air Force is also working on improving its ability to combine LO [Low Observable] and EW operations. According to XOIE officials, at least two combat training exercises have been conducted at Nellis AFB [Nev.] in the post-Kosovo time frame which were designed to improve the integration of EA and LO platforms. Also, general officer-level coordination meetings have been initiated in the Pentagon to address EA and LO training and infrastructure needs. General Ryan has stated

that "USAF believes that a combination of EW and Low Observables are required to assure air superiority in the 21st century battlespace."

SEAD Issues

Air Force planners have taken a fresh look at SEAD capabilities in the post-Kosovo era. As directed by the aforementioned EW Summit, Air Combat Command has developed a Concept of Operations called "Countering Air Defenses," or CAD. This document is intended to serve as the foundation for improving the Air Force's SEAD capabilities. Air Force personnel describe CAD as the most comprehensive document of its type ever written by the Air Force.

The Air Force has also led training activities designed to improve SEAD capabilities. For instance, USAF hosted a joint SEAD test and evaluation at Nellis Air Force Base in August and September 2000, designed to update and test SEAD tactics. The Air Force also annually runs Joint Expeditionary Force Exercises. The one held Sept. 11-14, 2000, at Nellis focused on improving time critical targeting capabilities, such as destroying SAMs that employ shoot-and-scoot tactics.

The Air Force is engaged in a variety of programs to improve its SEAD capabilities. Perhaps the most prominent are upgrades to the HARM Targeting System, the Advanced Targeting Pod, and the Miniature Air Launched Decoy. ■



Carrying the Load. HTS-equipped F-16s will continue to handle most of the SAM hunting in the near future, but Congress has now begun to push for more resources in this mission area.

Verbatim

By Robert S. Dudley, Executive Editor

Heat Stroke

"As the leading element of the [Gulf War] coalition, the United States Army decisively defeated the fourth largest field army in the world. ... It was the land force that provided the essential muscle to lead America's coalition partners in the liberation of Kuwait, the decisive defeat of the Iraqi army, and the restoration of stability in the Persian Gulf."—*From "Desert Victory: The US Army in the Gulf," February 2001 paper issued by Institute of Land Warfare, an adjunct of the Association of the US Army.*

Airpower Targets Civilians?

"These arguments [about the value of precision guided weapons] are a throwback to airpower theories advocated by strategic thinkers such as the Italian Gen. Giulio Douhet and the American Gen. William 'Billy' Mitchell in the 1920s. Then, as now, the argument was that airpower alone could win conflicts. Now, as then, there are those that advocate relaxing the targeting restrictions imposed by the law of war to enable direct attacks on civilian targets in order to inflict punishment on the population in hopes of generating opposition to their regime."—*Gen. Gordon Sullivan, US Army (Ret.), AUSA president, in March 3 Washington Times column.*

You Know—Morons

"There is a new generation [of Western Europeans] coming up that has no memory of the Soviet threat as the basis of a special relationship with the United States. Young people think of America in terms of the culprit behind the death penalty, global warming, the bombs over Baghdad, and the use of depleted uranium weapons in Kosovo."—*Spanish legislator Rafael Estrella, president of NATO parliamentary assembly, quoted in Feb. 23 Washington Post.*

Come on Down

"We have seen the miracles associated with things like the Airborne Laser. Who could possibly imagine being able to shoot a laser hundreds of kilometers through the atmosphere

and hit a target only a meter or so in diameter? I know I didn't believe it. No, I was the biggest skeptic in the world, and I took my leather jacket and my white scarf right out to Kirtland [AFB, N.M.], sat my butt down, and said, 'You guys are going to have to prove this to me.' I left there saying, 'Amen, brother,' because it is going to work."—*Gen. John P. Jumper, Air Combat Command commander, in Feb. 15 remarks to AFA symposium in Orlando, Fla.*

Thatcher Looks at Euro Force

"The public could be forgiven for thinking there are two [European Union defense force] plans—one for strengthening NATO and one for creating a rival organization. ... Our Prime Minister [Tony Blair] has assured President Bush that the former is the correct interpretation. I am sure that he will be aware of how much, in terms of trans-Atlantic trust, now hangs on that assurance. My own view is that, if the Europeans truly wish to improve their NATO contribution, they can show it simply enough. They can increase defense expenditure. They can move more swiftly to establish professional armed forces like those of the UK. And they can acquire more advanced technology."—*Former British Prime Minister Margaret Thatcher, in March 1 speech in London.*

Total Takedown

"Everything—all sources, all methods, all techniques, all targets. There's only a few people in counterintelligence that have to know everything, and he was one of them."—*Former FBI official David Major, quoted in Feb. 22 Washington Post article describing range of secrets possibly compromised by accused spy Robert P. Hanssen.*

Loony Bin Prepares to Launch

"We promised not to test-fire long-range missiles during the duration of [US-North Korean] talks [on mutual security issues], but we cannot do so indefinitely. If the United States continues to fail to honor the agreement [to build nuclear power plants for North

Korea], we don't feel we should cling to it."—*From Feb. 22 statement by North Korean Foreign Ministry.*

You Have Been Warned

"Our work this year revealed growing deficiencies in the [United States'] nuclear weapons production complex, deep morale and personnel problems, continued slippage of program milestones, and unacceptably high risks to the completion of needed weapon refurbishments. ... There is an increasingly urgent need for a coherent vision, comprehensive plan, and programmatic commitment. Failure to meet these needs would virtually guarantee that, in the decades ahead, the nation would face a crisis in the weapons program."—*Feb. 1 letter of John S. Foster Jr., chairman of Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Weapons Stockpile.*

Up With Airpower ...

"The [Bush Administration's] defense review ought to begin by examining the assumption that the United States should be able to fight two simultaneous regional wars. ... It would make more sense to plan for one conflict and to rely on airpower and the mobilization of reserves if a second [war] breaks out."—*Feb. 7 New York Times editorial.*

... Down With Airpower

"The Administration should look hard at expensive weapons systems whose rationale may have disappeared with the Cold War. Particularly deserving of scrutiny [is] the Air Force's \$64 billion F-22 tactical fighter program."—*Same editorial.*

Faith Unshaken

"As an individual, a pilot, and as a citizen of the United States, I have unwavering faith in the Osprey. It's an awesome airplane."—*Maj. Gen. Charles F. Bolden Jr., head of USMC West Coast aviation units, quoted in March 1 San Diego Union-Tribune in regard to two fatal crashes that have killed 23 Marines.*

The commission predicts a direct attack on the United States.

Hart–Rudman Calls for **Homeland Defense**

THE warning was nothing if not blunt. “A direct attack against American citizens on American soil is likely over the next quarter century. The risk is not only death and destruction but also a demoralization that could undermine US global leadership.”

Moreover, “in the face of this threat, our nation has no coherent or integrated governmental structures.”

The act of guarding US territory from foreign depredations should be made “the primary national security mission of the United States.” Preventing or deterring attacks against US soil or responding to them if preventive measures fail will require a comprehensive strategy and new government structures.

Such was the principal conclusion of the US Commission on National Security/21st Century, better known as the Hart–Rudman Commission after co-chairmen Gary Hart, a former Democratic Senator from Colorado, and Warren Rudman, a former Republican Senator from New Hampshire. The panel was chartered in 1998 by Defense Secretary William S. Cohen. It has now reported to both Cohen and to President Bush’s Pentagon leader, Donald H. Rumsfeld.

In late January, the group issued its third and final report. The commission released its Phase 1 and Phase 2 reports in September 1999 and April 2000, respectively, setting out a threat environment over the next 25 years and outlining what the panel viewed as a realistic new national security strategy.

The Phase 3 document called for dramatic changes to the US national security apparatus itself, including a proposal to create a new homeland security agency. Titled “Road Map for National Security: Imperative for Change,” the report built upon the group’s previous work and raised stark concerns about US vulnerability.

The Focal Point

One striking recommendation: Convert the Federal Emergency Management Agency into a “National Home-

By Keith J. Costa

land Security Agency.” The new agency would be chartered in law to provide a focal point for government response in “all natural and man-made crisis and emergency planning scenarios.”

The NHSA director would enjoy Cabinet rank, undergo Senate confirmation, and serve as an advisor to the National Security Council—as is the case today with the director of central intelligence. The panel believes the proposed structure would ensure that one person is accountable to the President for homeland defense policy-making and implementation.

The NSC, though, would still play a role in planning and coordinating homeland security missions involving other federal agencies like the Defense Department, the Centers for Disease Control and Prevention, and the Department of Health and Human Services.

“Through the commission’s proposal for a National Homeland Security Agency, the US government will be able to improve the planning and coordination of federal support to state and local agencies, to rationalize the allocation of resources, to enhance readiness in order to prevent attacks, and to facilitate recovery if prevention fails,” the report stated.

“Most important,” it added, “this proposal [places] the problem of homeland security within the broader framework of US national security strategy. ... We are mindful that erecting the operational side of this strategy will take time.”

The report said NHSA’s planning and coordination activities would be carried out by three components:

- Directorate of Prevention, to oversee border-security activities.
- Directorate of Critical Infrastructure Protection, to head up the agency’s cyber-security operations.
- Directorate of Emergency Preparedness and Response, to set training and hardware standards, give resource grants, and promote information sharing by DOD, FBI, and state officials.

The new agency would also feature a National Crisis Action Center, led by a two-star National Guard general, responsible for coordinating the federal response to crises.

The commission said the NHSA structure, consolidating today’s disparate homeland security activities, would focus the government’s attention on preventing terrorist attacks against American citizens and critical infrastructure. Prevention activities would include a commitment to verifiable arms control and nonproliferation and establishing “vigilant systems of border security and surveillance” carried out by the Border Patrol, Customs Service, and Coast Guard, all three of which would become NHSA components.

An increased number of people and a rising volume of trade crossing US borders means it will be necessary to develop “new transportation security procedures and practices designed to reduce the risk that importers, exporters, freight forwarders, and transportation carriers will serve as the unwitting conduits for criminal or terrorist activities,” the report said.

Enhanced homeland security requires better intelligence gathering and sharing throughout the government so that high-risk shipments and individuals can be targeted for inspection by border-control agencies. Further, those border-patrol officials should have greater author-

ity to apprehend terrorists and stop shipments before they reach the United States, according to the commission.

Pay Attention

All signs are that the Pentagon will play a vital role in responding to a terrorist attack on US soil using Weapons of Mass Destruction, the report said. The Defense Department itself “should pay far more attention” to homeland security, and it should be reorganized to better support the overall mission.

