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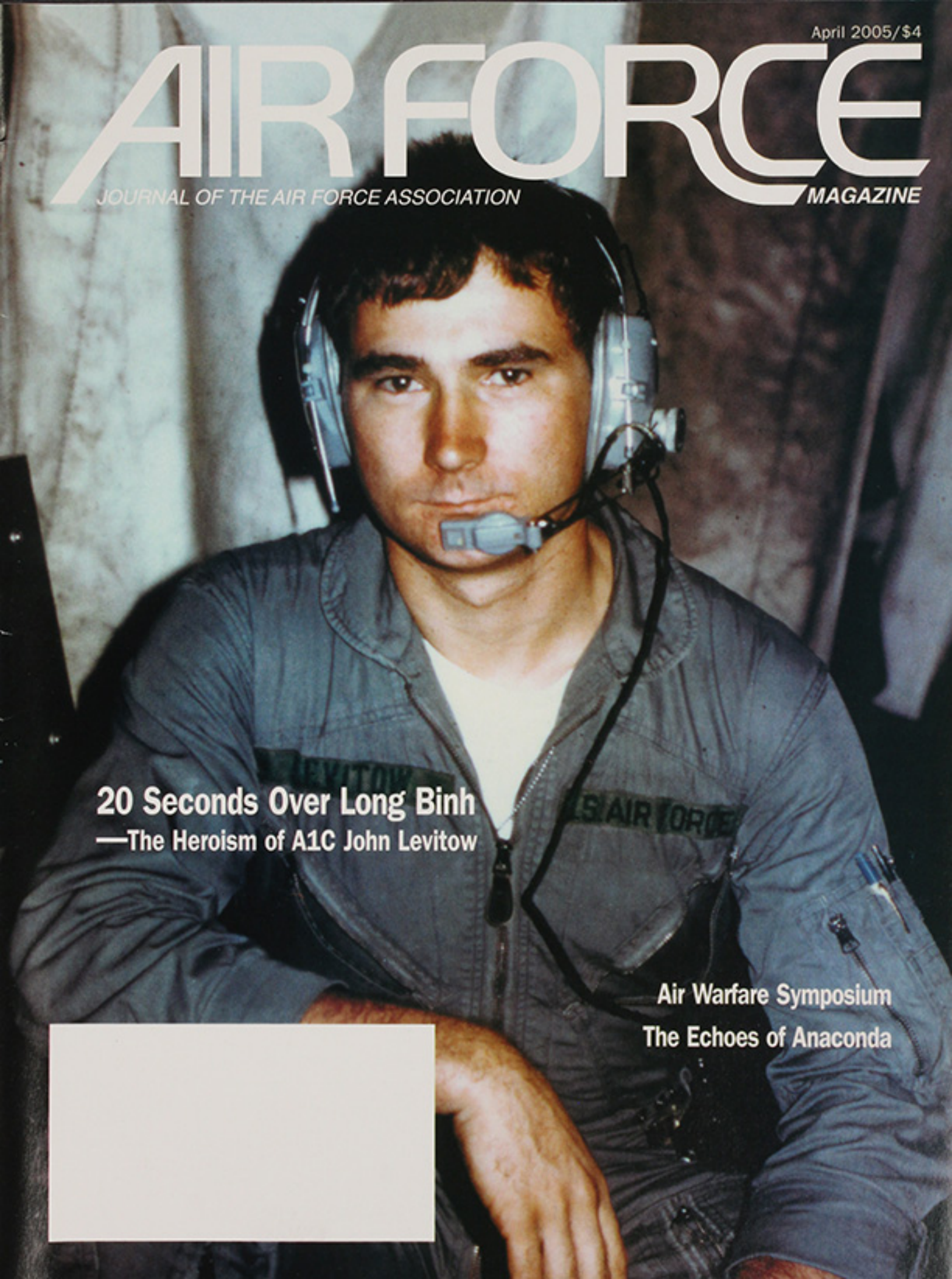
AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION



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About the cover: Medal of Honor recipient A1C John Levitow. See "20 Seconds Over Long Binh," p. 68. Photo courtesy of the Enlisted Heritage Research Institute/ Enlisted Heritage Hall, Maxwell AFB, Gunter Annex, Ala.

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Editorial

By Robert S. Dudney, Editor in Chief

Airpower Fiction and Fact

ACCORDING to a recent *New York Times* editorial, true combat today almost always occurs "on the ground." US land forces are "dangerously overstretched," but the Air Force has "so many people." An airman spends "only four months out of every 20" on a combat rotation. What he does there is "nowhere near as dangerous or as grueling" as soldiering, so DOD must "lower [USAF's] recruiting quotas" and bring in more infantrymen.

"Short-range fighters" are another problem. To the *Times,* they are "dubious Cold War weapons"—particularly the "extravagantly gold-plated F/A-22." USAF would be better off funding more "unpiloted aircraft," not to mention "unglamorous" A-10 fighters and C-130 transports. It would be safe to do this because "no one seriously expects" the US to face a major, high-tech foe.

The *Times* is not the only critical voice. Ralph Peters, a *New York Post* columnist, wants to scuttle the "nearly useless" F/A-22 and buy a new, Army-friendly transport, "cost-efficient" [sic] bomber, and plain-jane multirole fighter. He would fire every Air Force four-star general ("intellectual relics") in the place. "We have the wrong Air Force," he warns.

Well, to paraphrase Mark Twain, we could not feel more convinced if every pundit in New York City were criticizing the Air Force.

Seriously, though, it is amazing what you read in newspapers these days. Ordinarily, the ruminations of a few spitball artists in the press could be brushed off. This time, though, the criticism coincides with a certain diffidence about airpower that has appeared in Congress and within the Pentagon. The Air Force would be unwise to ignore it.

The first thing to say is airmen need no lectures about courage from newspaper editorialists. Whether they are flying combat sorties or driving trucks in Iraq, airmen are engaged in dangerous work. Only a fool would claim otherwise.

The portrait of a lavish, bloated Air Force is strange. The *Times* piece ("Slimming Down the Air Force," Feb. 25) reads as if the writer were unaware of USAF's recent drawdown. In 1986, it had 608,000 active duty troops. Today, the figure is 361,000—41 percent fewer than in the "Cold War Air Force." Since the Cold War, USAF lost half of its fighter force structure (dropping from 37 to 20 wings) and more than half of its bombers.

Moreover, USAF wants to get even smaller. It has clamped down on recruiting and sheds airmen whenever possible. It has programmed a new, 25 percent cut in the fighter force, but that hinges on getting 381 of those "gold-plated" F/A-22s to replace 800 aging F-15s and F-117s.

Nothing is more terrible to see than ignorance in action.

In this recent spate of press attacks, one finds indications of two troubling beliefs. One is that future US air superiority can be taken for granted. The other is that the Air Force and Army are locked in a zero-sum budgetary game.

USAF is a "full-service" air force, providing many "products"—airlift, aeriel refueling, communications, airborne command and control, precision attack, close air support, intelligence-surveillance-reconnaissance work, and more. Theater commanders want as much of this stuff as they can get.

Yet everything hinges on air superiority, and the nation increasingly seems to think it can get by without new investment in tactical fighters—the basic tools of air dominance.

That is a great gamble. The danger is raised by the proliferation of sophisticated, Russian-designed air defense systems and front-line fighters. The F/A-22 is the only jet sure to overcome the threats in decades ahead, which is why USAF wants it.

"The fundamental fact [is] that air and space will be contested in the future," warned Gen. John P. Jumper, USAF Chief of Staff. Those who think otherwise are "wrong."

Secondly, the media act as if the Air Force and Army are engaged in a kind of Darwinian struggle. Its essence is that the battered Army needs more money (for more troops) and USAF's budget is the main place to get it.

Few disagree that the Army and Marine Corps need more support, given that they are taking big casualties in Iraq. The Air Force, however, is the worst imaginable billpayer.

For one thing, Iraq will not be the end of war for this nation. The US will need dominant air and space power to hedge against an aggressive China or resurgent Russia—or somebody else.

More importantly, the Air Force offers direct and enormous benefit to the Army itself. As former Air Force Secretary Donald B. Rice once noted, "It's a tribute to air superiority that the last time an American soldier was killed by air attack was in April 1953."

Today, airpower protects ground forces not only by warding off enemy air attack but also by destroying the enemy on the ground—a fact made glaringly evident in the Gulf Wars of 1991 and 2003.

Given these circumstances, one might even expect senior Army leaders to loudly protest the media cheap shots on the Air Force.

The truth is that the services shouldn't be traded off against one another, especially when, as Defense Secretary Donald H. Rumsfeld recently stated, "This country is perfectly capable of investing whatever is needed to preserve the freedom ... and the security and the safety of the American people."

That statement is irrefutable. Americans should keep it in mind as the budget demolition derby heats up. It is often said that nothing is more terrible to see than ignorance in action. We've seen quite a lot of it already, and we fear there is a lot more of it to come. ■

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More on the Future Total Force

"The Unified Air Force" *["Editorial," January, p. 2]* should have read, "The Integrated Air Force" or "The Federalized Air Force," a concept defeated every time in my lifetime since an Air Force Association president tried to abolish "the 48 little state air forces" in 1948.

This time the senior Air Force leaders are smarter, but the smartest will evaluate the "cultural identities" [in the Air National Guard] which have produced, in decades, thousands of accident-free hours, often with brand-new aircraft.

The smartest will read the USAF Safety Center report on "some who prefer the old ways," who went 38 years and 150,000 hours accident-free in Texas (http://afsafety.af.mil/magazine/htdocs/pdf/fsmdec03.pdf). North Dakota's ANG fighters have over 123,000 hours and 31 years since their last accident. Let's not break this so-called "institutional crockery," which minimizes aircraft breakage.

The effective Air Guard was not trained in integrated wings. The Total Force concept was an economy measure. The state-community linkage to Congress has acquired weapons and support for the Total Force. BRAC [base realignment and closure] and integration threaten these assets.

"Everyone should stand aside and, ... give this idea its best shot" is what the victim last heard before he got the bullet between the eyes! In wing-walking, you hold onto what you have until you're damn sure of what you're reaching for.

Brig. Gen. William W. Spruance, USAF (Ret.)
Las Vegas

Your editorial is to be commended for how the Air Force is approaching the future of the Total Force. We point out one additional fact that your readership might be interested in knowing: The active, Reserve, and Air National Guard stood up a Total Force RED HORSE engineer squadron at Malmstrom AFB, Mont., in 1997.

Within 12 months, the fully unified squadron deployed regularly to demonstrate its designed operational capability and, by November 1998, deployed significant elements of the Future Total Force Squadron in response to Hurricane Mitch humanitarian efforts in Central America.

Col. Mike Aimone, USAFR (Ret.)
Pentagon
and Col. Gary Shick, ANG
Great Falls, Mont.

Do the Math

Regarding "The Fighter Force You Have" *[February, p. 2]*, if the Air Force feels they need to have the F/A-22 in 10 different locations, the arithmetic is simple. If DOD will only allow 180 F/A-22s to be built, put 18 at each of the 10 locations.

Lt. Col. Tony Weissgarber, USAF (Ret.)
San Antonio

■ *It doesn't work that way. Total production of 180 F/A-22s would yield, at any given time, only about 115 combat-coded fighters. The rest would be in test, training, depot maintenance, and attrition reserve. Thus, each AEF would get 11 to 12 fighters, about one-half of a squadron.*—THE EDITORS

Excellent editorial. The budget cuts are directly related to the cost of the Iraq War. We need a full complement of F/A-22s. A possible threat from China or other countries is not going away. What should the Air Force do? It is about to lose $10 billion in F/A-22 funding.