The report noted that, at present, the department assigns responsibility for WMD incidents to the assistant to the secretary of defense for civil support while the Army’s director of military support responds to non-WMD contingencies. The commission didn’t like that setup. “Such an arrangement does not provide clear lines of authority and responsibility or ensure political accountability,” the commission concluded.

The panel recommended that the President ask Congress to establish within the Office of the Secretary of Defense the post of assistant secretary of defense for homeland security. This official would have powers to oversee the department’s homeland security activities and make sure “mechanisms are in place for coordinating military support in major emergencies.”

The new assistant secretary would report directly to the Defense Secretary. “He or she would work to integrate homeland security into Defense Department planning and ensure that adequate resources are forthcoming,” the report added.

To that end, the committee recommended that the new assistant secretary work closely with Joint Forces Command to enhance the capabilities of the Joint Task Force for Civil Support.

The task force should be headed by a senior National Guard general and given additional headquarters personnel, the report said. Furthermore, the task force should “contain several rapid reaction forces, composed largely of rapidly mobilizable National Guard units” with adequate command-and-control capabilities for handling multiple emergencies, it said.

The report acknowledges the role strong nuclear and conventional forces can play in deterring attacks against the homeland, but it added that those forces may not deter nonstate actors that wish to strike the United States.

Taking into consideration the continuing proliferation of missile technology, the commissioners argued that a ballistic missile defense system would be a valuable addition to defense capabilities and should be developed “to the extent technically feasible, fiscally prudent, and politically sustainable.”

The report called for defenses to protect the homeland from cruise missile attack.

Going to the Guard

The Hart–Rudman panel placed heavy emphasis on the role the National Guard can play in homeland security missions. Indeed, one of the Phase 3 report’s top recommendations called on the President and Secretary of Defense to make homeland security a primary mission of the Guard.

“The commission recommends that the National Guard be directed to fulfill its historic and constitutional

Commission Members

Co-Chairmen

Gary Hart, former Senator (D-Colo.).
Warren Rudman, former Senator (R-N.H.).

Commissioners

Newt Gingrich, former Speaker of the House (R-Ga.).

James R. Schlesinger, former defense secretary, energy secretary, and director of the Central Intelligence Agency.

Retired Adm. Harry D. Train II, former commander in chief, US Atlantic Command.

Retired Army Gen. John R. Galvin, former Supreme Allied Commander Europe.

Andrew Young, former US ambassador to the United Nations.

Anne Armstrong, former counselor to Presidents Nixon and Ford and former US ambassador to Britain.

Norman R. Augustine, former chairman and CEO of Lockheed Martin.

John Dancy, former NBC News White House, Congressional, and diplomatic correspondent.

Leslie H. Gelb, former State Department director of politico-military affairs; president of Council on Foreign Relations.

Lee Hamilton, former chairman (D-Ind.) of the House Intelligence Committee; director of the Woodrow Wilson International Center for Scholars.

Lionel H. Olmer, former undersecretary of commerce for international trade.

Donald B. Rice, former Secretary of the Air Force.

mission of homeland security," it said. Presently, the Guard is mainly structured to support overseas military operations. The panel proposed that the Guard redistribute its resources "to provide greater support to civil authorities in preparing for and responding to disasters, especially emergencies involving Weapons of Mass Destruction."

Subsequently, the Guard would take on missions such as initiating local, state, and regional planning for responding to a WMD attack and training first responders. Furthermore, the Guard should take advantage of experience it gains from crisis-response activities to develop an "overseas capability for international humanitarian assistance and disaster relief," the report said.

The redistribution of Guard resources should only come after "a detailed assessment of force requirements" for Major Theater Wars and homeland security operations. This assessment should be conducted by DOD with the active participation of state governors and the NNSA director, the report said.

Two-War Concerns

As in the group's Phase 2 report, the commission's final study addresses problems with DOD's force planning methods and takes aim at the Pentagon's present strategy of sizing forces to fight and win two overlapping Major Theater Wars.

In its Phase 2 report, the commission expressed concern that the two-Major Theater War strategy inhibits DOD reform efforts and prevents the military from deploying the five kinds of forces—namely, strategic nuclear,

homeland security, conventional, expeditionary, and humanitarian/constabulary forces—needed in the post-Cold War world to deal with symmetrical and asymmetrical threats.

The panel maintains that the possibility of two such conflicts erupting in the same time frame is "remote" and is not supported by "actual intelligence estimates nor by this commission's view of the likely future," the Phase 3 report said. "We believe it is more useful to plan and retain readiness for a major conflict, while also securing the homeland and responding to small- or medium-scale conflicts, international terrorism, peacekeeping, humanitarian actions, and other commitments requiring US military support."

With that in mind, the commission called for a new top-down planning process that would accelerate efforts to transform the military's capabilities as recommended, with the highest priority reserved for developing DOD expeditionary forces.

Commissioners did not offer suggestions on the numbers and types of divisions, wings, and naval battle groups to carry out alternatives to the two-MTW strategy. Instead, the group focused attention on how to alter processes that for years have led defense officials to conclude that it needs to shape its forces according to the two-MTW yardstick.

The Phase 3 report said, "The Secretary of Defense should direct the DOD to shift from the threat-based force sizing process to one which measures requirements against recent operational activity trends, actual intelligence estimates of potential adversaries' capabilities, and national security objectives as defined in the new Administration's national security strategy"—once formulated.

As part of the Secretary's attempts to forge a mechanism for sizing forces, the Defense Secretary "should revise the current categories of Major Force Programs used in the defense program review to focus on providing a different mix of military capabilities." Those categories should correspond to the five kinds of forces endorsed by the commission, the report said.

Emphasizing Space

In addition to policies that affect military force structure, the report gives special attention to DOD space policy.

"There is no more critical dimension of defense policy than to guarantee US commercial and military access to outer space," the report said. "The US economy and military are vitally dependent on communications that rely on space. The clear imperative for the new era is a comprehensive national policy toward space and a coherent governmental machinery to carry it out."

The commission called for establishing an Interagency Working Group on Space at the National Security Council to coordinate the nation's space policy. The working group would comprise representatives from the Commerce, State, and Defense departments, Intelligence Community, and NASA, among others. ■

Keith J. Costa is chief editor of "Inside the Pentagon," a Washington, D.C.-based defense newsletter. His most recent article for Air Force Magazine, "Toward a 'Concert for Freedom,'" appeared in the April 2000 issue.

Odd Little Bird



It had three engines and high wings reminiscent of the early Ford Trimotor, and as a commercial transport airplane the N-23 Pioneer fizzled, but in 1948, the Air Force thought it just might replace gliders in airborne assaults and serve as a rescue aircraft. The service ordered 23—calling them YC-125 Raiders—for testing. Despite some modifications from Northrop's original design, in-

cluding a change of engines, the Raiders proved to be significantly underpowered for either moving troops into forward areas or rescue work. Helicopters won out in both roles. Consequently, the YC-125s were sent to Sheppard AFB, Tex., for use as ground maintenance trainers. Shortly thereafter, in 1955, the Air Force declared them surplus.

They flew military airplanes in the 1940s, but many years went by before they were recognized as veterans.

By Bruce D. Callander

The WASPs



These pilots on the flight line at New Castle AAB, Del., were among the more than 1,000 women who flew for the AAF in the continental US during World War II.



IN October 1943, the Army Air Forces checked out several women ferry pilots in the B-26 bomber. Women also flew P-38 fighters and the B-29 bomber, both of which had bad reputations when they were introduced, so bad that some male pilots balked at flying them.

As members of the unit known as the Women Airforce Service Pilots—the WASPs—they worked as test pilots, towed targets for gunners, pulled weather reconnaissance missions, flew student navigators and bombardiers, and instructed male pilots.

In all, more than 1,000 women flew for the AAF during the war, and 38 were killed, 11 in training and 27 in line of duty. They served in civilian status, wore made-over men's uniforms, and when there were enough males to fill the flying jobs, were sent home with little more than an official thank you. It would take Congress more than 30 years to recognize their contributions.

The program traces its origins to two women who could not have been more different in background and temperament.

Jacqueline Cochran was a founding raised by impoverished foster parents in a north Florida mill town. She had little formal education and began working in a beauty shop before she was in her teens. Yet she wound up running a prosperous cosmetics business and becoming one of the foremost female aviators of her day.

Nancy Love, a few years younger than Cochran, was the daughter of a successful physician. She attended a private school, then spent a couple of years at Vassar College, and helped to build up a successful Boston-based aviation company.

Where Cochran was brash, outspoken, and competitive, Love was quiet and conciliatory. But they had two things in common.

Two Similarities

One was their love of flying. Cochran originally took lessons for business reasons, but aviation soon became her consuming interest. By 1938, she had won the Bendix Transcontinental Air Race and become a leading aviatrix. Love received her private pilot's license at 16. Later, she sold airplanes on commission



All eyes are on Jackie Cochran, director of women pilots, as she gestures to illustrate a flying maneuver to women trainees at Avenger Field. Along with Nancy Love, Cochran championed the idea of women pilots in noncombat roles.

and flew for the Bureau of Air Commerce, where she tested airplanes and marked water towers as navigational aids.

The second similarity was that both women married men influential in aviation. Cochran's husband, Floyd Odum, was a millionaire industrialist and defense contractor with important contacts in Washington. Love's husband, Robert Love, founded the Boston aviation company and was a reserve officer in the Army Air Corps, rising to colonel in Air Transport Command.

When war erupted in Europe, both women approached government officials with ideas for building a cadre of women pilots to fly for the Army.

Love's plan was to recruit experienced female pilots to ferry airplanes. In May 1940, she presented it to Lt. Col. (later Gen.) Robert Olds, who was setting up the Army Air Corp's Ferrying Command (later Air Transport Command). Olds passed the idea to Maj. Gen. H.H. Arnold, AAC chief.

Although nothing came of the idea at the time, two years later, Lt. Col. (later Lt. Gen.) William H. Tunner was searching for experienced pilots to serve with Ferrying Command, and Love's plan resurfaced. On Sept. 10, 1942, the Army Air Forces created the Women's Auxiliary Ferrying Squadron with 27 female pilots and Love as director.

Cochran had begun selling a similar idea even earlier. In September

1939, she wrote to First Lady Eleanor Roosevelt, saying the government should start thinking about using women in noncombat roles in case the US entered the war.

Later, she approached Arnold, who suggested she go to England and study Britain's Air Transport Auxiliary, which used women to ferry airplanes. She did. When she returned, she went public with her views and was invited to discuss them with President Franklin D. Roosevelt.

Arnold initially rejected her plan but suggested that Cochran recruit qualified women pilots (she selected 25) and return to Britain to fly with the ATA and refine her plan.