My suggestion is to have the Air Force help the Army and Marine Corps fight the Iraq War in a more efficient manner, in terms of lives and cost. The war in Iraq has now cost $100 billion. That's a lot of F/A-22s but cheap if we saved New York City. The question is, "Can we fight the Iraq War more efficiently?" I think the answer is yes, and the Air Force could help.

The Army/Marine strategy seems to be to fight the guerrillas until the Iraqi Army can take over. The strategy is not to develop a better technical approach to fighting the guerrillas. This is a mistake!

The guerrillas have taken our most technologically advanced military force (Air Force) out of the picture. The guerrillas are now fighting the Army and Marines, which have a small technical budget and are not technologically or systems oriented like the Air Force. We have to fight the terrorists smarter with technology. The result would be fewer troops required, fewer casualties, and lower cost. Then, the Defense Department could buy the number of F/A-22s we really need. My point is that, with our technological little finger, we could beat the terrorists.

Bill Thayer
San Diego

Russ Dougherty

Just finished reading John Correll's outstanding article on one of the kindest, most superb leaders I ever had the pleasure of serving under. *[See "The Strategic World of Russell E. Dougherty," February, p. 62.]* While serving my second tour at SAC HQ from 1974-77, I had the privilege of briefing General Dougherty on many occasions. He always put briefers at ease and made them feel comfortable.

In early 1976, I had the good fortune of traveling with General and Mrs. Dougherty on a CINCSAC trip to Europe. Most of the senior staff of SAC HQ were also on the trip, and I was one impressed young major. Shortly after takeoff from Offutt AFB, Neb., General and Mrs. Dougherty traveled through the cabins, sitting

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down and visiting individually with each passenger. I was told that they did that on every trip.

One of our stops was USAFE HQ at Ramstein AB, Germany. There I learned the extent of General Dougherty's kindness and compassion. My boss, Maj. Gen. James Brown, SAC/IN, had scheduled me to brief the afternoon of our arrival. After the briefing, we were asked if I'd present it again the next morning. On a trip like this, everyone was given a schedule of events and travel times—0700 be on board aircraft, 0715 CINCSAC arrives, 0730 aircraft departs, etc. Don't be late! Our scheduled departure from Ramstein was relatively early the next day, but General Brown assured me we had plenty of time to fit the briefing in.

The briefing and discussion ran long. General Brown finally noticed me pointing to my watch and said, "We've got to run." I still had classified material to pick up at the USAFE command post. I commandeered a base taxi. In front of the HQ building, there were several limos approaching from the opposite direction, and my driver slowed to let them turn into the circular drive. By now, panicked at the thought of being late to the aircraft, I shouted at him to go ahead. As it turned out, limo No. 1 pulled in, then my taxi, then limos 2 and 3. Still unaware of what was happening, I jumped out of the taxi, right onto the red carpet, with an honor guard at rigid attention. Just about the time an irate USAFE chief of protocol reached me, limo No. 2 deposited General Dougherty onto the red carpet. Realizing immediately what had happened, he walked over to me, put his arm around my shoulders, and, in that wonderful, soft Kentucky drawl, said, "Mike, I've got a little meeting with the ambassador, so would you tell the fellas that I'll be a few minutes late to the plane." That defused the situation very quickly, and after the dignitaries had entered the building, I retrieved my classified and was on time at the airplane.

In my two tours at SAC HQ, I served under and briefed many great general officers, but General Dougherty will always have a special place in my heart and memory. What a great man.

Lt. Col. Mike Morris,
USAF (Ret.)
Palestine, Tex.

Your article on Gen. Russ Dougherty was a splendid read. It certainly captured the human awareness side of the man. I recall an instance in 1970 when he was DCS/P&O and receiving a briefing by one of us greenbean lieutenant colonel action officers, when the flustered briefer (not me this time) referred to him as "Lieutenant Colonel" Dougherty. Instantly the all knowing lieutenant general put all at ease by remarking, "Well, I was a lieutenant colonel a lot longer than I've been a lieutenant general." From that day forward, we scrambled for the opportunity to brief Gentleman General Dougherty.

Maj. Gen. James L. Gardner,
USAF (Ret.)
Hanahan, S.C.

I received my copy of *Air Force* Magazine today and could not put it down until I had finished the Russ Dougherty story. A terrific gentleman, he is.

I think all of us have many stories to tell about Russ. He put the arm on me many years ago to become president of the Air Force Association. And he loved to fly in the Japanese dive bombers at the Confederate Air Force air shows at Harlingen, Tex., when he was executive director of AFA. He met up with Tennessee Ernie

Ford who was always at the annual Harlingen show and who wrote and produced the song "Ghost Squadron" for the CAF film. They truly were the best of friends.

Ollie Crawford
Blanco, Tex.

I think General Dougherty is one of the world's greatest gentlemen. As the Air Force Association's Llano Estacado Chapter president, I invited General Dougherty to be the chapter's speaker for the evening because the men and women at Cannon AFB, N.M., had just won the 1994 Proud Shield Trophy named after him. This gentleman wanted to meet with the aircrews prior to the chapter's meeting.

He came into the room with an Air Force cold weather parka on. When asked why he was wearing the parka, he stated it was because he had previously said it would be a cold day in hell when TAC's fighter-bomber pilots can out-bomb Strategic Air Command. General Dougherty went on to say he was here to tell us that it is a cold day in hell, because the air crews and mechanics at Cannon Air Force Base had completed the task. It was in July 1994.

Thanks for recognizing General Dougherty. He deserves it.

Ken Huey
Clovis, N.M.

Opposing Views

There is nothing, absolutely nothing, which can justify the firebombing of Dresden (and other acts) by [Air Marshall Arthur] Harris. *[See "Bomber Harris," January, p. 68.]* Descending to the ethical level of an immoral enemy is something that "good" peoples must steadfastly resist. Sadly, Harris surrendered to his baser impulses and apparently relished the result.

Rebecca Grant's fine article describes the controversy well, although she comes across as a bit too sympathetic to the man, in my opinion. Especially in this day when we wage a war against international terrorism, we cannot afford to "rehabilitate" the legacy of this advocate of violence against noncombatants. Although withdrawn and revised before being issued to the Chiefs of Staff by Churchill, his original assessment provides a candid evaluation of the bombing: "It seems to me that the moment has come when the question of bombing German cities simply for the sake of increasing the terror, though under other pretexts, should be reviewed. Otherwise we shall come into control of an utterly ruined land. ... The destruction of Dresden remains a serious query against the conduct of Allied bombing. ... I feel the need for more precise concentration upon military objectives rather than on mere acts of terror and wanton destruction, however impressive."

Lt. Col. Robert Stroud
Scott AFB, Ill.

I am delighted to observe your defense of Gen. Sir Arthur "Bomber" Harris, although I personally would have made that defense even stronger. Allied soldiers such as myself, all over Europe, were unanimously thankful to Bomber Harris' raids, to which many of us owe our lives. If the enemy chooses to hide his materiel in historic or sacred buildings, we have no choice but to destroy them. The fact that historic shrines and so-called "innocent" civilians were destroyed is simply not our fault. No, I did not see "London on fire from end to end," but I didn't have to in order to agree with him, support him, and thank him for his role in defeating one of the great scourges of the last century, not to mention probably saving my life. Thank God he finally got knighted, and, as I believe, the Queen dedicated his statue despite the stupid protests.

Dean S. Edmonds Jr.,
Naples, Fla.

Haderlie Insights

I was an instructor at the Aerospace Research Pilot School (ARPS) when Kert Haderlie experienced his incapacitating explosive decompression, after losing his pressure suit glove. *[See "Zoom Climb," February, p. 80.]* I was also a member of the accident investigation board and inspected the crash site immediately after the accident. The engine was about the only relatively intact piece of wreckage and was buried in a small crater, attesting to the very high speed at impact.

As John Lowery stated, we concluded that Kert's glove came off just after he was notified to shut down the afterburner, at 63,000 feet. The cockpit of the F-104C was quite snug, and an inflated pressure suit made movement a bit difficult. This was actually part of the learning process for this maneuver—operating under stress and better prepared the student to cope with anticipated future difficult flight situations. We believed that the movement to reach the throttle, while keeping the aircraft on its programmed flight path, caused the locking collar

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to rotate to the unlocked position. We were very aware of the consequences of the pressure suit being compromised during the zoom maneuver, and Kert's last transmission about his glove coming off reinforced our conclusion that he was unconscious during the ensuing dive.

A few months prior to his last flight, Major Haderlie had another severe test of his fortitude and flying skill—while operating in a very stressful situation. While he was flying another F-104C on a training mission, the aircraft pressurization duct ruptured, sending searing hot air into the cockpit. He was instantly subjected to a near-incinerating environment. He endured intense pain from burns on his arms while safely recovering the aircraft at Edwards. He was that kind of pilot.

Also worthy of comment was the author's reference to the procedures—and the excellent staff that carried them out—for the preparation and functioning of the life support systems that were vital to the safe accomplishment of missions at ARPS. These professionals were meticulous. The checks and rechecks were reassuring. When the taping of the locking collar was discontinued, we understood it was to make it easier for the pilot to intentionally open it to relieve pressure at low altitude in event of a pressure suit malfunction. This accommodation turned out to be disastrous.

Col. Fred R. Nordin,
USAF (Ret.)
Henderson, Nev.

Thanks to *Air Force* Magazine and John Lowery for the "Zoom Climb" article. It not only documents the ambition and contributions of Maj. Kermit L. Haderlie, it also helps me understand the technical challenges faced by the F-104 pilot in "The Right Stuff" motion picture.

Earl Heron
New York City

While I was not at Edwards at the time of the accident, I was responsible for these programs for periods, both before and after the accident. Assigned as chief, Bioastronautics Division, Air Force Flight Test Center, oversight of all pressure suit programs at AFFTC for Air Force and NASA was one of my responsibilities. These included the X-15, XB-70, F-12/SR-71, and USAF and NASA Lifting Bodies Program, as well as the ARPS Zoom Program. Theoretically, the glove/suit disconnect described in the article could not happen, since it took two separate and distinct actions to remove the glove. First, the locking slide had to be retracted, then the glove ring rotated to unlock the glove from the suit.

To my knowledge, only one other time did this suit malfunction occur. This happened to me, personally. I was flying a TF-102. When wearing a full pressure suit, we routinely dumped cockpit pressure and depended on the suit for survival. On one occasion, while flying at 47,000 to 48,000 feet, my left glove popped off. At that altitude, I had time to hit the switch to repressurize the cockpit. The impossible had happened. In my case, we determined that my locking slide spring was weaker than normal, and I must have brushed the wrist ring against the leg of my inflated pressure suit.

As a result of that incident, in addition to replacing all weak springs, we instituted the taping procedure the author wrote about. From that date forward, as long as I was at Edwards, every pressure suit that went up had locking slides taped on both gloves. Why, after I left, the procedure was discontinued was, in words of the author, "inexplicable."

Lt. Col. Ivan Skinner,
USAF (Ret.)
Melbourne, Fla.

John Lowery has the "right stuff" when it comes to writing aviation articles. Let's keep him onboard.

Maj. Vern Pall,
USAF (Ret.)
Tucson, Ariz.

The article by John Lowery was well-written and basically very factual. Kert was in Class 69-A and I was in Class 69-B. I knew Kert well, and his loss was felt by all at the Aerospace Research Pilot School.

The missions flown in the F-104C were pretty much canned missions and required a zoom climb of 30, 40, and 45 degrees. Following the F-104 zooms, some selected pilots flew the NF-104 with the rocket engine. The pressure suit was actually checked at 45,000 feet before the climb was initiated. Once the climb started, you did not have much time to check your suit. If it was hard, you went; if it was soft, you aborted.

Our class was required to attend the aerospace pilot medical class at Brooks AFB, Tex., for indoctrination into high-altitude effects on the body. As you can imagine, there was a lot of discussion about Kert's accident.

It was decided he could have bailed out, if he had initiated ejection prior to passing out from lack of oxygen.

He had about four to six seconds of useful consciousness after the glove came off. The dynamic pressure would have been low enough at that attitude for him to survive the ejection. The bad news is that he may not have had enough oxygen to last him during his free fall to the ground.

Lt. Col. Fred Watts,
USAF (Ret.)
Silver City, N.M.

More on the Navigator Saga

Your article on training a "new breed" of USAF navigators as combat systems officers (CSOs) with a broader knowledge of the complex systems with which we work today is interesting and important. *[See "Combat Systems Officers," January, p. 57.]* As a B-52 navigator and then radar navigator, I moved to the FB-111A and acquired a whole new perspective on flying. As I moved back into B-52Hs as an ADO and operations group commander, I found the systems knowledge, crew discipline, and overall air sense I had acquired in the right seat of an FB-111A as radar navigator, EWO, and semi-copilot was invaluable to me in comfortably performing my duties as the commander of flying operations as a navigator.

More broadly integrating the navigator into the duties involved in the flying of the aircraft and the operations of its complex systems is key. Equally important, however, is giving navigators the same opportunities to lead and for advancement as their pilot counterparts.

Col. Charles R. Hardesty,
USAF (Ret.)
Huntingtown, Md.

As a 20 year-plus B-52 radar navigator and B-1 weapons systems officer, I was pleased to read the article concerning the new combat systems officer (CSO) concept. When I entered the Air Force in 1982, bomber navigators used circa 1950s analog navigation/bombing computers with manual charts and logs while flying "compartmentalized" in our tactics and thinking. This has been changed to accommodate enormous updates in technology, changing our mind-set from "use the checklist" to "use your cranium."

What hasn't changed much, officially, is how the Air Force takes care of its navigators "cradle to grave." In theory, the Air Force develops and promotes "officers," but the reality is we promote "operators." The dismal promotion rates/opportunities for navigators, compared to pilots and nonrated officers, are nothing new. At the end of the day, the Air Force develops and promotes the officers who sign for the jet and crew or lead people and assets to make the mission happen. So long as navigators are viewed as mission "support," vice mission "accomplishment," there will be no improvement. The most discouraging thing I ever heard during a career counseling session with a general officer at promotion time was to be told I had an impeccable record with exception of the fact that I was a navigator.

The Air Force has had problems attracting enough candidates to fill new navigator training allocations. The young navigators I've worked with are the best I've ever seen. However, they ask many smart questions about staying involved in a career field that, up until now, has had few options for personal or professional growth beyond the rank of major.

While I applaud the CSO concept, I think the Air Force can do better. First, until the CSO concept is fully employed, we need to promote navigators at a more equitable rate—this has been done with acquisition officers and joint officers in the past. Second, in flying squadrons requiring navigators, we should emulate the Navy, in that if a commander is a pilot, the operations officer should be a navigator (and vice versa). Third, if the Air Force is going to continue to pay the ACP bonus, then the program should be equalized so that all eligible rated officers receive the same contracts. Nothing is perceived or speaks like money. Finally, we need a shift in thinking on the part of Air Force leadership. I've never been able to figure out why a pilot performing navigation, time control, and weapon delivery in a B-2 is called a "mission commander," but the same function on a B-1 is performed by a "wizzo." Also, a navigator with 15 years' aviation service is a "master navigator," but a pilot with the same service is a "command pilot." The Air Force has been well served by its current navigator force, with huge impact to the mission bottom line. My hope is the Air Force will grow to embrace its new combat systems officers.

Lt. Col. Roy E. Walker Jr.,
USAF
Hampton, Va.

In 1996, I put in my papers to get out of the Air Force and my B-52 nav slot because, as I said in writing, "I'm not about to accept a limit on my career advancement at age 28." Nearly 30 years later, I ended my part-time career in the Air Guard working for a two-star navigator who had to get a state law changed to allow a non-pilot to head the New York Air National Guard. Navigators have always been an "undervalued" resource, and as with all types of discrimination, it has been wasteful. I wonder, though, if the Air Force is really changing its mindset about navigators' upward mobility by cross-training them to be UAV operators. Isn't that the slot that fighter pilots don't want? The more things change ...

Col. Edward G. Moran,
ANG (Ret.)
Montclair, N.J.

I could not agree more that navigators have been "undervalued." Our Air Force had significant numbers of highly trained, highly educated aviators and military professionals. They were trained in navigation, weapons delivery, and electronic warfare. Many had advanced civilian pilot ratings. They distinguished themselves in peacetime bombing and navigation competitions. They distinguished themselves in aerial and ground combat. They successfully led, managed, and used judgment in leadership positions at austere locations around the globe.

Unfortunately, the navigator career field was mismanaged. When it came time for a reduction in force, too many were let go. When it came time for promotions, they were promoted at rates lower than other officer career fields. Because of a shortage of qualified navigators and weapons systems officers, they were held in the cockpit and denied career broadening and professional development opportunities. Navigators were not treated as officers and military professionals first.

The investment in training for combat systems officers will be wasted if the Air Force does not treat them as officers first and provide professional development opportunities. If they are not promoted, then who will mentor the next generation of CSOs? Let us hope that the Air Force learns from its mistakes of the past and does not repeat them with these promising CSOs.

Maj. Douglas R. Putney,
Nellis AFB, Nev.

Others Played a Role

I just read the article "OSI Nets 148

Iraqi MANPADS," which left me with the impression OSI did this effort alone. *[See "Aerospace World: The Iraq Story Continues," January, p. 19.]* As one of the leaders for the 506th Expeditionary Civil Engineering Squadron Explosive Ordnance Disposal (EOD) Flight, Kirkuk AB, Iraq, from August 2004 to January 2005, I can state for a fact OSI was a major component of this effort, but not the only one.

During their time on the ground, USAF EOD team members on my rotation also collected MANPADS from the US Army at their various forward operating bases (FOBs)—most notably from the soldiers at FOB McHenry and even on occasion from Iraqi police and Iraqi National Guard. Our EOD team would then transport MANPADS to FOB Warrior at Kirkuk with US Army support for storage.

I can't speak for the USAF EOD rotations prior to August 2004, but I'm sure USAF-US Army EOD team members also collected MANPADS from various agencies and stored them at Kirkuk. MANPADS is a serious threat to everyone's missions, and the joint efforts of all military agencies [contribute to] buy-back/collection programs.

So let's give credit to all involved in this joint warfighting effort in AOR Warrior that helped reach the 148 MANPADS collected number.

SMSgt. William T. Walton III,
Chief, EOD Flight
Incirlik AB, Turkey

■ *Sergeant Walton is correct. SMSgt. Robert C. Hodges, EOC flight superintendent at Aviano AB, Italy, wrote as well, making the same point. We apologize for our incomplete reporting.—THE EDITORS*

I read with great interest the article about OSI agents collecting MANPADS. It made me think: If these items threaten US and coalition aircraft, could this mission be considered defensive counterair or would it more properly be classified as suppression of enemy air defenses? It sure seems like a perfect example of asymmetric warfare!

MSgt. Michael R. Betzer,
USAF (Ret.)
Lancaster, Calif.

Not the First?

It was interesting to read the article "Operation Lusty" *[January, p. 62]* by Robert L. Young; however, there was some information missing regarding the "first" American pilot to fly the Me-262. The first American pilot to fly an Me-262 was Capt. Howard Ellsworth, according to the December 2004 issue of *Military Officer* magazine. He flew on Dec. 26, 1944.

Captain Ellsworth's P-38 was shot down Dec. 21, 1944, and he was held a prisoner at Sohie Bslad airfield in Germany, where he helped repair a runway. During a bombing raid on Dec. 26, 1944, several Me-262s landed, and one pilot left his engines running. During the confusion, Captain Ellsworth ran to the plane and took off and flew to Allied territory and landed the Me-262 on a hillside. He was arrested by US troops for impersonating an American officer. He returned to his unit on Dec. 31, 1944. The facts are that Captain Ellsworth was the "first" American to fly an Me-262, not Captain Ward or First Lieutenant Strobell.

Roy P. Gibbens
Meridian, Miss.

Correction

SSgt. Dan Libby (not Levy) was the noncommissioned officer whose actions were described by Gen. Lance W. Lord, commander of Air Force Space Command, in the February article "Space—The Next 50 Years" (p. 70).

Washington Watch

By John A. Tirpak, Executive Editor

Get On With C-130J; No Time to Lose on Tankers; USAF Expects F/A-22 Reviews; Smaller, Better Air Force ....

Teets: Get On With the C-130J

The C-130J should get a reprieve from termination, says Peter B. Teets, acting Secretary of the Air Force. He warns that the C-130J program, recommended for cancellation in 2006 by the Defense Department, is too important to be left out of the budget.

In an interview with *Air Force* Magazine at the Air Force Association's Air Warfare Symposium in Orlando, Fla., in mid-February, Teets talked about the service's top weapons programs, including the C-130J.

"I think it's going to be revisited," Teets said of the C-130J decision, handed down in late December with other cuts in a budget trimming exercise.

The C-130J is "quite an efficient procurement," but canceling it would invoke termination costs, he explained.

Members of Congress have complained that terminating the C-130J would cost more than simply buying the full complement of aircraft under contract. (See "Washington Watch: Political Leaders Open Second Front," March, p. 9.)

"We do so much intratheater lift with C-130s today, and they're getting old," Teets noted. Some are restricted from flying under certain conditions while others are grounded for cracks in their wing boxes, he said.

"In a sense," said Teets, "it's almost a more severe case than the tankers, in terms of the need to get on with recapitalization."

The tankers to which he refers are the Eisenhower-era KC-135s, replacement of which is a USAF top priority.

No Time for "Clean Sheet" on Tankers

The Air Force needs to get a new tanker program going, and there's no time to lose, Teets asserted. Some have suggested that the Air Force skip the procurement of a commercial derivative and go forward with a new generation tanker-cargo design. Teets doesn't agree.

"I don't think there's time to start with a clean sheet of paper and try to develop a totally new concept," he insisted, explaining that the advanced age of the KC-135E fleet won't permit such an approach.

He predicted that a Pentagon analysis of tanker alternatives, which was due to be completed at any moment, would recognize that "there are two viable competitors [for tanker production] and we should proceed with a competition and get on with the replacement tanker program."

The two likely choices will be Boeing's KC-767 and an Airbus derivative of the A330 airliner. While both aircraft would have US content, Teets said, "there are challenges with running a good, fair competition," since one of the competitors is a foreign design.

It's a "complicated picture," Teets observed, but he said he'll be watching to see the reaction of Congress to the Marine Corps' recent choice of a foreign design to be the next Presidential helicopter. The choice of the US101 helicopter, a program headed by Lockheed Martin but featuring a large percentage of European content, is expected to rouse Congressional "buy American" challenges.

Lockheed Martin photo/John Rossino

C-130J: Did DOD bungle the math?