By the summer of 1942, the US was in the war and hurting for pilots. Arnold called Cochran home to set up a program to teach women to fly for the Army. On Sept. 15, five days after the formation of Love's WAFS, he announced the formation of the Women's Flying Training Detachment, with Cochran at the helm.

Officials of Air Transport Command, thinking they had Arnold's approval, had OK'd Love's WAFS program while he still was negotiating with Cochran. There was little to do but go ahead with both programs. About a year later, however, the two groups were merged into the WASPs. Cochran was named director of women pilots and assigned to Arnold's staff. Love became executive, Ferrying Division, but remained director of women in ATC.

Love's Limited View

"Kaddy" Landry (now Katherine L. Steele of Gainesville, Fla.) trained with Cochran's group and recalls the situation. "The major difference was that Nancy Love had a very limited view of what women could do," she said. "All she was thinking about was the same program used by the British ATA, which didn't do any training. I don't think that she minded being subordinate to Cochran because she didn't have that big ambition that Cochran did. She just wanted to do her own thing, and Cochran let her."

Another difference between the approaches of the two women was that Cochran hoped to see women pilots integrated into the AAF while Love seemed content with their remaining in civilian status. Ultimately, Cochran did not get her wish. Her insistence on it may actually have shortened the life of the program.

While the idea of using women in the military flying role was new, it was not unprecedented. In the late 1930s, the US had launched the Civilian Pilot Training program to develop a pool of potential airmen, many of whom became military pilots. Under pressure, CPT later accepted a small number of women (one for every 10 males), some of whom eventually would fly for the Army. The Army also was commissioning older men who already had private pilot licenses as "service pilots" to fly in noncombat jobs. Although women service pilots were not given the same military status, they served much the same function.

Love's WAFS set up shop at New Castle AAB, Del., in September 1942. Applicants had to have commercial licenses with 200 horsepower ratings, 500 hours of flying time, and cross-country experience. After four weeks of transition training they were assigned to ferrying duties, at first delivering only light airplanes but eventually checking out in cargo aircraft, fighters, and bombers.

Cochran's WFTD program began at Houston Municipal Airport in Texas, with the first women entering training in November 1942. The government commandeered trailer parks to house them, and their first airplanes were cast-off civilian aircraft.

In early 1943, a second program opened at Avenger Field in Sweetwater, Tex., where the AAF had been training male cadets. Eventually, the

women received the same AAF trainers used by male students. Operations at both Houston and Sweetwater, including flight instruction, were handled by a private operator under AAF contract.

The first WFTD applicants had to be at least 21 but not older than 35 and have a high school education and 200 hours of flying time. Each had to pass a medical exam by an Army flight surgeon and undergo an interview either by Cochran or by one of her representatives. The initial program called for 23 weeks of training, including 115 hours of flying and 180 hours of ground school.

Changing Criteria

As the pool of qualified applicants dwindled, the entry criteria and the course changed. The minimum age dropped to 18.5 years. Required flying time was lowered to 100 hours, then to 75, and finally to 35. Over the same period, the course was beefed up to cover 30 weeks, including 210 hours flying and 393 hours of ground school. Early on, the women went through primary, basic, and advanced training, but later, the basic phase was dropped.

"I was in Class 43-7," said Landry. "Then, everybody had to have at least 75 hours. Toward the end, they ran out of women who had even that much. There weren't that many women pilots in the 40s, but we all had some flying time and some of those first women in Ferry Command not only had a lot but had heavy horsepower time. They were mostly wealthy women who had their own airplanes. The ATA in Britain was able to require a lot of time, too, but they had a broader base to pick from, not only English women but those from Australia, South Africa, and all the colonies."

Rules laid down by Cochran said, "Applicant will have to be qualified at the end of training to pass commercial, written, and flight tests, and earn instrument rating." She added, "Applicant can be eliminated at any time during the process of the course at the discretion of the instructors."

Despite the lowering of the entry requirements, Cochran maintained high training standards. Of the more than 25,000 women who applied, 1,830 were accepted for training. A mere 1,074 were graduated. Of those who washed out, 552 were elimi-

nated for flying deficiencies, 27 for medical problems, and 14 for disciplinary reasons. Another 152 resigned and 11 women were killed during training.

The women pilots received much the same training as male aviation cadets, including courses in military courtesy, Articles of War, drill and ceremonies, plus ground school in mathematics, physics, navigation, theory of flight, weather, code, and physical training.

During training, women's basic pay was \$150 per month plus \$26 for overtime. At Sweetwater, the women paid \$1.65 per day for room and board. Male cadets received only \$75 per month in base pay, but they were not charged for room and board. The overall compensation was comparable, but women had to pay their own way to training and home again if they washed out. They were not eligible for government life insurance.

Lower Pay

After graduation, women received \$250 per month plus overtime for a total of \$287.50. On base, they paid \$15 to \$20 per month for quarters and were allowed to buy meals at the officers' mess. Living off base, they paid considerably more for rent and meals. Traveling on official duties, they drew a \$6 per diem allowance. Not only was their total pay less than that of second lieutenants but women were allowed no increases for promotion or length of service. The most

senior drew the same pay as the youngest graduates.

On graduation, some WASPs were sent directly to bases to fly the same kinds of airplanes they had flown in training, but most were given additional transition training in heavier aircraft before going to their assignments.

"After training at Sweetwater," said Landry, "several of us were sent to Mather Field [Calif.] and through B-25 transition. That lasted about three-and-a-half months. Then, they split that group and 20 went to Riverside, Calif., and the rest of us went to Biggs Field at El Paso [Tex.]."

Landry was assigned to the tow target squadron. Other WASPs at Biggs flew as "targets" to train searchlight crews and radar operators, piloted "mother ships" for radio-controlled targets, pulled low-altitude night missions to drop flares on troops and gun emplacements, and laid smoke screens.

Other women pilots fanned out to more than 120 airfields, taking on a variety of assignments. At Alamogordo, N.M., they flew flight checks, search missions, and cargo delivery in everything from the light L-5 liaison airplane to C-47s and B-17s. At Altus, Okla., they served as engineering test pilots on UC-78s. At Victoria, Tex., they worked as instrument instructors.

They flew weather missions and helped establish B-29 routes for the Army Airways Communications Sys-



Gen. H.H. Arnold awards wings at an Avenger Field ceremony in December 1944. The program was deactivated that month, as the Army cut back on flight training programs and the male pilot shortage became less acute.

US Air Force photo



Although women pilots in World War II carried out numerous flying duties for the military, they were not given full military status. It was not until 1977 that they were declared veterans.

tem. They flew bombardier and navigator students in AT-11s at Childress, Tex. At Frederick, Okla., they flew AT-6s, B-24s, and UC-78s and checked returning overseas pilots to prepare them to instruct cadets. At Wright Field, Ohio, Ann Baumgartner worked as a test pilot, checked out in the Bell YP-59A, and became the first US woman to fly a jet.

Fatalities

Cornelia Fort was instructing a student in Hawaii on Dec. 7, 1941, when they had a near collision with a Japanese warplane attacking Pearl Harbor. She returned to the States and instructed in the Civilian Pilot Training program, then became the second woman to volunteer for the WAFS. On March 21, 1943, the BT-13 she was ferrying collided with another airplane and she became the first American woman pilot killed in line of duty.

She was not the last. Evelyn Sharp, another of the original WAFS group, had 2,968 hours when she joined the ferry program. She was killed when the engine on her P-38 failed on takeoff. A third WAFS pilot, Dorothy E. Scott, was in pursuit training at Palm Springs, Calif., when she and her instructor were killed in an AT-6 in a midair collision.

Eleven women were killed during their initial training with Cochran's group. Another 27 graduates were killed while on duty. Most were on ferry missions or on cross-country

flights in training airplanes. Four died in A-24 attack bombers, two in B-25s, one in a P-39, and one in a P-63. Overall, Cochran said in her final report, the women's fatality rate was comparable to that for men.

If women pilots had proved themselves to AAF leaders, they were not always accepted by men at lower levels.

Landry recalls, "When we got to the tow target squadron at Biggs, the commanding officer was horrified. I guess he didn't know we were coming. He not only didn't want us to do anything for him, he didn't want to do anything for us. He wouldn't see about getting us proper quarters or anything."

That officer eventually shipped out. "Of course, the men we flew with every day were very easy to get along with," she went on. "They were all our age. The ones we had all the trouble with were those older men who had been there forever."

Some barriers never fell. For example, female pilots were prevented from flying outside the boundaries of the continental US. "That was something that the Congress passed," said Landry, "and it was stupid because many of those Ferry Command women were flying P-39s and P-63s that the US was giving to Russia." Women would fly them to Great Falls, Mont., where men picked them up and flew them to Alaska (which was not yet a state). Then, Russian women flew them to Russia.

"So," said Landry, "the American women could just as well have flown them to Anchorage."

Another frustration for the women was that they never were brought into full military status. It was one of Cochran's aims, but she balked at having the WASPs placed under Oveta Culp Hobby's Women's Army Corps. In June 1944, a Congressional committee considered a bill to militarize the WASPs in their own right but rejected it and recommended the program be disbanded.

One important factor in the decision was that the Army had cut back its flight training programs, leaving thousands of civilian instructors vulnerable to the draft. The AAF took some in as pilots, but many were faced with induction into nonflying jobs or other branches and lobbied against keeping the women pilots. Landry said, "All those men who had been exempt all those years by instructing suddenly were eligible for the draft and wanted our jobs. Even though they weren't prepared to take them, they didn't want to be drafted."

Arnold reluctantly ordered the shutdown, and the WASPs program was deactivated on Dec. 20, 1944, more than six months before the war ended. Some women later were commissioned in the new United States Air Force but not on flying status. Others continued to fly, but few were able to make full careers in civilian aviation. Unlike male veterans, they were not eligible for training under the GI Bill.

It was not until 1977 that Congress passed a bill, introduced by Sen. Barry Goldwater (R-Ariz.), that gave the WASPs honorable discharges and declared them to be veterans. Their actions in wartime demonstrated courage and determination, paving the way for women to be admitted to military flying training again, but it had been more than 30 years before they finally completed their journey. ■

Bruce D. Callander, a regular contributor to Air Force Magazine, served tours of active duty during World War II and the Korean War. In 1952, he joined Air Force Times, serving as editor from 1972 to 1986. His most recent story for Air Force Magazine, "Minuteman Turns 40," appeared in the March 2001 issue.

Books

Compiled by Chequita Wood, Editorial Associate

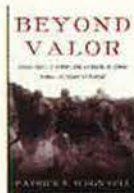
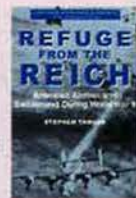
An Autobiography of a Pilot: From WWII to Korea and Vietnam to VIP Duty. Albert T. Keeler. Order from: Al Keeler, 20 Industry Ln., Prince Frederick, MD 20678 (410-535-0576). 195 pages. \$29.95.