"It'll be real interesting to see what happens there," Teets said.

Review of the F/A-22 No Surprise

For Teets, the need to rejustify the USAF requirement for 381 F/A-22s in the Fiscal 2006 budget and subsequent budgets is a given simply because it is a "big-ticket" program. The 2006-11 Future Years Defense Program calls for terminating in 2008 the F/A-22 at 180 aircraft.

"In a constrained budget environment, you're going to find that programs that are requiring significant resources are going to get examined on a regular basis," he said.

The Air Force's requirement for 381 of the stealthy fighters is "not an easy slam-dunk argument," Teets acknowledged. The rationale is "not exact science," and "to some extent, it does depend on the threat scenario," he said.

However, he emphasized, "you also want to be prepared to deal with unexpected, unanticipated threats."

The Air Force has done "an analysis that I think is very proper, correct, [and] sophisticated ... that does say there's a requirement for 381," said Teets. "When all is said and done, I think the logic behind our rationale ... will prevail. ... But clearly, it's going to be examined again this year, and it could be examined again next year, because it will be a big-ticket item next year, too."

He said flatly that, contrary to some reports, "the Air Force did not offer up the F/A-22" as a cost-cutting measure in the defense budget. However, he also noted that the cuts do not affect the program for two more fiscal years, so "there's plenty of time to do a proper study of the whole air dominance issue and what ... the mix of tactical air [is] going to be."

The Quadrennial Defense Review, now under way, is slated to consider the contribution of all fighter, bomber, munitions, and unmanned vehicle programs to the mission area of air dominance.

However, the F/A-22 is the only platform that offers both stealth and supercruise in a single package, Teets

said. Supercruise "is a huge deal" and will figure prominently in the desire to have combat aircraft within minutes of supporting troops on the ground.

A cruise missile launched from a ship at sea means potentially "hours" of flight time to a target, which will give moving targets a chance to escape, Teets said. "Even [some] high-value targets can defend themselves with that kind of time to target," he asserted.

Teets said it's also important to highlight the sunk investment in the F/A-22, because it makes clear that the vast bulk of development and tooling costs is already spent and all that remains is production.

The Pentagon's cut of $10.5 billion in the F/A-22 program resulted in the reduction of 100 airplanes, said Teets. He added that "you don't have to be a rocket scientist" to see that the incremental costs of each new Raptor is about $105 million—not the $257-million-a-copy figure quoted by Rumsfeld.

Moreover, because 381 F/A-22s have the potential to replace 800 other aircraft—mostly F-15s and F-117s—the result will be "more capability with lots of recurring savings" in maintenance and personnel costs.

"Boy, that just has 'winner' written all over it," Teets said of the plan, which he said also demonstrates that the Air Force is "not trying to say you've got to have more iron on the ramp."

Expanding the UAV Horizon

The Pentagon in December designated the Air Force as lead service on the Joint Unmanned Combat Air System. According to Teets, USAF is working with the Navy to define differences and commonalties, as well as technologies, that would "pay dividends for both variants."

The Air Force wants to develop a long-range strike version of the J-UCAS to loiter for extended periods over a battlefield. It would need to be air refuelable, unlike today's unmanned aerial vehicles. With a long loiter time and stealth, the J-UCAS would also make an excellent intelligence-surveillance-reconnaissance platform, Teets noted.

USAF photo by MSgt. Gary R. Coppage

Teets says the logic behind the F/A-22 will prevail.

He does not believe it would make a good system to suppress or defeat enemy air defenses. That role, said Teets, will be "superbly done by the F/A-22."

Teets does expect the J-UCAS to compete with the proposed FB-22 for the long-range strike mission. The FB-22 "ought to get played off against J-UCAS," he said. However, USAF first must decide whether a UAV can perform a bomber mission, carrying a large weapons load deep into enemy territory. Teets indicated a preference for the unmanned vehicle, saying, "I wouldn't jump at an FB-22, personally."

Jumper Favors Smaller, Better Air Force

For its portion of the Quadrennial Defense Review, the Air Force is promoting the idea of a reduced force that offers even greater capabilities than USAF does currently, Chief of Staff Gen. John P. Jumper reported.

The service's pitch to the QDR will be that "we can have a smaller, much more capable force if we can make the investments that we think are required," Jumper said in an interview with *Air Force* Magazine at the AFA symposium in Orlando.

Jumper expects USAF to develop new capabilities in space, unmanned vehicles, command and control, and information operations because, as he said, "That's where the demand is." On the whole, the service will be better able to support "maneuvering units on the ground."

The Air Force's top uniformed leader sees the QDR as being a "fine-tuning" of the strategy articulated over the last four years, with no "large deviation" in terms of the threats to be confronted or the emphasis on capabilities rather than platforms or intentions.

However, he does expect a "much closer look" at force structure and size. Notable in that debate will be air dominance.

The linchpin of the Air Force's QDR effort, he said, is the F/A-22, specifically, acquiring it in the required numbers.

"That's the whole strategy, actually," Jumper said.

According to the Chief, as more capable aircraft, such as the F/A-22, F-35 Joint Strike Fighter, and E-10 battle management platform, enter the inventory, USAF "can do with a lot fewer" aircraft than it has now. "It gives you an opportunity to reduce your force structure and change your investment," he added.

It costs the Air Force $1.2 billion a year for every 10,000 personnel it has in uniform, Jumper noted. Trading 800 legacy fighters for 381 F/A-22s that are easier to maintain and deploy is an opportunity "to make a smaller force structure that is still extremely capable."

He confessed to remaining puzzled that F/A-22 critics deride the fighter because they say it is too powerful an airplane.

Jumper said: "I can understand if people think that we have too many, and we can certainly argue that. It should be a matter of analysis—it's going to be a matter of how many places in the world we're going to have to be at one time—but to say, [after] we've invested all this money, and now it's too good, makes no sense to me."

Having recently qualified in the F/A-22, Jumper said he is now acutely aware of its potential, and it is "obviously of more value than any of us ever thought."

Because enemy defenses can't see the Raptor, he explained, "the denominator now becomes zero. It's no longer an exchange ratio" with enemy fighters. By the time the F/A-22 gets close enough to be seen by the enemy, "your time gradients are so quick that they can't do anything about it."

Improving Joint "Effects"

Jumper said a major focus of the QDR should be different ways to employ forces jointly to "create better effects." He believes that "there's a lot more we could do."

The Army is coming to depend more and more on the other services for things like air defense, as well as for "joint fires to be able to come to the right place at the right time," said Jumper. The most recent concept of operations for maneuver units, he said, scatters them around the battlespace, often "quite deep in the battlespace." Jumper said that would call for the Air Force because there wouldn't be time to bring in artillery.

He said that deep in contested airspace, "you can't

just send a bunch of helicopters or A-10s" to perform classic close air support, because they could not survive against advanced ground and air threats in an enemy's heartland.

"You've got to be able to come at it in other ways," he asserted, "and this is where the value of stealth and ... speed ... presents itself in the new, modern context."

According to Jumper, the Air Force did not expect to be performing such missions with the F/A-22, but as the Army changes its way of doing business, the aircraft "happens to fit perfectly." He maintained, "If we didn't have it, we'd have to invent it."

Jumper added, "If we agree that the concept of operations is to put maneuver units deep in enemy space, then we have to agree that we have to respond to them quickly." He said it will be essential to be able to respond to requests for air support "in seconds, and not minutes or hours, to help people who are *in extremis*."

Jumper also agrees with Teets that the J-UCAS can feature prominently in this new CONOPS. It can loiter over enemy territory, where ground units can get air support almost instantaneously.

"Not to trivialize it, but it's sort of the Coke-dispenser model of being able to order up fires," Jumper said. He said the J-UCAS could carry an impressive load of varied weapons.

It will have to be "fairly big" and air refuelable to travel very long ranges, carrying that sizeable payload, he said. It would also be cost prohibitive to load it with enough sensors and processors in addition to its weapons load to enable it to avoid enemy aircraft, so, he said, it may take the F/A-22 to defend such a craft in the daylight hours.

Jumper expects the J-UCAS to be able to stay up "dispensing weapons" and refueling from an aerial tanker "as long as it's got weapons."

The options for the J-UCAS are still open. Questions remain about the need for stealth and speed. Those features exist now in the F/A-22, which has led the Air Force to consider a larger version—the FB-22—as an interim bomber. Jumper has asked, "Could we make an FB-22 that doesn't have a man in it?" It is large enough and fast enough to satisfy the needs of on-demand airpower.

"The bomber advocates will tell you that it's not big enough," Jumper said. "But if supercruise is the big payoff, then shouldn't we take advantage of the fact that we've already got something like that?" Yet, for the J-UCAS, if stealth is "the big payoff," then "shape becomes more important, bomb load becomes more important, and you don't need supercruise quite so much."

USAF photo by Judson Brohmer

Why not trade 800 fighters for 381 Raptors?

USAF photo by MSgt. Jim Varhegyi

Jumper wants direct radio links.

The design trade-offs are important, said Jumper. That is "why it's taking so long to do this long-range strike" analysis.

It's critical not to try to do too much with one platform, while at the same time, the Pentagon must avoid focusing on a "niche that may not be useful," he emphasized.

Jumper Advocates Redundancy

The US military should not become overly dependent on information warfare and network operations, said the Air Force Chief of Staff, because "the more you're using long-haul communications for very critical activities, the more vulnerable you are."

"It's why I feel so strongly about the E-10," Jumper said. The E-10 would be a forward-area airborne command post able to maintain short-distance, line-of-sight communications with combat aircraft and surface forces.

However, he said that the Air Force has to fight those who say there is no need for an aircraft loaded with mission specialists and instead are pushing for a sensor that can send a signal back to the States for processing.

Jumper believes that such an extended reachback option is fraught with risk.

"You have to have the assurance of eyeball-to-eyeball or direct radio links ... to make sure that your message gets through," he said.

Redundancy of command and control is what is needed, said Jumper, who thinks it can be obtained "for a relatively low cost."

In addition to the E-10, part of this redundant capability, he said, could be a near-space craft, which could provide line-of-sight relays. He proposes exploring the use of lighter-than-air craft at "near-space" altitudes as a possible way to improve the coverage provided by satellites.

"We have to prove that it really will do what its potential says," said Jumper. He maintained, "I think we can do that proof with a relatively modest investment."

Jumper sees the near-space craft being put under the direction of the space community, which would use the airships to dwell over areas of interest for long periods of time. They would cue more capable satellites as they pass over the region to get maximum benefit from each satellite pass.

The key, he said, would be to make the payload of such craft light enough to be practical. He does not recommend duplicating, for instance, the 3,000-pound payload of a Global Hawk UAV. If it can be done, cheaply enough, it would help get far more effectiveness out of satellites, which are "very, very expensive," said Jumper. ■

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Aerospace World

By Adam J. Hebert, Senior Editor

90 C-130s Restricted

Gen. John W. Handy, Air Mobility Command chief, on Feb. 10 grounded 30 C-130Es. At the same time, another 60 C-130s were placed on restricted flight status "to minimize wing stress and increase the safety margin," AMC officials said.

The aircraft were grounded "based upon a recommendation by the C-130 System Program Office at Robins AFB, Ga.," officials explained in an Air Force news release.

Since 2001, inspections of the center wing box have found cracks that are deeper and more severe than expected, creating a safety concern.

Most of the affected aircraft, which include E, H, and HC-130N/P models, belong to Air Mobility Command, but three other major commands, Air National Guard, and Air Force Reserve Command also own transports that were put under flight restrictions.

USAF photo by TSgt. Mike Buytas

Airmen of Task Force 1041 patrol the area around Balad AB, Iraq, during daily offensive ground combat operations, often conducted under US Army control. The airmen have been effective in helping drive the number of attacks down, said their commander, USAF Lt. Col. Chris Bargery.

Airman Dies During Rescue

Air Force SSgt. Ray Rangel, 29, died Feb. 13 while attempting to rescue US troops from a canal in Balad, Iraq. He was one of four US troops to die in the incident in which an Army Humvee on a combat patrol near Balad Air Base overturned into the canal.

Rangel was a firefighter deployed with the 732nd Expeditionary Civil Engineering Squadron. He was permanently assigned to the 7th Civil Engineering Squadron, Dyess AFB, Tex.

Officials said the incident is still under investigation. However, according to an account in the *Washington Post,* Rangel was wearing body armor when he rushed down the canal's embankment to assist in the rescue operation and may have lost his grip and fell into the frigid water. The *Post* reported that two other USAF firefighters in the rescue party had been trapped in the canal but were pulled to safety.

Expeditionary Jobs Rejected

The Air Force has decided not to offer expeditionary specialties for airmen in career fields that typically do not deploy. Viewed initially as a means to increase the service's pool of airmen eligible for the 10 air and space expeditionary forces (AEFs), there "turned out to be not a lot of water in the well," said Lt. Gen. Ronald E. Keys, deputy chief of staff for air and space operations.

The idea, first discussed by Keys last September, was conceived as a way to get missileers, scientists, and others who wanted to deploy into the AEF system. (See box, p. 74, in "Airpower and 'The Long War,' " November 2004, p. 70.) New Air Force specialty codes were seen as a possibility—airmen could train for secondary skills needed in deployed locations. But the limited payback was ultimately deemed not worth the effort.

The Air Force will continue to look for ways to deploy additional personnel, even if a direct correlation to their primary AFSC doesn't exist, Keys told *Air Force* Magazine. Some Air Force Academy professors have already done tours in Iraq, he noted.

USAF Extends Tours for 200 Slots

Air Force officials in February announced that about 200 USAF positions in the US Central Command area of responsibility will become 365-day extended deployments rather than continue as standard 120-day air and space expeditionary force assignments.

The longer deployments are necessary because CENTCOM's joint task force commanders need greater continuity in positions where "the local culture requires more time to establish meaningful ties with local people and host governments," according to a Feb. 24 announcement.

Lt. Col. James Davis, a USAF assignments official, said the change affects a mixture of enlisted and officer positions—"mainly midlevel and up"—and specialties.

USAF officials plan to make selections to fill these positions during the spring and summer assignment cycles. They expect personnel to be in place by August 2005.

The Air Force will seek volunteers first. If it doesn't get enough, said

Davis, the service will use "modified short-tour criteria" to identify individuals for the positions.

This one-year assignment will not be considered a permanent change of station move. Rather, it will be termed an "indeterminate length" temporary duty assignment, stated the news release. That will make personnel eligible for short-tour assignment entitlements such as priority for follow-on assignments and possibly returning to their former assignment. Officials said USAF will consider other benefits on a case by case basis.

Space Radar Shoots for 2008

The Air Force has changed the name of the "Space Based Radar" program to the "Space Radar" program. More importantly, USAF plans to "increase collaboration with stakeholders" in DOD and the Intelligence Community, stated an Air Force news release.

Officials also announced that Brig. Gen. John T. Sheridan is the SR program executive officer and system program director. He will lead the revitalized effort from an office in the Washington, D.C., area.

"The new program structure will improve stakeholder interaction allowing us to better meet the needs" of DOD and intelligence customers, said acting Air Force Secretary Peter B. Teets.

Plans call for a demonstration satellite to be launched in 2008 to "mature technologies which are necessary for the program," the news release explained.

Space Radar will offer synthetic aperture radar imagery, moving target indication, and advanced geospatial intelligence capabilities. It will combine the capabilities of the Joint STARS system and legacy reconnaissance satellites, providing all-weather sight into denied areas.

USAF photo by SSgt. Colette Bennett

During a trip for the Middle Eastern Air Symposium, Gen. John Jumper, USAF Chief of Staff, took time to visit two Southwest Asia locations. Here, he talks with Reserve TSgts. Kenneth Canada (left) and Ricky Drinkwater, both deployed from Maxwell AFB, Ala., to the 8th Air Mobility Expeditionary Squadron.

A-10s To Get Precision Upgrade

Air Force officials plan to upgrade the entire 356-aircraft fleet of A-10A Warthogs to the A-10C "precision engagement" configuration. The modification is the largest avionics improvement in the A-10's history and will add the ability to use targeting pod "smart" weapons, Wind-Corrected Munitions Dispenser, and the Joint Direct Attack Munition.

Other upgrades include a pair of multifunction color cockpit displays, a head-up display panel, and a doubling of the direct current power available to the aircraft.

The operational fleet will be modified from 2006 through 2009, Air Combat Command officials wrote in response to questions from *Air Force* Magazine.

In February 2004, then-ACC Commander Gen. Hal M. Hornburg announced the plan to retire a portion of the A-10 fleet to fund upgrades for the remainder. The retirements no longer appear necessary—ACC officials say the A-10C conversion is fully funded.

A primary benefit of the A-10C is

USAF Releases Anaconda Review

Operation Anaconda, the 2002 US-led assault in eastern Afghanistan, ultimately was successful in clearing al Qaeda and Taliban forces out of their mountain hideouts, officials said in February, but the operation was made unnecessarily difficult by several bad planning assumptions.

The outcome was a testament to the skill and training of the forces involved, they said, despite a lack of early coordination between ground and air elements. The Air Force in mid-February released its review "Operation Anaconda: An Airpower Perspective." (See "The Echoes of Anaconda," p. 46.)

During Anaconda's buildup, both the land and air component commanders were left "dissatisfied" with their insight into the planning, said Col. Dan Richards, director of the Air Force lessons learned office at the Pentagon, at an Air Force briefing on the report.

Richards told reporters that "no single commander had authority" to integrate all the force elements. The importance of unity of command was a lesson the Defense Department should have learned in Vietnam.

There was "insufficient coordination at all levels," said Richards.

Assumptions were another problem. Planners thought most enemy fighters would turn and run at the first opportunity, while taking "potshots" at the US forces—hoping to inflict casualties. This had been the model in the earlier Tora Bora campaign.

What the planners didn't initially appreciate, Richards said, is that al Qaeda chose the Shah-i-Kot Mountains as a "stronghold" because that is where Soviet forces had been defeated 20 years earlier. Many of the fighters were Chechen veterans willing to fight to the death.

Ultimately, Richards said, airmen adapted quickly to the challenging circumstances while performing many missions in combat for the first time. Anaconda marked the first use of Joint Direct Attack Munitions to protect troops in close contact with the enemy; the first use of bombers for close air support; and heavy use of fighters such as the F-15E Strike Eagle to strafe enemy positions.

AFMC Goes to Wing Structure

Air Force Materiel Command on Feb. 9 formally reorganized its largest product center into wings, groups, and squadrons—a command structure which more clearly resembles the rest of the Air Force, officials wrote in a February news release.

The move, which was announced last year, is a "major step toward demystifying the acquisition structure." (See "Operational Acquisition," August 2004, p. 54.)

Aeronautical Systems Center at Wright-Patterson AFB, Ohio, consolidated its Byzantine structure—consisting of more than 40 system program offices—into seven wings and groups. They are fighter-attack, long-range strike, reconnaissance, mobility, agile combat support, special operations, and training aircraft.

Officials said the new arrangement had already paid dividends. They credit a "flight test" that began last October with helping to speed delivery of new munitions to meet urgent requirements for US Central Command operations in Iraq.

Shortly after restructuring ASC, Materiel Command also reorganized its three logistics centers. The Oklahoma City Air Logistics Center at Tinker AFB, Okla., and Ogden ALC at Hill AFB, Utah, changed over to the new system in February. Warner Robins ALC at Robins AFB, Ga., activated its wing structure March 4.

Under their new systems, the centers established aircraft sustainment, air combat sustainment, and maintenance wings. The move eliminates a management structure that did not resemble "any other organizational structure in the Air Force," officials said.

"Rather than having a more narrowly defined organization focused on individual weapon system platforms," explained Gen. Gregory S. Martin, AFMC commander, "capability-based wings" should create synergy between complementary mission areas.

that it gives the pilot better control of targeting, weapons delivery, and situational awareness through "the available cockpit controls and displays," said Maj. Jason Childs, ACC's A-10 system team chief. "This modification will turn the aircraft from a 'look out the window' aircraft to a digital platform."

Warfare Centers May Merge

USAF is considering a possible future merger of the Air Warfare Center at Nellis AFB, Nev., and the Space Warfare Center at Schriever AFB, Colo.

The Air Force sees command, control, communications, and computers and intelligence-surveillance-reconnaissance capabilities as key enablers for future combat, said Gen. T. Michael Moseley, at a February breakfast sponsored by the defense consulting firm DFI International.

Moseley, the Air Force vice chief of staff, said the service envisions a seamless linkage between space and air-breathing C4ISR systems as the service fields next generation systems such as the E-10 battle management aircraft.

To make the most of its future capabilities, the Air Force is "thinking through the notion" of combining these two centers to create "a seamless set

of activities" that would concentrate on the future of both space and air-breathing systems, said Moseley.

There is already collaboration between the entities. The Air Force uses Red Flag and assorted wargames to train its airmen as they fight. This necessitates bringing air-breathing and space capabilities together. For example, the Space Warfare Center recently held the Schriever III space wargame at Nellis, home of the Air Warfare Center.

DOD IG Cites Roche

According to the DOD inspector general, former Air Force Secretary James G. Roche violated a government ethics regulation in May 2003 when he used his official e-mail channel to send a character reference, for the brother of a longtime friend, to contractor Northrop Grumman.

The IG determined that Roche violated two sections of the Joint Ethics Regulation when he sent a character reference for the brother of Robin Cleveland, who was then associate director for national security programs at the Office of Management and Budget.

The first offense was sending the e-mail with his official signature block, which "implied Air Force sanction for the employment recommendation," according to the IG report. The second was improper use of e-mail.

USAF photo by Capt. Catie Hague

In Afghanistan, airmen work with soldiers to form a human chain, moving boxes of supplies to aid Afghan people in snow-bound villages in the Parwan area. The US troops are deployed to Bagram Air Base.

USAF photo by TSgt. Cecilio Ricardo Jr.

USAF security forces on Guam practice attacking a simulated terrorist target during a recent exercise. Training for the airmen, who are part of the 613th Contingency Response Group, included urban terrain, sniper, navigation, and breaching operations.

Promotion Boards Will Not See Degree Info

The Air Force has stopped including academic degree information in most officer records sent to promotion boards. The move marks the end of "square-filling" degrees, said Gen. John P. Jumper, Chief of Staff, in a Feb. 2 paper to Air Force personnel.

The change applies to active duty line officers only, beginning this year. The Air National Guard and Air Force Reserve Command will implement the new procedure in 2006. It does not apply to health profession and chaplaincy officers.

Jumper said the new policy ushers in a "significant change" in mind-set for officers. Attaining a master's degree—of any type and in any area—has long been considered essential to officer advancement. "This must change," he said.

"Education must be tailored to benefit airmen in doing their jobs," explained Jumper. "Promotion is, and will continue to be, determined by your performance and demonstrated leadership potential."