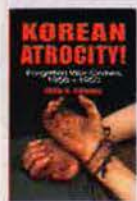
Hitler's Northern War: The Luftwaffe's Ill-fated Campaign, 1940-1945. Adam R.A. Claasen. University Press of Kansas, 2501 W. 15th St., Lawrence, KS 66049-3904 (785-864-4155). 338 pages. \$39.95.



Refuge From the Reich: American Airmen and Switzerland During World War II. Stephen Tanner. Serpedon Publishers, 49 Front St., Rockville Center, New York, NY 11570 (516-255-0313). 262 pages. \$25.00.



Beyond Valor: World War II's Ranger and Airborne Veterans Reveal the Heart of Combat. Patrick K. O'Donnell. The Free Press, 1230 Avenue of the Americas, New York, NY 10020 (800-323-7445). 366 pages. \$26.00.



Korean Atrocity!: Forgotten War Crimes, 1950-1953. Philip D. Chinnery. Naval Institute Press, 2062 Generals Hwy., Annapolis, MD 21401-6780 (800-233-8764). 286 pages. \$34.95.



The Rescue Season: The Heroic Story of Parajumpers on the Edge of the World. Bob Drury. Simon & Schuster, 1230 Avenue of the Americas, New York, NY 10020 (800-223-2348). 238 pages. \$25.00.

F-105 Thunderchiefs: A 29-Year Illustrated Operational History. W. Howard Plunkett. McFarland & Co., Inc., Publishers, PO Box 611, Jefferson, NC 28640 (800-253-2187). 325 pages. \$55.00.



The Legacy of Daedalus: War Stories and Flying Tales. Turner Publishing Co., PO Box 3101, Paducah, KY 42002-3101 (800-788-3350). 304 pages. \$44.95.



Shield and Sword: The United States Navy and the Persian Gulf War. Edward J. Marolda and Robert J. Schneller Jr. Naval Institute Press, 2062 Generals Hwy., Annapolis, MD 21401-6780 (800-233-8764). 517 pages. \$36.95.



Fire by Night: The Dramatic Story of One Pathfinder Crew and Black Thursday, 16/17 December 1943. Jennie Gray. Seven Hills Book Distributors, 1531 Tremont St., Cincinnati, OH 45214 (513-471-4300). 182 pages. \$29.95.



My War Gone By, I Miss It So. Anthony Loyd. Penguin Putnam, 375 Hudson St., New York, NY 10014 (800-778-6262). 321 pages. \$14.00.



Titan II: A History of a Cold War Missile Program. David K. Stumpf. The University of Arkansas Press, 201 N. Ozark Ave., Fayetteville, AR 72701 (800-626-0090). 320 pages. \$49.00.

Fly Fast ... Sin Boldly: Flying, Spying and Surviving. William P. Lear Jr. Adax Publishing Group, 8643 Hauser Dr., Suite 235, Lenexa, KS 66215 (913-438-5333). 475 pages. \$27.95.



Operation Nickel Grass: The Airlift to Israel and Coronation of the C-5 Galaxy, October-November 1973. 2nd ed. Kenneth K. Robertson Jr. Air Mobility Command Museum Foundation, Dover AFB, DE 19902 (302-677-5992). 79 pages. \$7.95.



To Hanoi and Back: The US Air Force and North Vietnam, 1966-1973. Wayne Thompson. Smithsonian Institution Press, PO Box 960, Herndon, VA 20172-0960 (800-782-4612). 416 pages. \$27.95.



The History of US Electronic Warfare, Vol. 3: Rolling Thunder Through Allied Force, 1964 to 2000. Alfred Price. Association of Old Crows, 1000 N. Payne St., Alexandria, VA 22314-1652 (888-653-2769). 609 pages. \$49.00.



Patriot Hearts: An Anthology of American Patriotism. Maj. William T. Coffey Jr., USAR. Order from: Purple Mountain Publishing, PO Box 77019, Colorado Springs, CO 80970-7019 (719-572-1169). 430 pages. \$23.95.



War Machines: Transforming Technologies in the US Military, 1920-1940. Timothy Moy. Texas A&M University Press, John H. Lindsey Bldg., Lewis St., College Station, TX 77843-4354 (800-826-8911). 218 pages. \$39.95.

By Frances McKenney, Assistant Managing Editor

Korean War Remembered

"Air War in Korea" served as the theme for the annual Air Force Gala in Orlando, Fla., sponsored by the Central Florida Chapter and the Aerospace Education Foundation and held in conjunction with the AFA Air Warfare Symposium.

The 17th annual black-tie banquet honored retired Maj. Gen. Frederick C. Blesse and retired Col. Harold E. Fischer. Blesse, who wrote the fighter tactics primer *No Guts, No Glory*, and Fischer were both Korean War aces with 10 aerial victories each.

Others honored were retired Col. Russell L. Blaisdell, who arranged the evacuation—in Operation Kiddy Car—of more than 1,000 orphans out of Seoul, two weeks before Communist troops captured the city; retired MSgt. Gilbert R. Switzer, a bomb loader during the war; and retired Col. Dean E. Hess, a minister who became a pilot and started an unofficial orphanage for Korean children. His experiences were made into the 1957 movie "Battle Hymn," starring Rock Hudson.

The five honorees were named Ira C. Eaker Historical Fellows: The chapter donated to AEF \$1,000 in each of their names.

Tommy G. Harrison, gala chairman, reported that funds raised by the ball support local aerospace education efforts ranging from AFROTC to Civil Air Patrol activities, as well as AEF and the Air Force Memorial Foundation.

Out of the Can

Just showing a canned video wasn't enough for the **Falcon (Fla.) Chapter**.

Chapter officers decided that educating the public about airpower, the Air Force, and AFA needed a more personal approach. Chapter President Homer H. Humphries Jr., Vice President Frank W. Kozdras, and Secretary Richard W. Coker created a slide show that includes live narration.

Kozdras and Coker wrote the narration, pulling together information from Department of Defense publica-



At the Air Force Gala in Florida, Tommy Harrison (left), gala chairman; AEF leaders Richard Goetze Jr., giving a thumbs-up, and Jack Price; and John Brock (right), Central Florida Chapter president, exhibit a whopper of a check to symbolize the chapter's \$45,000 donation to AEF. The chapter also donated \$10,000 to the Air Force Memorial Foundation.

tions, *Air Force Magazine*, and other periodicals. Kozdras then rounded up slides to accompany the message.

The slides cover the Air Force inventory, aging aircraft, and budget trends, among several topics. The presentation lets the audience know that USAF is more than just fighters, said Humphries. It also lists specific ways the chapter helps its Jacksonville, Fla., community.

Live narration gives the slide show impact, Humphries added.

The chapter presented the slide show to its members in September, then took the show on the road, to the state's northern area meeting at Daytona last fall. It also presented it to the Florida state meeting held in conjunction with the February Air Warfare Symposium and had three other possible invitations. Humphries said the chapter is willing to make copies of its presentation for other chapters.

AEF Scholarships

AEF announced the recipients of its Spouse Scholarships in February.

This year, there were 120 applicants—up from about 70 last year—for the 30 \$1,000 scholarships.

The award winners are enrolled in schools as far away as Guam and South Korea and ranged from two community college students to two PhD candidates. Ten are earning master's degrees. Six are nursing students, all from different schools.

AEF's Spouse Scholarships were established in 1995 for spouses of USAF active duty, Air National Guard, or Air Force Reserve Command personnel.

Tara L. Blaschko received the \$500 Janet R. (Wisemandle) Whittle Memorial Scholarship, earmarked for the spouse of an Air Force enlisted member in the grade of senior airman or below. Blaschko's husband is Amn. Troy Blaschko, stationed at Nellis AFB, Nev.

SACEUR Luncheon

Air Force Gen. Joseph W. Ralston, Supreme Allied Commander Europe and commander in chief of US European Command, spoke to the **Donald**

W. Steele Sr. Memorial (Va.) Chapter at a February meeting at the Army-Navy Country Club in Arlington, Va.

Chapter President James T. Hanam reported that Ralston described his future vision of NATO and ongoing EUCOM operations in Bosnia, Kosovo, and Africa and Operation Northern Watch.

The luncheon brought out nearly 200 guests, including former Air Force Secretary F. Whitten Peters; Thomas G. Shepherd, Central East Region president; several foreign air attachés; and aerospace industry representatives.

The chapter donated \$1,000 in Ralston's honor to the Air Force Memorial Foundation.

Joe Foss Honored

Joe Foss, former AFA National President (1961-62) and Chairman of the Board (1962-63), received the American Hero award from St. John's Northwestern Military Academy in Delafield, Wis.

A Marine Corps fighter pilot in World War II, Foss received a Medal of Honor for his actions at Guadalcanal, including destroying 26 enemy aircraft. He went on to become governor of his home state, South Dakota, and founded its Air National Guard, from which he retired as a brigadier general.

Wisconsin AFA officials on hand for Foss's award banquet included Charles W. Marotske Jr., state president, and Kenneth W. Jacobi of the **Billy Mitchell (Wis.) Chapter**.

St. John's is a college preparatory



USAF photo by SrA Greg L. Davis

Thomas McKee, AFA National Chairman of the Board, was on hand for this gathering of USAF and coalition air forces leaders at Shaw AFB, S.C. The group, which included Gen. Michael Ryan, USAF Chief of Staff, and other dignitaries, poses for a photo in front of 9th Air Force headquarters. The occasion marked the 10th anniversary of the Gulf War.

school for boys in grades seven through 12.

For the Vets

The **Altus (Okla.) Chapter** donated \$200 in January to help Robert A. Beers, chapter vice president for veterans affairs, collect and deliver supplies to patients at the Oklahoma Veterans Center in Clinton, Okla.

Beers began the volunteer effort 10 years ago and now does it under the auspices of the Elks Club. Four times a year, he takes his own van to

the center, loaded with items collected from local businesses, civic and veterans organizations, as well as the Altus Chapter and its Community Partners. Donations include gift certificates, new and used clothing, personal care items, and cases of bananas and other fruit. In November, he delivered 1,200 books.

Beers called his voluntary effort a "campaign" and said, "The look on their faces when they see the stuff come in—it's really gratifying."

Representing AFA

A display at the terminal of the Greater Rochester IAP, N.Y., features plaques from about two dozen veterans organizations having chapters in the area.

"Every time I took a plane out of there, I noticed they didn't have an Air Force plaque," said **Genessee Valley (N.Y.) Chapter** member John F. Devney.