The Chief does not want officers "chasing a degree just to get promoted," explained Lt. Col. Leslie Formolo, promotions and evaluation chief at the Pentagon. When it came to advanced degrees, many officers "took whatever" degree just to remain promotion-eligible. The result was a lot of MBAs but not enough degrees directly related to Air Force missions, Formolo said.

Professional military education, which is directed by the Air Force, will stay in promotion records, but there will no longer be an advantage—real or perceived—in attending "in-residence," she said. The goal is simply professional development.

The Air Force will have to track the number of officers eligible to teach ROTC courses or at the Air Force Academy, Formolo said. These teaching positions require an advanced degree, and officials cannot predict how the "pool" of officers eligible for these assignments will change in future years.

Jumper noted that the Air Force would not discourage individuals from pursuing advanced degrees on their own and would continue to offer tuition assistance.

"The Air Force's emphasis is on job performance and providing airmen the right opportunities for advanced education when it is required," he said.

In a Dec. 3, 2004, letter to the IG, Roche denied that his e-mail violated the regulation.

An Air Force news release, dated Feb. 15, stated that Roche's handheld communications device had been preset to include his title automatically.

The IG also reviewed whether Roche's employment recommendation had improperly influenced OMB's evaluation of the defunct Boeing KC-767 tanker lease proposal. According to the USAF news release, the IG said in a Jan. 27 letter to Roche that it "found insufficient evidence to suggest his e-mail had influenced an assessment of the tanker lease proposal by the Office of Management and Budget."

Predators Urgently Needed

Air Force budget officials are seeking $161 million in supplemental Fiscal 2005 funding to purchase 15 additional Predator unmanned aerial vehicles to meet urgent warfighting needs in the US Central Command region, which includes both Iraq and Afghanistan.

If lawmakers approve the reprogramming request, USAF would purchase 27 Predators in 2005. Nine MQ-1 and MQ-9 Predators were originally requested for the current fiscal year, and three more were later added by Congress.

The Air Force's 2006 budget request, unveiled in February, seeks production funding for nine more Predators.

Missile Test Fails Again

The Defense Department's ground-based missile defense system failed to launch an interceptor missile for a flight test in February. The system automatically shut down because of a problem with the arms that help hold the interceptor in place in the silo, Gen. Richard B. Myers told lawmakers Feb. 17.

It was the second consecutive flight-test failure for the missile defense system. (See "Aerospace World: 'Glitch' Foils Missile Test," February, p. 12.) The Feb. 14 flight test was meant to replicate last December's aborted test.

Myers said the problem is not thought to be a systemic issue but is nonetheless one that the Missile Defense Agency will "have to deal with."

North Korea Admits Nukes

North Korea admitted in February that it has nuclear weapons. The US has long suspected North Korea had a handful of nukes, but the Feb. 10

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USAF Lifts Boeing Suspension

The Air Force in early March lifted the suspension of three Boeing units that had been barred from bidding on Evolved Expendable Launch vehicle business. The suspension had been in place for 20 months.

Acting Air Force Secretary Peter B. Teets said that Boeing had taken sufficient steps to "rectify past improprieties and to develop long-lasting integrity standards." The suspension was put in place when the Air Force determined that Boeing, in bidding on EELV work, had possessed and used thousands of pages of illegally obtained data about rocket rival Lockheed Martin's bid proposal.

Teets, in a Pentagon press conference, said the suspension could be reinstated if Boeing is indicted or convicted of further wrongdoing on EELV contracting, or if new evidence surfaces.

Boeing had to pay the Air Force $1.9 million to cover the costs of the service's investigation into the matter. Boeing lost approximately $1 billion in fines and lost business due to the suspension. The Air Force awarded some of the contracts Boeing won to Lockheed Martin. Boeing also agreed that all its costs pertaining to improving its internal ethics programs and to defending itself in a civil suit brought by Lockheed Martin are not allowable charges on any government contract. Boeing must also have its new ethics policy verified by an outside panel. This group will be headed by retired Air Force Gen. George T. Babbitt, former head of Air Force Materiel Command, with a support staff from Bearing Point, a management consulting firm.

In addition, Boeing must submit written assurance of compliance with ethics rules when it bids on any government contract—military or civil—valued at more than $50 million. The ethics compliance measures will be in place a minimum of three years and will be lifted after that at USAF's discretion.

Teets said Boeing has taken adequate steps to correct its corporate culture by reorganizing management responsibility for the company's ethical conduct, and by changing its business practices.

"We hope that everyone who does business with the Air Force takes note of this case," Teets said, "and is reminded that we take ethical breaches very seriously and will not hesitate to impose significant sanctions when necessary to protect the procurement process."

The affected units were Boeing's Launch Systems, Boeing Launch Services, and Delta Program.

—John A. Tirpak

ACC Optimizes Daily Training

Air Combat Command has launched integrated training conferences to create a single source for scheduling US and allied military training events. Previously, said ACC officials, many potential consolidated training opportunities were missed.

The conference provides a "buffet," said Maj. Greg Kent, integrated training coordinator at ACC. Services and units can "take what they want."

Held quarterly, the conferences bring military representatives together to create an awareness of routine unit training that may present opportunities for wider participation.

Major events like Red Flag and the Joint Expeditionary Force Experiment are very expensive, so "we are trying to do the opposite," said Kent.

The idea is to bring forces together during daily training, whether it is for two-vs.-two air combat between Air Force and Navy pilots or to get USAF involved in a large-scale naval exercise with a carrier battle group.

Kent said this program offers a "bottom-up, unit driven" opportunity to compare and link schedules. Among the leading scenarios always open for joint participation are special operations forces integration, combat search and rescue missions, and dynamic close air support events, he said.

The most recent conference, held Feb. 16 and 17 in San Diego, highlighted several joint training opportunities. According to an event overview, these included:

- Testers at Edwards AFB, Calif., had a "dire need" for an E-3 AWACS aircraft to help evaluate Link 16 interoperability with F-16s and possibly F/A-22s and B-2s.
- A Royal Air Force AWACS team visiting Langley AFB, Va., in early April was "looking for weapons control activity."
- A group of seven Navy ships "expressed interest in finding some USAF assets to perform some air intercept control training."

ACC officials said the conferences have proved successful because they can schedule realistic joint training events that might otherwise never occur.

Continued from p. 18.

declaration was the first official acknowledgment.

North Korea manufactured nuclear weapons "for self-defense, to cope with the Bush Administration's evermore undisguised policy to isolate and stifle" the communist nation, the state-run Korean Central News Agency reported.

US intelligence officials believe North Korea's nuclear program has continued essentially unabated since well before Bush took office.

In response to the rhetoric, Secretary of State Condoleezza Rice said, "The North Koreans have no reason to believe that anyone wants to attack them."

India Mulls US Fighters

The Indian Air Force is considering US-built F-16 and F/A-18 fighters as competitors for a possible aircraft order, according to news reports. India solicited information about the Lockheed Martin F-16, Boeing F/A-18, Saab Gripen, Dassault Mirage, and the MiG-29, among other competitors.

US Ambassador David C. Mulford confirmed India's interest in buying American aircraft. However, Reuters quoted Mulford as saying that "no decision has been made" on whether the US will allow the sale. India has never purchased advanced US fighters, but its long-standing rival, Pakistan, owns F-16s—and seeks more.

India is interested in approximately 125 aircraft in a competition that could be worth up to $9 billion, Bloomberg News reported.

NSPS Standards Proposed

The Pentagon in February released proposed regulations for its controversial new National Security Personnel System. Officials expect to use NSPS to overhaul the way Defense Department civilians are paid and promoted.

Gone would be the old General Schedule system that compensates workers primarily based on their longevity and limits the ability to reward top employees.

The proposed NSPS rules for DOD's 650,000 civilian employees were published in the *Federal Register* Feb. 14.

In outlining the proposal, Navy Secretary Gordon R. England, who oversees NSPS for the Pentagon, made clear that DOD seeks "pay for performance." (See "New Day for Defense Civilians," February, p. 75.)

Workers will know in advance what is expected in terms of performance and "there will be measures and metrics that they will agree to in terms of: Did they accomplish those objectives?" England said.

The first 60,000 positions will be converted to NSPS in July 2006. Initial pay for those employees will remain the same.

New RQ-4 Software Is a Challenge

Air Force officials said in February that training pilots to make full use of new mission planning software for the RQ-4 Global Hawk unmanned surveillance aircraft is a "continuing challenge for testers."

A large amount of developmental testing is required to "figure out how the software affects the aircraft's existing capabilities," stated an Air Force news release. Developing effective tactics for the new automatic contingency generation (ACG) software is critical, because ACG will cut Global Hawk mission planning time from weeks to about 12 hours.

ACG will also allow Global Hawk to autonomously react to system degradation, said Lt. Col. James Wertz, commander of the 452nd Flight Test Squadron at Edwards AFB, Calif.

The 452nd started testing ACG on Jan. 24, and testers are still "discovering how the software makes the Global Hawk think while in flight," the release stated.

United Tech Buys Rocketdyne

United Technologies, parent company of engine manufacturer Pratt & Whitney, announced in February that it would buy Boeing's Rocketdyne booster-engine business for roughly $700 million.

Rocketdyne builds the space shuttle main engine as well as boosters for the Defense Department's Evolved Expendable Launch Vehicle program.

The sale should benefit both companies, said James F. Albaugh, CEO of Boeing's Integrated Defense Systems. Boeing will be able to streamline its operations, while Pratt & Whitney "is in the best position to build upon Rocketdyne's proud heritage," Albaugh said.

Predator Reaches IOC

The Air Force on March 1 said the MQ-1 Predator unmanned aerial vehicle (UAV) achieved initial operational capability. The announcement was somewhat anticlimatical since the UAV had already performed well in Afghanistan and Iraq. An earlier, unarmed technology demonstrator,

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USAF photo by SSgt. Karen J. Tomasik

In El Salvador, SrA. Jake Kurtz with the 28th Civil Engineer Squadron, cuts stone blocks to be used for a clinic expansion. Kurtz was one of 600 airmen, marines, sailors, and soldiers working on a variety of humanitarian projects.

For Vets, Buyer Brings Different Style

Rep. Steve Buyer (R-Ind.) has moved quickly to show that his approach toward veterans' benefits will differ from that of Rep. Chris Smith (R-N.J.), whom fellow Republicans removed as VA chairman in January.

Buyer made clear, while chairing his first hearings and in an interview, that he wants VA resources focused on "core" beneficiary groups—veterans who are poor or who have service-connected disabilities or special needs. In contrast, Smith favored expanding VA services, including healthcare, to as many veterans as might desire to use the system.

The decision by Congress in 1996 to open VA health care to all veterans, including priority categories 7 and 8, was a mistake, Buyer suggested.

"This idea that you can just open up the system to 7s and 8s and that it will be budget-neutral and [even] revenue-enhancing turned out to be false," said Buyer. As a result, VA has more than $3 billion in uncollected debt—money it expected to collect from veterans' alternative health insurance plans to cover the cost of care for conditions unrelated to service.

Back then, Buyer said, Congress worried that an aging veterans population could not sustain the VA health system. The most recent experience was the first Persian Gulf War which was over quickly and resulted in relatively few US casualties. At that time, the VA system continued to care mostly for an increasingly aging population. Times are changing, Buyer explained.

"We find ourselves now in protracted wars in Iraq and Afghanistan and a war on terrorism all over the world," said Buyer. The goal no longer is "to protect the bricks and mortar" of the VA system by caring for lower-priority veterans. The challenge to care for thousands of men and women severely wounded in body or mind is rising.