A former facilities engineer, Devney said he has no art training but does have an "artistic flair." So he designed a 15.5-inch circular plaque showing AFA's "wee wings" logo and the chapter name. The chapter donated funds for the project, and Chapter Secretary Wayne Sheeler arranged to have Devney's design turned into a plastic plaque. The airport installed it last fall, and the chapter now uses the same logo on its newsletter.

It's not the first time Devney has designed an emblem. In World War II, he won a contest to create an emblem for the 756th Bomb Squadron in Italy. With permission from

Photo by Dan Higgins



AFA National Chairman of the Board McKee (left) and National President John Politi (center) chat with Gen. Patrick Gamble, Pacific Air Forces commander, at the Air Warfare Symposium in Orlando, Fla.

Disney, he used Goofy, holding a bomb, in his design (see October 1998 "Pieces," p. 80). The unit used the emblem until its mission changed from bombing to airlift.

Change at AIA

Brig. Gen. Carol C. Elliott, vice commander of Air Intelligence Agency at Kelly AFB, Tex., spoke to the January meeting of the **Alamo (Tex.) Chapter** about the realignment of AIA.

On Feb. 1, it was functionally realigned from a USAF field operating agency to an Air Combat Command primary subordinate unit. The agency's two wings, the 67th Information Operations Wing at Kelly and the 70th Intelligence Wing at Ft. Meade, Md., were realigned under 8th Air Force.

The luncheon gathering was held at Air Force Village II in San Antonio. Some of the residents of the facility's 400 apartments were among the audience. As part of the program, the chapter showed a video on the Air Force Memorial and distributed brochures on the project.

More AFA/AEF News

■ When ANG Brig. Gen. George A. Demers retired after 46 years of military service, several members of



USAF photo by T. C. Perkins

During one of his stops on an orientation tour of four Air Mobility Command bases, AFA National President John Politi holds a peregrine falcon used at Travis AFB, Calif., in an aircraft bird strike hazard abatement program. An AMC news release quoted Politi, "If AFA is to represent all Air Force members and their families, it's critical that we meet with them where they work and live."

Connecticut AFA chapters were on hand for the ceremony and banquet. Demers, a member of the **Sgt. Charlton Heston (Conn.) Chapter**, was also presented with a ceremonial

sword from the state AFA organization. Making the presentation were Joseph A. Zaranka, national director; Joseph R. Falcone, state president; and Col. Daniel R. Scace, commander of the 103rd Fighter Wing (ANG), Bradley IAP, Conn. Scace is a member of the Jerry Waterman (Fla.) Chapter.

■ The **Dale O. Smith (Nev.) Chapter** raised more than \$3,000 from its annual scholarship banquet fundraiser in December. In a highlight of the evening, Kathleen Clemence, Nevada state president, auctioned off wrapped white-elephant gifts that had been brought in by chapter supporters. Among the 50 guests were Scotty Wetzel, Southwest Region president. According to chapter member Chris A. Anastassatos, the funds raised at the event support scholarships for Air National Guard family members and Civil Air Patrol cadets.

■ The **Miss Veedol (Japan) Chapter** held a fund-raising "American Christmas Tour" that brought Japanese families onto Misawa Air Base. More than 350 guests toured homes decorated for the holidays, enjoyed Christmas carols, and visited with Santa. The \$1,500 raised by the event went to the city of Misawa, to help carry out a re-enactment of the first nonstop trans-Pacific flight, which originated from Misawa in 1931. The re-enactment is scheduled for 2003.

Paul G. Markgraf (1919-2001)
Retired USAF Maj. Paul G. Markgraf,

AFA Specialty Items



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Please add \$3.95 per order for shipping and handling

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F8 Victorinox Pocket Knives. Blue enamel or silver metallic. Contains blade, nail file, scissors. Blue enamel also includes toothpick and tweezers. AFA name and logo. **\$16**

F9 Music Key Ring. Plastic key ring with AFA logo. Plays the tune "Off We Go". **\$6**

F10 Windproof Lighter. By Zippo. Brushed stainless steel. **\$13**

F11 Golfer's Money Clip. By Zippo. Brushed stainless steel with ballmarkers and greenskeeper. **\$13**

F12 AFA Umbrella. 60" in white and dark blue with AFA logo and fiberglass shaft. **\$25**

F13 3" Decal. Member or Life Member. Specify inside or outside window. **\$.15**

F14 AFA Golf Balls. Titanium Top Flight by Wilson with full color AFA logo. Sleeve of 3. **\$8.50**

F15 Pewter Medal. AFA logo. Suitable for plaques and decorative placement. 1.75" diameter. **\$.5**

founder of the Gen. E.W. Rawlings (Minn.) Chapter, died Jan. 27, the day after he turned 82.

A USAF fighter pilot and test pilot, he was the first president of the Rawlings Chapter, when it was chartered Aug. 9, 1982.

After a state charter was granted in June 1984, Markgraf became Minnesota state president. He was elected as North Central Region vice president at the September 1986 National Convention and served for three years.

Aerospace Education Foundation Fellows for 2000

The individuals listed below were named calendar year 2000 AEF Fellows in the categories indicated. (The sponsors are included in parentheses.)

Barry Goldwater Fellow (represents \$5,000 contribution): Rep. Herbert H. **Bateman** (Langley Chapter); Gen. and Mrs. Seth J. **McKee** (Seth J. McKee Jr., William B. McKee, and Thomas J. McKee); George H. **Ebbs** Jr. (Brig. Gen. William W. Spruance); Michael J. **Dugan** (Trustees and Friends, AEF); Irwin and Rhoda **Gorman** (Iron Gate Chapter).

Gen. Bernard A. Schriever Fellow (represents \$2,500 contribution): **Space and Missile Systems Center** (Gen. B.A. Schriever Los Angeles Chapter); Robert E. **Ceruti** (Central Florida Chapter).

Jimmy Doolittle Educational Fellow (represents \$1,000 contribution): Gen. Ralph E. **Eberhart** (Langley Chapter); Col. Jeff **Harrison**, TSgt. Kenneth **Bancroft**, USAF (Ret.), SSgt. J.J. **Beyers**, USAF (Ret.), James **McClain**, and MSgt. Wesley **Witherspoon**, USAF (Ret.), C-130 Crew Republic 4 (Central Florida Chapter); Capt. William F. **Denehan** and SSgts. Jeremy S. **Hardy** and Richard D. **Kelley**, MH-60G Crew Skat 14 (Central Florida Chapter); Brig. Gen. Harry C. **Aderholt**, USAF (Ret.), MSgt. Timothy A. **Wilkinson** (Central Florida Chapter); Capt. Chad P. **Franks**, MSgt. Donald J. **Cantwell**, and SSgts. Eric D. **Giacchino** and Gunther J. **Kirsch**, MH-60G Crew Gator 07 (Central Florida Chapter); Brig. Gen. John L. **Barry** (Iron Gate Chapter); Arlene P. **Stein** (Brig. Gen. Robert G. Stein, USAF, Ret.); Brig. Gen. Craig R. **McKinley** (Brig. Gen. William W. Spruance); L.B. "Buck" **Webber** (Fort Worth Chapter); Lt. Gen. Eugene L. **Tattini** (Gen. E.W. Rawlings Chapter); Craig E. **Allen** (Utah State AFA); Jon **Reynolds** (Iron Gate Chapter); Danny D. **Marrs** (AFA/AEF Staff); Ruth M. **Davis** (The Aerospace Corp.).

Ira C. Eaker Historical Fellow

AFA Conventions

April 20-22	New Jersey State Convention, Wildwood, N.J.
April 26-28	California State Convention, Edwards AFB, Calif.
May 4-5	Tennessee State Convention, Tullahoma, Tenn.
May 4-6	South Carolina State Convention, Columbia, S.C.
May 18-20	Mississippi State Convention, Columbus, Miss.
June 1-3	North Carolina State Convention, Wilmington, N.C.
June 16-17	Washington State Convention, McChord AFB, Wash.
July 19-21	Virginia State Convention, Charlottesville, Va.
July 20-22	Texas State Convention, Fort Worth, Tex.
July 27-29	Florida State Convention, Tampa, Fla.
Aug. 10-11	Oklahoma State Convention, Enid, Okla.
Aug. 10-12	Georgia State Convention, Robins AFB, Ga.
Aug. 10-12	Indiana State Convention, Indianapolis
Aug. 10-12	Minnesota State Convention, Sioux Falls, S.D.
Aug. 24-25	Missouri State Convention, Lake of the Ozarks, Mo.
Sept. 15-19	AFA National Convention, Washington
Sept. 21-22	Colorado State Convention, Colorado Springs, Colo.
Sept. 21-23	Delaware State Convention, Dover, Del.

(represents \$1,000 contribution): F. Whitten **Peters**, Secretary of the Air Force (Cape Canaveral Chapter); Geraldine **Jones** (Thomas B. McGuire Jr. Chapter); CMSgt. Clayton C. **Pyle**, USAF (Ret.) (Doyle and Lois Larson); Gen. Charles T. Robertson Jr. and Col. Jaromir J. **Bon** (Gen. E.W. Rawlings Chapter).

Fellow of the Foundation (represents \$500 contribution): Fred "Pete" W. **Peters** (Susan Peters and Family); Lt. Gen. Stewart E. **Cranston** (Wright Memorial Chapter); Col. Bernt

Balchen, posthumously (Nassau Mitchell Chapter and Lloyd Schloen-Empire Chapter); Rep. Owen B. **Pickett** (Tidewater Chapter); Charles **Durazo** (Central East Region); Mary Anne **Thompson** (Central East Region); **Boeing** Satellite Systems (Colorado Springs/Lance Sijan Chapter); Gifford P. **Stein** (Brig. Gen. Robert G. Stein, USAF, Ret.).

Associate Fellow of the Foundation (represents \$250 contribution): Gen. George T. **Babbitt** (Wright Memorial Chapter); **AT&T** Govern-



Harry S. Truman Chapter President Patricia Snyder (second from right) presents the overall first place trophy for drill to AFJROTC cadet Duncan Reed from Lee's Summit North High School of Lee's Summit, Mo., who joined her as airmen from units at Whiteman AFB, Mo., who volunteered as judges. The chapter donated several trophies to the February drill and color guard competition. The multiservice competition involved more than 300 cadets from Missouri, Kansas, Nebraska, and Iowa.

ment Markets, **Hughes Space and Communications Co.**, **Denver Tech Labs**, and **ITT Industries** (Colorado Springs/Lance Sijan Chapter).

Scott Associate (represents \$50 contribution): Ranganath **Weiner** (Colorado Springs/Lance Sijan Chapter); Norm **King** (Norm King); Karla **Yuhas** and Mark **Standing** (Northern Utah Chapter and Utah State AFA); Lt. Col. Wes **White**, USAF (Ret.) (Ute

Rocky Mountain Chapter); Jean **Poelinger** (Colorado State AFA); ANG Maj. Gen. Daniel **James III** (Norm King).

Have AFA/AEF News?

Contributions to "AFA/AEF National Report" should be sent to *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: afa-aef@afa.org. ■

Correction

Bill Harris, for whom the Bill Harris (Ore.) Chapter is named, was incorrectly identified in the December 2000 issue, p. 83, as Brooklyn "Bil" Harris. Brooklyn Harris is author of the book *Bill, A Pilot's Story* and is not related to Bill Harris. Thanks to reader Dominick A. Cea for pointing out this error.

Unit Reunions

reunions@afa.org

1st FW, past and present personnel. October 2002 in Las Vegas. **Contact:** Jim Graham, 7620 S. Sunnycrest Rd., Seattle, WA 98178 (jnmig@email.msn.com).

3rd BG, 89th Attack Sq. May 7-11 in Niagara Falls, Canada. **Contact:** Mrs. John Dugan (716-945-1457) (bettiane@aol.com).

4th Emergency Rescue Sq Assn. Sept. 26-30 in Montgomery, AL. **Contact:** Chet Gunn, 237 Franklin St., Reading, MA 01867-1030 (781-944-6616).

13th FIS, ADC. Sept. 27-30 in Panama City, FL. **Contacts:** Ed Lewis, 4161 N. Longvalley Rd., Hernando, FL 34442-2849 (352-637-3662) (edlew@hitter.net) or Gary Dryden, 582 Ruckel Dr., Niceville, FL 32578 (850-678-6925) (Garddryden@aol.com).

38th BW, Laon, France (1952-59). May 30-June 1, 2002, at the Westin Hotel in Oklahoma City. **Contacts:** Glen Brady (405-946-3457) (gbrady@aol.com) or Theo. McCool (405-364-6329) (mccoolpe@telepath.com).

47th BW, all units (1950-62). Oct. 4-8 in Washington, DC. **Contact:** Carty S. Lawson, 105 Lake View Way NW, Leesburg, VA 20176-2038 (703-779-4670) (crlawson@erols.com).

59th FG (WWII). May 11-13 at the Hampton Inn in Thomasville, GA. **Contact:** Bob Dawson (941-756-7445).

62nd TCG, 4th, 7th, 8th, 51st, and Hq Sqs (WWII). Sept. 26-30 in Colorado Springs, CO. **Contacts:** A.J. Hoffacker, 201 Oaklane, Cranford, NJ 07016 (908-276-9136) or W.J. Klinko, 1608 Kerry Dr., Dresher, PA 19025 (215-646-0196) (wjlinko@enter.net).

69th FS (WWII, Korean War). June 14-18 in Providence, RI. **Contact:** George E. Mayer, 7445 Thomas Avenue S., Richfield, MN 55423-3513 (612-866-6073).

75th FS (WWII). Oct. 10-13 in Fort Walton Beach, FL. **Contact:** Don Miller, 5515 W. Washington Center Rd., Fort Wayne, IN 46818 (219-489-9269) (miller75dk@msn.com).

303rd BW, SAC, Davis-Monthan AFB, AZ (1953-64). April 19-22 at the Viscount Suite Hotel in Tucson, AZ. **Contact:** D.H. Bott, 37939 S. Samaniego Dr., Tucson, AZ 85739-1016 (520-825-2056) (dhhbott@juno.com).

368th FG, Ninth AF (WWII). Oct. 8-12 at Harrah's Casino in Reno, NV. **Contact:** Randolph Goulding, 6801 Governors Lake Pkwy., Norcross, GA 30071 (phone: 687-333-0241 or fax: 770-455-7391).

406th FG, Ninth AF (WWII). June 5-7 at the Holiday Inn in Atlantic City, NJ. **Contact:** Walter Tryka, 4615 Roosevelt Ave., Pennsauken, NJ 08109-1848 (856-665-4995).

410th BG, ETO (WWII). April 29-May 2 at the Hilton Savannah DeSoto in Savannah, GA. **Contacts:** John McDonagh (803-747-2404) or Emory Chastain (770-428-0144).

441st TCG, 99th, 100th, 301st, and 302nd Sqs. Nov. 1-4 in Biloxi, MS. **Contacts:** Edward and Hilda Cullen (228-897-2870).

461st BW, SAC, formerly 4128th Strategic Wg. June 4-7 at the Radisson Hotel in Amarillo, TX. **Contact:** Bill Davies, 3217 Ridge Pass Rd., Little Rock, AR 72227 (bulldavies@aol.com).

485th Tactical Missile Wg. June 29-July 1 in San Antonio. **Contact:** Mavis Baldwin (830-981-8682) (msbrb@aol.com).

496th FIS, Hamilton, CA, and Landstuhl and Hahn ABs, Germany. Sept. 1-4 in Bellevue, WA. **Contact:** Jan Barmore, 4208 Arbordale Ave. W., University Place, WA 98466-1304 (phone: 253-564-9040 or fax: 253-565-9148) (janmarbar@earthlink.net).

525 TFS. June 22-24 at the Embassy Suites Hotel in Grapevine, TX. **Contacts:** Bill MacFarlane (972-355-7174) (Mozamb@aol.com) or Pete Tkacs (972-317-9035) (PeterTkacs@cs.com) (www.525bulldogs.com).

648th Radar/AC&W Sqs. Sept. 8-9 at the Victoria Inn in West Pittston, PA. **Contact:** Tony Palischak, 1340 W. Mountain Rd., Plymouth, PA 18651 (570-779-1694) (apalis@ptd.net).

3650th Basic Military Tng Wg and all Sampson AFB, NY, veterans, including permanent party, trainees, and instructors. Sept. 6-9 at Sampson State Park in Romulus, NY. **Contact:** C. Phillips (phone: 716-633-1119 or fax: 716-633-9118) (chip34@aol.com).

AF Photo Mapping Assn. Sept. 26-29 at the Marriott Residence Inn in Vancouver, WA. **Contacts:** Bob and Liz Cross, 4407 NE 51st St., Vancouver, WA 98661 (360-695-8732).

Air Rescue Assn. Sept. 17-20 in Las Vegas. **Contacts:** ARA, PO Box 300945, Fern Park, FL, 32730-0945 or John Flournoy (505-821-1145) (flournoy@swcp.com) (http://pedroairrescuechopper.net/ara/).

Assn of AF Missileers. Oct. 23-27, 2002, at the Santa Maria Inn in Santa Maria, CA. **Contact:** Charlie Simpson, PO Box 5693, Breckenridge, CO 80424 (phone/fax: 970-453-0500) (aafm@

amissileers.org).

A-37 Assn, including anyone associated with A-37 aircraft. Oct. 3-7 in Fort Walton Beach, FL. **Contact:** Oliver Maier, 306 Village West, San Marcos, TX 78666 (512-353-7432) (omaier@swt.edu).

Doolittle Raiders. May 12 at Fresno Air Terminal in Fresno, CA. **Contact:** James Estep, 6251 N. Del Rey Ave., Clovis, CA 93611 (559-299-6904).

Evreux AB, France, personnel, including TDY personnel and tenant units. Oct. 7-11 in Las Vegas. **Contact:** Norbert Mueller, 7003 Shoal Creek Blvd., Austin, TX 78757-4385 (512-454-3921) (evsecmueller@aol.com).

First Air Commando Assn, CBI (WWII). Oct. 3-7 in Philadelphia. **Contact:** Felix Lockman, 201 Amosland Rd., Norwood PA 19074-1502 (610-532-1942).

Pilot and Navigator Classes 55-U and 56-A. October in San Antonio. **Contact:** Don Breeding (713-6E5-5308) (bracos111@aol.com).

Roswell AAF/Walker AFB, NM (1941-67), military and civilian. Sept. 14-16 at the Best Western Sally Port Inn in Roswell, NM. **Contact:** Alfred H. Wilbur, PO Box 2744, Roswell, NM 88202 (505-622-5413).

Wheelus AFB High School and Junior High School alumni, Wheelus AFB, Libya. June 6-9 in New Orleans. **Contacts:** Wheelus Ex-Students Assn, PO Box 703, Friendswood, TX 77546 or Joe Nothrop (219-356-5672).

Women's Overseas Service League. July 6-9 at the Drawbridge Inn in Fort Mitchell, KY. **Contact:** Gertrude Gay, 1488 Bland St., #4, Louisville, KY 40217-1115 (502-636-5372).

Seeking members of **Pilot Training Class 55-B** for a reunion. **Contacts:** D. Nemeth, 3527 Goodview Ct., Fairfax, VA 22031 (703-280-5075) (d.hnemeth@att.net) or Dale Peckman, 1970 Thomas Dr., McKeesport, PA 15131 (412-751-7102) (psherkybird@aol.com). ■

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. We reserve the right to condense notices.

AFA State Contacts



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

ALABAMA (Birmingham, Huntsville, Mobile, Montgomery): **Austin S. Landry**, 154 Lucerne Blvd., Birmingham, AL 35209-6658 (phone 205-879-2237).

ALASKA (Anchorage, Fairbanks): **Steven R. Lundgren**, P.O. Box 71230, Fairbanks, AK 99709 (phone 907-459-3291).

ARIZONA (Green Valley, Phoenix, Prescott, Sedona, Sierra Vista, Sun City, Tucson): **Arthur W. Gigax**, 3325 S. Elm St., Tempe, AZ 85282-5765 (phone 480-838-2278).

ARKANSAS (Fayetteville, Hot Springs, Little Rock): **Jerry Reichenbach**, 501 Brewer St., Jacksontonville, AR 72076-4172 (phone 501-988-1115).

CALIFORNIA (Apple Valley, Bakersfield, Edwards AFB, Fairfield, Fresno, Los Angeles, Merced, Monterey, Orange County, Palm Springs, Pasadena, Riverside, Sacramento, San Diego, San Francisco, Sunnyvale, Vandenberg AFB, Yuba City): **James H. Estep**, 6251 N. Del Rey Ave., Clovis, CA 93611-9303 (phone 559-299-6904).

COLORADO (Colorado Springs, Denver, Fort Collins, Grand Junction, Pueblo): **Terry Miller**, 65 Ellsworth St., Colorado Springs, CO 80906-7955 (phone 719-574-9594).