"The reality is that we have more veterans now that have to come into the system, and that while some of the veterans organizations like to create a theme that 'a veteran is a veteran [and] there is no difference,' I disagree."

Limited VA resources, he said, must shift from treating veterans in priority categories 7s and 8s to the more deserving and needy.

Buyer also said he wants the new Veterans' Disability Benefits Commission, which Congress approved in 2003 but is still being organized, to look hard at how service-connected disability ratings are set and adjusted.

"There is something bothersome in the system where you can have a soldier blow out his knee from a roadside bomb and end up with a disability that's the same as a guy who blew out his knee sliding into home plate at church league softball on Sunday," said Buyer.

Three more immediate priorities, he said, are providing care to that core constituency, creating a seamless transition for them in moving from military medical care to VA health services, and improving rehabilitation programs, both for the physically and emotionally disabled.

"I want this seamless transition to work and that new veteran to be able to succeed at new endeavors," Buyer said.

—Tom Philpott

News Notes

By Tamar A. Mehuron, Associate Editor

■ President Bush Feb. 17 nominated John D. Negroponte, currently US ambassador to Iraq, as the first director of national intelligence. The President also tapped USAF Lt. Gen. Michael V. Hayden, currently head of the National Security Agency, to serve as Negroponte's deputy.

■ Air Force Space Command personnel at Cape Canaveral AFS, Fla., received the first modernized Global Positioning System satellite from Lockheed Martin, company officials said Feb. 9. Known as GPS IIR-M1, the technologically advanced satellite will be readied for a May launch. Updated capabilities on the satellite include two new military signals offering greater accuracy, strengthened encryption, and anti-jamming features.

■ The last Atlas III successfully boosted a National Reconnaissance Office payload into orbit Feb. 3, from Cape Canaveral. The liftoff, which was the 75th successful launch of Lockheed Martin's Atlas II and III rockets, concludes the era of those launchers. It was also the final Atlas mission from Complex 36, which is being transferred from Lockheed to USAF control.

■ Two X-45A unmanned aerial vehicles on Jan. 27 successfully executed distributed command and control simultaneously in a test flight at Edwards AFB, Calif. During the test, the primary pilot handed off control of the aircraft to a pilot "in theater," who controlled both aircraft and commanded one to get radar images. After that, he transferred aircraft control back to the primary pilot.

■ USAF awarded a contract Feb. 18 worth $414 million to Lockheed Martin for 24 more F/A-22 Raptors and equipment. Work is scheduled to be completed by October 2005.

■ Air Force space operators at Vandenberg AFB, Calif., took delivery of the first Atlas V launcher, according to a Feb. 11 Lockheed Martin news release. The Atlas V will be prepared for a future inaugural launch from Vandenberg's newly refurbished Space Launch Complex 3 East.

■ The National Aeronautic Association on Feb. 8 awarded the Robert J. Collier Trophy to SpaceShipOne, recognizing its flight into space, 62 miles above the Earth. Mike Melvill piloted the privately financed spacecraft.

■ Engineers at Edwards AFB, Calif., successfully test-fired a hybrid rocket motor utilizing technologies from both liquid-fueled and solid propellant-fueled launchers, the Air Force said in early February. The test was part of the Falcon program to develop and demonstrate an economical space booster able to launch a 1,000-pound payload into a circular orbit of 115 miles.

■ During eight consecutive test flights over a period of five days in February, a stretch C-130J demonstrated its ability to drop about 40,000 pounds of bundled equipment without damage to the cargo. It was a critical test to determine the cargo damage rate for the stretch version, which is 15 feet longer than the standard C-130J. Tests four years ago had uncovered a change in the aircraft's center of gravity that caused the cargo bundles to bunch up and damage one another during a drop's gravity extraction process. The latest test showed 100 percent survivability rate, said testers at Edwards AFB, Calif.

■ A new user-friendly Web-based data program to track orders issued for Air National Guard personnel will be operational Oct. 1, officials said. The new system will consolidate disparate systems used throughout the 54 states and territories. Guardsmen will be able to monitor their orders during the approval period, print them when published, and access their order history and the number of duty days. It will provide "day-to-day, real-time tracking of our travel and training funds for the first time," said Brig. Gen. Charles Ickes, ANG deputy director.

■ NATO officials said Feb. 10 that the Alliance likely would expand its missions in Afghanistan, including "some form of unity of command" merger with the US-led Operation Enduring Freedom. Such a move, they said, is still a subject of discussion, but "more synergy" should occur "as soon as possible." NATO defense ministers met Feb. 10 and agreed that NATO had the resources to expand its operations in Afghanistan.

■ USAF honored the Electronic Warfare Evaluation Simulator team from the 412th Test Wing Electronic Warfare Directorate with the 2004 Air Force Modeling and Simulation Award for Acquisition, according to a Feb. 10 USAF press release.

■ Three Air Force civil engineering units garnered outstanding unit awards for 2004 from the Air Force Civil Engineer Support Agency and the Society of American Military Engineers. The units are: 341st Civil Engineer Squadron, Malmstrom AFB, Mont. (small unit category); 18th Civil Engineer Group, Kadena AB, Japan, (large unit category); and 934th Mission Support Group's civil engineer flight, Minneapolis-St. Paul IAP/ARS, Minn. (reserve unit).

■ Black Engineer of the Year awards went to two Air Force Research Laboratory engineers: Chandra Curtis and Lawrence Porter. Curtis is a digital avionics systems engineer for the munitions directorate, Eglin AFB, Fla., and was chosen for the "Most Promising Engineer in Government" award. Porter, a retired research and development executive of the materials and manufacturing directorate, was honored with the "Pioneer" award for his work in forging collaborative programs between the directorate and black colleges, universities, and other minority institutions.

■ The officers' club at Patrick AFB, Fla., sustained "extensive damage" from a fire earlier this year, said a base official. Most of the 35,000 square-foot club, which has operated since 1951, was destroyed. Lt. Col. Rick Czyzewski, 45th Mission Support Group deputy commander, said "there's no timeline" on an investigation into the fire. Many programs and services were transferred to other base facilities, he said.

■ DOD has launched the Joint Theater Trauma Registry to capture data about "life-saving measures at the point of injury," said L. Harrison Hassell, director of the registry system, which is located at Ft. Sam Houston, Tex. The registry will provide information on new medical devices and techniques and indicate what treatments were most effective in the field. Hassell said it is providing combat trauma care information never before available, aiding medical and operational planning.

■ The South Dakota Air and Space Museum finally has a B-1B Lancer display. SDASM worked with the National Museum of the Air Force and Ellsworth Air Force Base, from which the bombers have flown for 18 years, to obtain the B-1, which was last flown by Dyess AFB, Tex., but was given an Ellsworth tail code during preparation for display. Ellsworth received the bomber in 2003, and officials said the base spent nearly 18 months "on and off," removing parts, including radar and avionics, to get the bomber ready for display.

Druyun Fallout Hits Major Programs

The Air Force in February announced that it will recompete the second set of Small Diameter Bomb contracts, which will develop an SDB variant with a seeker that can destroy moving targets.

The decision follows a Government Accountability Office finding that former Air Force official Darleen A. Druyun improperly influenced the first competition. GAO found that she may have helped to steer the work to Boeing. (Druyun pleaded guilty last fall to violations of federal regulations. See "Washington Watch: Acquisition Gets a Scrub Down," January, p. 9.)

According to a USAF statement, the new SDB phase, or Increment 2, will be worth approximately $1.7 billion. The total includes research, development, and production funds. (The first SDB increment, developing a baseline near-precision weapon, is estimated to be worth $1 billion. It will remain with Boeing.)

The Air Force "plans to award a competitively based contract ... in early FY06," officials stated. They said the new competition should not delay the program, which is developing a next generation, 250-pound guided weapon to complement the larger Joint Direct Attack Munition.

Also in February, the GAO recommended a new competition for a major portion of the $970 million C-130 Avionics Modernization Program, also won by Boeing. The Congressional watchdogs suggested the Air Force recompete C-130 AMP installations and look into new competitions for the remainder of the program.

GAO determined that Druyun influenced the way competing proposals were evaluated, again in Boeing's favor. According to the GAO, Druyun "either expressly or implicitly ... directed revisions to ratings of Boeing's proposal" and to each of the losing competitors' proposals.

Druyun previously had acknowledged a bias, saying in her plea agreement last year that an objective source selector "may not have selected Boeing" for C-130 AMP. The 2001 decision was considered a major upset at the time, as Lockheed Martin had designed and built the C-130s.

GAO wrote that normally it would recommend that the entire program be recompeted, but this may be impossible as work has been under way for more than three years. The Air Force statement notes that the C-130 AMP production contract has yet to be awarded and production will run from 2006 to 2016.

Acting Pentagon acquisition chief Michael W. Wynne said Feb. 14 that DOD is also taking a closer look at eight other programs that may have problems. After reviewing 407 contracts, defense contracting officials identified eight cases that will be referred to the DOD inspector general for further consideration.

The problematic contracts included: a $400 million National Polar-orbiting Operational Environmental Satellite System sensor won by Boeing; C-5 AMP, won by Lockheed Martin and worth $561 million; the C-40, as a C-22 replacement (two Boeing contracts worth more than $300 million); KC-135 Programmed Depot Maintenance, won by Boeing and Pemco and worth $1.5 billion; and 60K Tunner loader logistics, won by SEI and worth $158 million.

Wynne told reporters that the eight contracts were flagged because "the process was either sped up, interrupted, or unduly influenced" by Druyun. He emphasized that these are process problems, and the IG will determine if there was actual wrongdoing.

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the RQ-1 was used even earlier, in the Balkans in the mid-1990s.

The MQ-1 version has advanced sensors and Hellfire missiles. Reaching IOC means the UAV has completed testing and met maintainability and supportability thresholds. ■

Senior Staff Changes

NOMINATIONS: To be **General:** William R. **Looney III.** To be **Lieutenant General:** Charles E. **Croom Jr.,** Claude R. **Kehler.** To be **Brigadier General:** James J. **Dougherty III,** Patricia C. **Lewis,** Benjamin J. **Spraggins.**

CHANGES: Brig. Gen. (sel.) C.D. **Alston,** from Dep. Dir., Ops., AFSPC, Peterson AFB, Colo., to Dir., STRATCOM, Multinational Force-1, Baghad, Iraq ... Maj. Gen. James B. **Armor Jr.,** from Dir., Signals Intel. Sys. Acq. & Ops., NRO, Asst. SECAF (Space), Chantilly, Va., to Dir., Natl. Security Space Integration, Undersecretary AF, Pentagon ... Maj. Gen. Paul W. **Essex,** from Dir., P&P, AMC, Scott AFB, Ill., to Cmdr., AAFES, Dallas ... Brig. Gen. (sel.) Gregory A. **Feest,** from Cmdr., 379th AEW, ACC, Al Udeid, Qatar, to Dep. Dir., Ops., AETC, Randolph AFB, Tex. ... Lt. Gen. (sel.) Claude R. **Kehler,** from Dir., Natl. Security Space Integration, Undersecretary AF, Pentagon, to Dep. Cmdr., STRATCOM, Offutt AFB, Neb. .... Gen. (sel.) William R. **Looney III,** from Cmdr., ASC, AFMC, Wright-Patterson AFB, Ohio, to Cmdr., AETC, Randolph AFB, Tex. ... Brig. Gen. (sel.) Ellen M. **Pawlikowski,** from Materiel Group Dir., Airborne Laser, ASC, AFMC, Kirtland AFB, N.M., to Prgm Dir., MILSATCOM, Jt. Prgm. Office, SMC, Los Angeles AFB, Calif. ... Maj. Gen. Robin E. **Scott,** from Dep. Dir., Jt. Warfighting Capability Assessments, Jt. Staff, Pentagon, to Cmdr., AFOTEC, Kirtland AFB, N.M.