CONNECTICUT (Brookfield, East Hartford, Storrs, Stratford, Torrington, Waterbury, Westport, Windsor Locks): **Joseph R. Falcone**, 14 High Ridge Rd., Ellington, CT 06029 (phone 860-875-1068).

DELAWARE (Dover, New Castle County): **Ronald H. Love**, 8 Ringed Neck Ln., Camden Wyoming, DE 19934-9510 (phone 302-739-4696).

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

FLORIDA (Avon Park, Broward County, Daytona Beach, Fort Walton Beach, Gainesville, Homestead, Hurlburt Field, Jacksonville, Leesburg, Miami, New Port Richey, Orlando, Palm Harbor, Panama City, Patrick AFB, Tallahassee, Tampa, Vero Beach, West Palm Beach): **David R. Cummock**, 2890 Borman Ct., Daytona Beach, FL 32124 (phone 904-760-7142).

GEORGIA (Atlanta, Savannah, Valdosta, Warner Robins): **Robert E. Largent**, 906 Evergreen St., Perry, GA 31069 (phone 912-987-2435).

HAWAII (Honolulu, Maui): **Michael E. Solomon**, 98-1217 Lupea St., Aiea, HI 96701-3432 (phone 808-292-2089).

IDAHO (Mountain Home, Twin Falls): **Dale W. Smith**, R.R. 1, Box 123, King Hill, ID 83633 (phone 208-366-2710).

ILLINOIS (Bellefonte, Chicago, Galesburg, Moline, Springfield-Decatur): **Keith N. Sawyer**, 813 West Lakeshore Dr., O'Fallon, IL 62269-1216 (phone 618-632-2859).

INDIANA (Bloomington, Columbus, Fort Wayne, Grissom AFB, Indianapolis, Lafayette, Marion, Mentone, Terre Haute): **William Howard Jr.**, 1622 St. Louis Ave., Fort Wayne, IN 46819-2020 (phone 219-747-0740).

IOWA (Des Moines, Marion, Sioux City, Waterloo): **Norman J. Beu**, 903 Blackhawk St., Reinbeck, IA 50669-1413 (phone 319-345-6600).

KANSAS (Garden City, Topeka, Wichita): **Jean**

M. Clifford, 102 Drury Ln., Garden City, KS 67846 (phone 316-275-4317).

KENTUCKY (Lexington, Louisville): **Edward W. Tonini**, 12 Eastover Ct., Louisville, KY 40206-2705 (phone 502-581-1900).

LOUISIANA (Baton Rouge, New Orleans, Shreveport): **Peyton Cole**, 2513 N. Waverly Dr., Bossier City, LA 71111-5933 (phone 318-742-8071).

MAINE (Bangor, Caribou, North Berwick): **Eugene M. D'Andrea**, P.O. Box 8674, Warwick, RI 02888-0599 (phone 401-461-4559).

MARYLAND (Andrews AFB, Baltimore, College Park, Rockville): **George Apostle**, 905 Bay Hill Ln., Silver Spring, MD 20905 (phone 301-421-0180).

MASSACHUSETTS (Bedford, Boston, East Longmeadow, Falmouth, Hanscom AFB, Taunton, Westfield, Worcester): **Harry I. Gillogly III**, 1 Patten Ln., Westford, MA 01886-2937 (phone 617-275-2225).

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

MINNESOTA (Duluth, Minneapolis-St. Paul): **Richard Giesler**, Rt. 1, Box 111, Sturgeon Lake, MN 55783-9725 (phone 218-658-4507).

MISSISSIPPI (Biloxi, Columbus, Jackson): **Gerald E. Smith**, 231 Theas Ln., Madison, MS 39110-7717 (phone 601-898-9942).

MISSOURI (Kansas City, St. Louis, Springfield, Whiteman AFB): **John D. Miller**, HCR 77, Box 241-5, Sunrise Beach, MO 65079-9205 (phone 573-374-6977).

MONTANA (Bozeman, Great Falls): **Regina L. Cain**, 426 Deerfield Ct., Great Falls, MT 59405 (phone 406-761-8169).

NEBRASKA (Lincoln, Omaha): **Richard Gaddie**, 7240 41st St., Lincoln, NE 68516-3063 (phone 402-472-6939).

NEVADA (Las Vegas, Reno): **Kathleen Clemence**, 35 Austrian Pine Cir., Reno, NV 89511-5707 (phone 775-849-3665).

NEW HAMPSHIRE (Manchester, Portsmouth): **Terry K. Hardy**, 31 Bradstreet Ln., Eliot, ME 03903-1416 (phone 603-430-3122).

NEW JERSEY (Andover, Atlantic City, Camden, Chatham, Forked River, Ft. Monmouth, Jersey City, McGuire AFB, Newark, Old Bridge, Toms River, Trenton, Wallington, West Orange): **Ethel Mattson**, 27 Maple Ave., New Egypt, NJ 08533-1005 (phone 609-758-2885).

NEW MEXICO (Alamogordo, Albuquerque, Clovis): **Peter D. Robinson**, 1804 Llano Ct. N.W., Albuquerque, NM 87107 (phone 505-343-0526).

NEW YORK (Albany, Binghamton, Buffalo, Rome, Jamestown, Nassau County, New York, Queens, Rochester, Staten Island, Syracuse, Westhampton Beach, White Plains): **Barry H. Griffith**, 5770 Ridge Rd., Lockport, NY 14094 (phone 716-236-2487).

NORTH CAROLINA (Asheville, Charlotte, Fayetteville, Goldsboro, Kitty Hawk, Raleigh, Wilmington): **Gerald V. West**, 4002 E. Bishop Ct.,

Wilmington, NC 28412-7434 (phone 910-791-8204).

NORTH DAKOTA (Fargo, Grand Forks, Minot): **James M. Crawford**, 1720 9th St. S.W., Minot, ND 58701-6219 (phone 701-839-7263).

OHIO (Cincinnati, Cleveland, Columbus, Dayton, Mansfield, Youngstown): **Fred Kubil**, 823 Nancy St., Niles, OH 44446-2729 (phone 330-652-4440).

OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **Don Johnson**, 309 Camino Norte, Altus OK 73521-1183 (phone 580-482-1387).

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

PENNSYLVANIA (Allentown, Altoona, Beaver Falls, Coraopolis, Drexel Hill, Harrisburg, Johnstown, Lewistown, Philadelphia, Pittsburgh, Scranton, Shiremanstown, Washington, Willow Grove, York): **Bob Rutledge**, 295 Cinema Dr., Johnstown, PA 15905-1216 (phone 724-235-4609).

RHODE ISLAND (Newport, Warwick): **David Buckwalter**, 30 Johnnycay Ln., Portsmouth, RI 02871-4110 (phone 401-841-6432).

SOUTH CAROLINA (Charleston, Clemson, Columbia, Myrtle Beach, Sumter): **Roger Rucker**, 112 Mallard Pt., Lexington, SC 29072-9784 (phone 803-359-5565).

SOUTH DAKOTA (Rapid City, Sioux Falls): **Ronald W. Mielke**, 4833 Sunflower Trail, Sioux Falls, SD 57108 (phone 605-339-1023).

TENNESSEE (Chattanooga, Knoxville, Memphis, Nashville, Tullahoma): **Joseph E. Sutter**, 5413 Shenandoah Dr., Knoxville, TN 37909-1822 (phone 423-588-4013).

TEXAS (Abilene, Amarillo, Austin, Big Spring, College Station, Commerce, Dallas, Del Rio, Denton, Fort Worth, Harlingen, Houston, Kerrville, San Angelo, San Antonio, Wichita Falls): **C.N. Horlen**, 11922 Four Colonies, San Antonio, TX 78249-3401 (phone 210-699-6999).

UTAH (Clearfield, Ogden, Salt Lake City): **Brad Sutton**, 5221 West Rendezvous Rd., Mountain Green, UT 84050-9741 (phone 801-721-7225).

VERMONT (Burlington): **Wayne S. Gibson**, 29 S. Myers Ct., South Burlington, VT 05403-6410 (phone 802-862-0427).

VIRGINIA (Alexandria, Charlottesville, Danville, Langley AFB, McLean, Norfolk, Petersburg, Richmond, Roanoke, Winchester): **Bill Anderson**, 3500 Monacan Dr., Charlottesville, VA 22901-1030 (phone 804-295-9011).

WASHINGTON (Seattle, Spokane, Tacoma): **Tom Hansen**, 8117 75th St. S.W., Lakewood, WA 98498-4819 (phone 253-984-0437).

WEST VIRGINIA (Charleston, Fairmont): **Samuel Rich**, P.O. Box 444, White Sulphur Springs, WV 24986 (phone 304-536-4131).

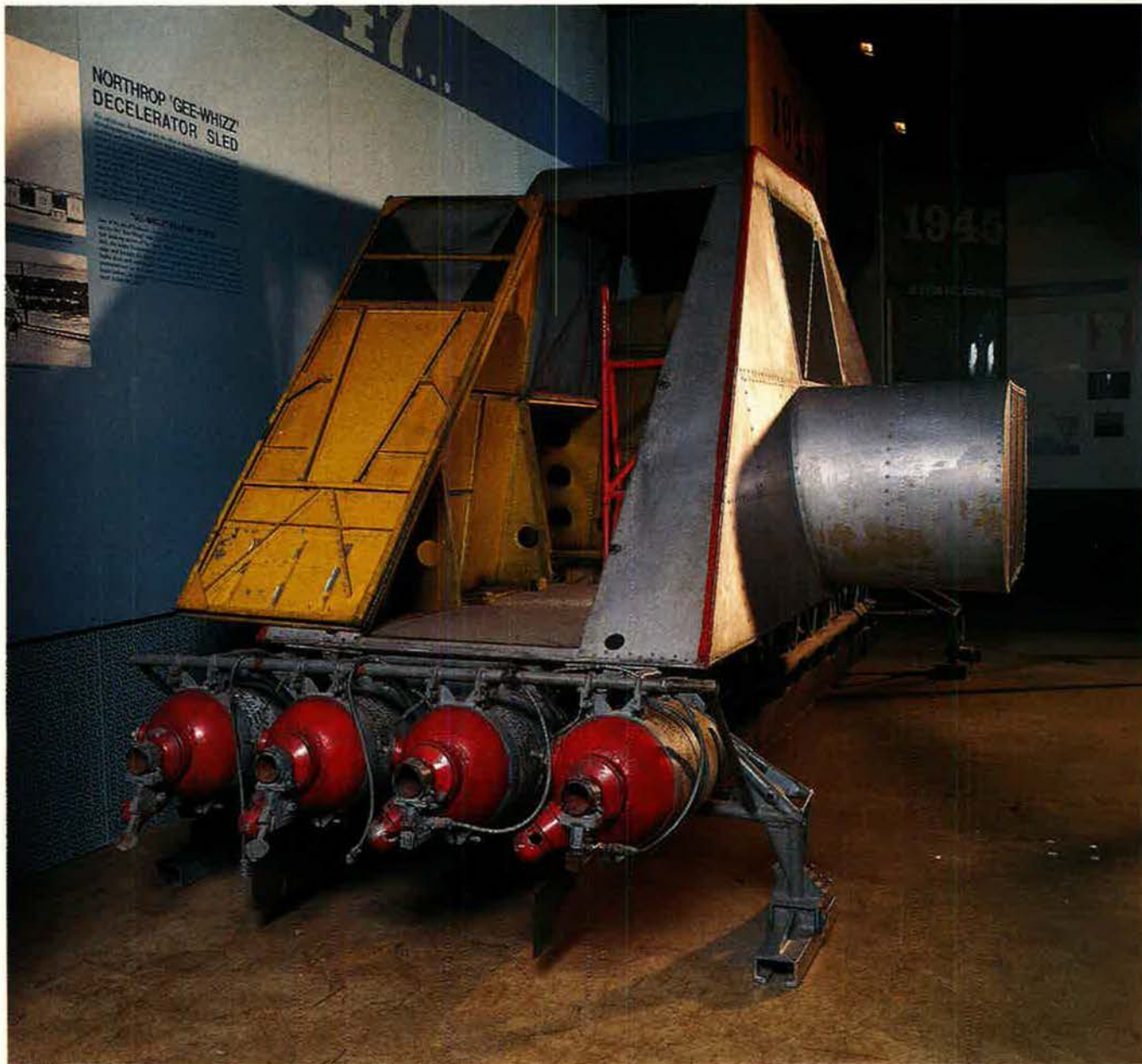
WISCONSIN (Madison, Milwaukee, General Mitchell IAP/ARS): **Chuck Marotske**, 5406 Somerset Ln. S., Greenfield, WI 53221-3247 (phone 414-325-9272).

WYOMING (Cheyenne): **Stephan Pappas**, 2617 E. Lincolnway, Ste. A, Cheyenne, WY 82001 (phone 307-637-5227).

Pieces of History

Photography by Paul Kennedy

Gee-Whizz—You Said It



Nicknamed "Gee-Whizz," this contraption was used at Muroc AAF, Calif., to experiment on the effect of deceleration forces on humans and on safety devices needed to survive aircraft crashes. The Gee-Whizz sled—built by Northrop Aircraft and shown here on display at the US Air Force Museum at Wright-Patterson AFB, Ohio—was mounted on a 2,000-foot track. Four solid-fuel

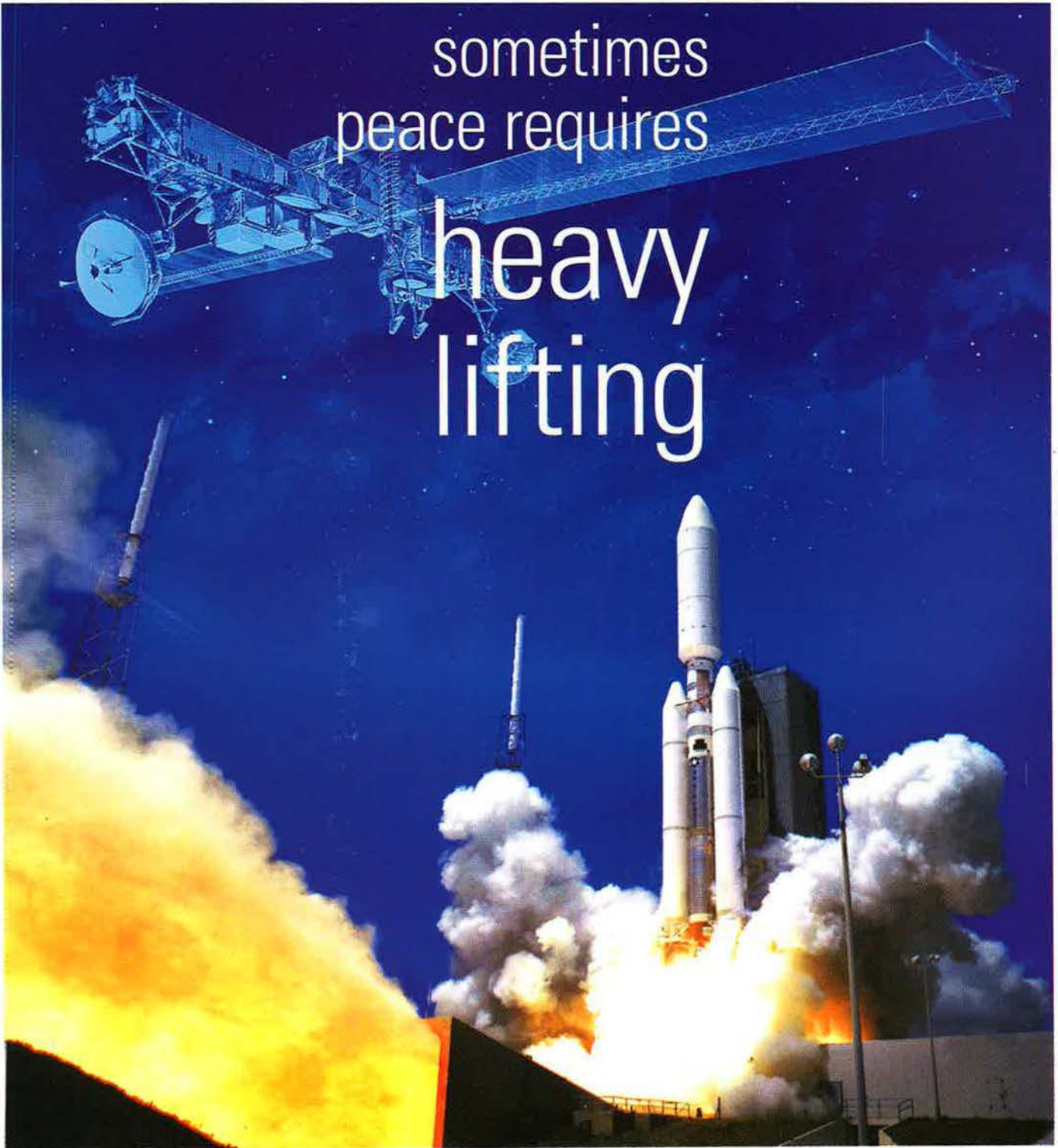
rockets could take the sled up to a maximum speed of about 200 mph. There were 45 sets of hydraulic clasp-type friction brakes in the main braking system, which could produce a deceleration effect of as much as 50 Gs. A test dummy made the first runs, but on Dec. 10, 1947, then-Capt John Paul Stapp became the first human to ride the sled. Between April 1947 and the

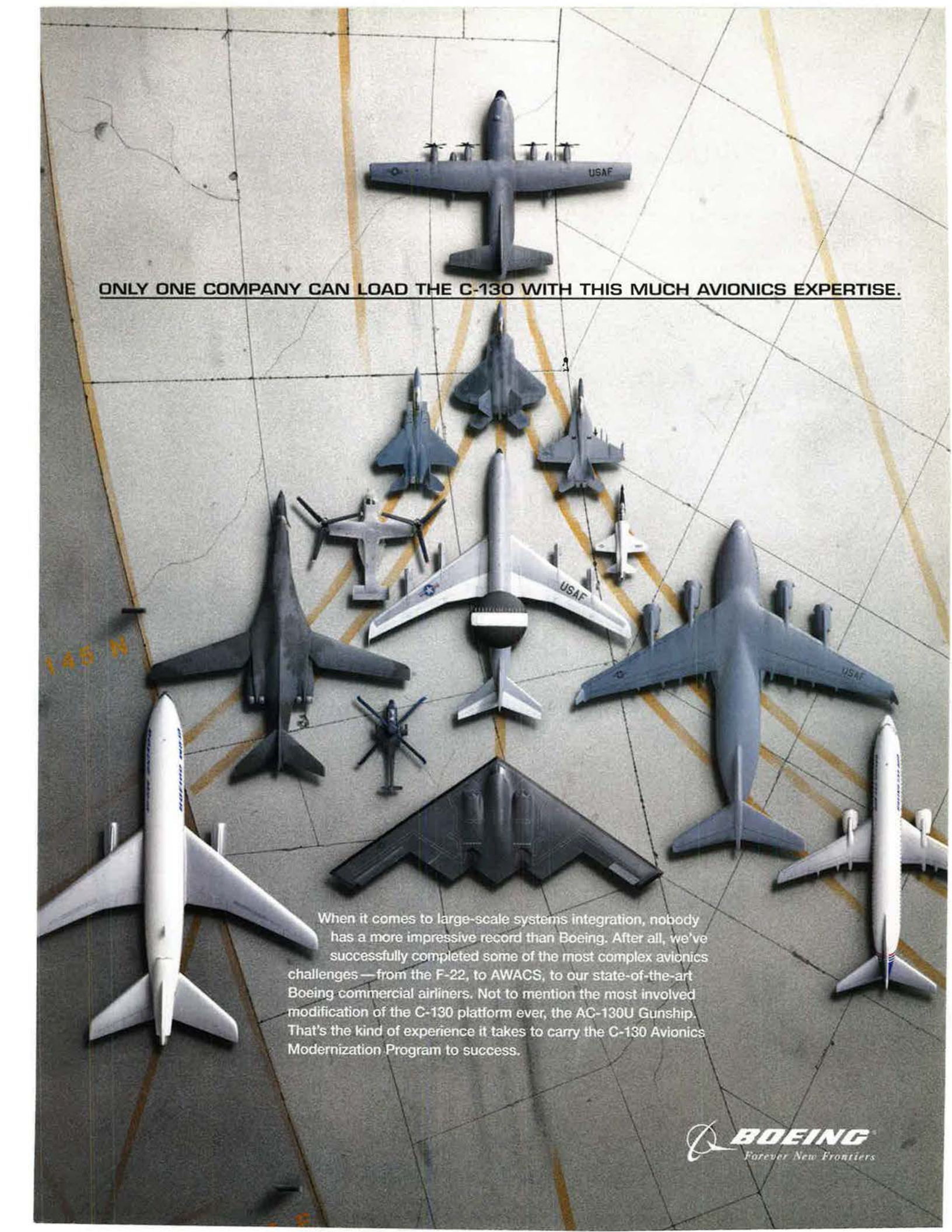
final run in June 1951 more than 250 tests were made using dummies, animals, or humans. Some tests subjected the volunteers, including Stapp, to a deceleration force of more than 35 Gs.



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