COMMAND CHIEF MASTER SERGEANT CHANGE: CMSgt. Rodney J. **McKinley,** to CCMS, PACAF, Hickam AFB, Hawaii.

SENIOR EXECUTIVE SERVICE RETIREMENT: Robert S. **Boyd.**

SES CHANGES: Steven A. **Cantrell,** to Dir., Intel. Analysis, DCS, Air & Space Ops., USAF, Pentagon ... Donald L. **Damstetter,** to Dir., Financial Mgmt. & Comptroller, SOCOM, MacDill AFB, Fla. ... Maureen T. **Koetz,** to Principal Dep. Asst. Secy., Instl., Env., & Log., OSAF, Pentagon ... Margaret **Leclaire,** to Dep. Dir., Strategy & Policy, TRANSCOM, Scott AFB, Ill. ... Ronald A. **Poussard,** to AFPEO (Combat & Mission Spt.), Asst. SECAF, Acq., Pentagon ... Debra K. **Walker,** to Dep. Dir., Resources, DCS, Instl. & Log., USAF, Pentagon. ■

The Iraq Story Continues

Casualties

By March 1, a total of 1,490 Americans had died in Operation Iraqi Freedom. The fatalities included 1,486 troops and four DOD civilians. The number of Americans killed in action by enemy attack is 1,139, and 351 died in noncombat incidents.

A total of 11,220 troops have been injured. Of those, 5,387 returned to duty within three days, and 5,833 were unable to quickly return to duty.

Ten Dead in UK C-130 Crash

A Royal Air Force C-130 transport went down in Iraq Jan. 30, killing nine British airmen and one soldier. It was the greatest loss of life for the UK, in a single event, during Operation Iraqi Freedom.

The aircraft crashed about 25 miles north of Iraq's capital while flying a short mission from Baghdad Airport to Balad Air Base, on the night of Iraq's election.

The cause of the crash was not immediately known, and by early March, no official findings had been released. Various Iraqi insurgent groups claimed to have shot the Hercules down with surface-to-air missiles, however.

USAF photo by SSgt. Dawn M. Bolen

New Kevlar "shorts" worn by 2nd Lt. Wendell Morgan, 1st Security Forces Squadron, Langley AFB, Va., prevent wounds to the vital femoral artery, which passes close to the outer surface of the upper thigh. The gear weighs eight pounds, with 28 layers of Kevlar that will withstand a 9 mm bullet. The Marine Corps first started testing this new type of gear. USAF recently sent 26 airmen on deployment with the gear to test its utility.

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Coordinates are punched in, and troops and materiel are quickly transported to an exact location. It's the stuff you find in science fiction. But in the real world, on the modern battlespace, the C-130J does just that. The J is a totally new, advanced, fully integrated digital weapons system. Its sophisticated positioning system can deliver 20 tons of cargo to a precise 10-foot-by-10-foot navigation location. Or complete an intricate search and rescue pattern. With flat panel, full-color multifunction displays, its cockpit looks more starship than aircraft. What's more, its state-of-the-art avionics even talks to the crew. C-130J. Advanced. Proven. Ready.

LOCKHEED MARTIN

We never forget who we're working for

Action in Congress

By Tom Philpott, Contributing Editor

Slim Quality of Life Package; Veterans' Issues on Stage; Raising Death Benefits; Survivor Care Lacking ....

2006 Military Personnel Initiatives

President Bush's 2006 defense budget request to Congress in February contains a 3.1 percent military pay increase, the seventh straight set at half a percentage point higher than private sector wage growth to make service pay more competitive.

The Administration also proposed increasing military housing allowances next January by enough to keep pace with rental costs, estimated at four percent nationwide.

Those are the only significant active duty qualify of life initiatives in the 2006 request, which also contained nothing new for Guard and Reserve personnel. Indeed, in unveiling the budget at the Pentagon, defense officials cited reserve initiatives Congress approved last year, providing $203 million next year on expanded transition health benefits and Montgomery GI Bill benefits for mobilized reservists.

Under the GI Bill provisions, National Guard and Reserve members mobilized for more than 90 consecutive days but less than a year will receive an additional $114 per month in benefits in 2005, for a total of $402 per month. Members mobilized from one to two consecutive years will receive an additional $314 per month for a total of $602. Members mobilized more than two consecutive years will receive an additional $515, a total of $803 per month.

2006 Veterans Initiatives

The Administration for the third year in a row proposed a $250 annual enrollment fee and higher pharmacy copayments for veterans in lower-priority categories 7 and 8, which include those who are neither poor nor suffering from service-connected disabilities. Congress already has moved to derail half the President's plan.

Republican majorities on both the House and Senate Veterans' Affairs Committees rejected the proposal to increase the $7 co-payment to $15. They did embrace the idea of an annual enrollment fee for 2.4 million lower-priority veterans.

The Senate panel, chaired by Sen. Larry Craig (R-Idaho), echoed the call for a straight $250 annual fee. But the House committee, chaired by Rep. Steve Buyer (R-Ind.), voted to set the annual fee for priority 7 enrollees at $230, matching the yearly enrollment fee for under-65 military retirees who use Tricare Prime, the military managed care program. For priority 8 veterans, the House plan proposes a four-tier sliding scale fee—$230, $250, $350, or $500—depending on a veteran's income.

USAF photo by SrA. John Parie

Troops will get pay boost.

Craig and Buyer, in separate letters to their budget committees, explained that difficult choices have to be made this year to curb costs or increase VA revenues, given the thousands of new veterans returning from war with severe injuries and post traumatic stress disorder.

"VA must garner supplemental funding from some source, and there are no easy options," Craig wrote.

Veterans service organizations have protested that $250 a year is too much even for nonindigent veterans to pay. However, Craig noted the Tricare fee for retirees, saying that shorter-serving veterans are no "more worthy" than retirees.

Buyer, too, said enrollment fees will "correct the inequity" between lower-priority veterans and Tricare users.

Senate and House committee Democrats sent their own "views and estimates" letters to the budget committees urging rejection of the enrollment fees for lower-priority veterans and recommending new initiatives costing several billion dollars.

Democrats joined veterans service organizations in condemning the enrollment fees, which they said would discourage veterans from using VA health care. They said the effect would send the "wrong message" in wartime.

Death Benefits Advance

The Bush Administration has earmarked $400 million of the Defense Department's new $75 billion wartime supplemental budget to be used to improve military death benefits.

Those death benefits, as the supplemental moves toward Senate passage at least, continue to be the set worked out late last year between Sen. Jeff Sessions (R-Ala.) and David S.C. Chu, undersecretary of defense for personnel and readiness. They would raise maximum coverage under Servicemembers' Group Life Insurance from $250,000 to $400,000, and the government would pay premiums on that additional coverage to all members assigned to combat areas. Also, the current $12,400 death gratuity would be increased to $100,000 but only for deaths that occur in combat areas.

The service vice chiefs of staff and various service associations opposed creation of a kind of two-tiered death gratuity during early February testimony before House and Senate committees. But supporters of alternatives to Sessions' bill, co-sponsored by Sen. Joseph Lieberman (D-Conn.), appeared to have no time to gain traction, particularly in the Senate, as Republicans moved swiftly to pass the President's latest wartime supplemental.

Service associations sounded resigned to having to address what

will be a death gratuity disparity, based on where a service member is killed, in subsequent legislation. The Military Coalition, an umbrella group for more than three dozen service associations, including the Air Force Association, also recommended providing $100,000 in SGLI coverage cost-free to any member who elects $300,000 in paid coverage. Additionally, they wanted to end reductions in military survivor benefits for those who also receive VA indemnity payments because the member died while on active duty or because the retiree died from service-connected ailments.

Aid to Survivors

Sen. Larry Craig called on military, Social Security, and VA officials to coordinate death benefit information and be far more responsive in caring for families that have suffered wartime losses. The chairman of the Senate Veterans' Affairs Committee was responding to testimony he heard in mid-February from families that lost loved ones in Iraq and Afghanistan.

The testimony of these families that said they waited months for various services and payments or received contradictory information from agencies was "stunning and upsetting," said Craig.

"Today we found out that many of those new widows are not getting the level of service they should be receiving," Craig said.

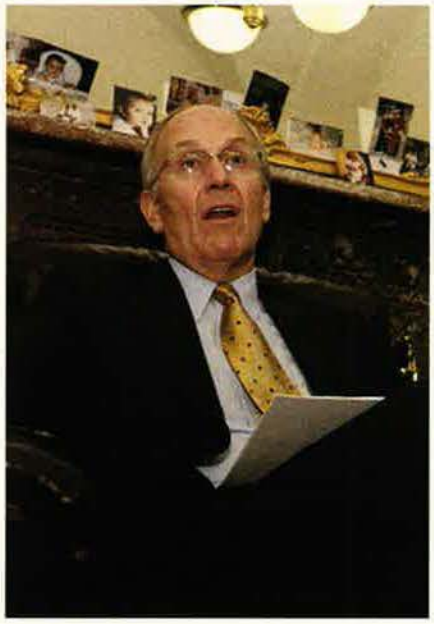
Tiffany Petty, a 25-year-old mother of two from Craig's home state, said she first was told her husband was killed instantly, only to learn later that he died some time after being wounded. Then she got confused and contradictory information on what benefits she and her children would receive, and nine months after her husband's funeral, she said, she learned that its bill hadn't been paid as she had expected.

Craig urged the Departments of Defense and Veterans Affairs to work with the Social Security Administration to provide a "one-stop" information source to survivors, both in writing and on the Internet, where they can go to get customized, integrated benefit information.

Key Bills Reintroduced

In the 109th Congress, lawmakers have reintroduced various bills important to military retirees and survivors. Here's a rundown:

■ Paid-Up SBP Premiums. Rep. James Saxton (R-N.J.) has reintroduced a bill (HR 968) to change the effective date from Oct. 1, 2008, to Oct. 1, 2005, for paid-up coverage under the Survivor Benefit Plan for retirees who reach age 70 and have paid premiums for at least 30 years. In approving the paid-up rule in 1998, Congress delayed the effective date by 10 years to reduce costs.



AP photo/Evan Vucci

Craig says DOD and VA fail survivors.

■ SBP/DIC Offset. Rep. Henry Brown (R-S.C.) has reintroduced his bill (HR 808) to end the dollar-for-dollar offset in SBP payments for spouses who also are eligible for VA Dependency and Indemnity Compensation because their spouse died on active duty or, in retirement, from a service-connected ailment. Sens. Bill Nelson (D-Fla.) and Jon Corzine (D-N.J.) introduced a measure (S 185) that combines the effect of the two House bills above, proposing both a 2005 paid-up rule for SBP premiums and an end to the SBP/DIC offset.

■ Keep Our Promise Act. Reps. Chris Van Hollen (D-Md.) and Jeff Miller (R-Fla.) have reintroduced the Keep Our Promise to America's Military Retirees Act (HR 602) that would waive Medicare Part B premiums for military retirees and their dependents who entered service on or before Dec. 7, 1956. They also would gain access to the Federal Employees Health Benefits Program if that provides a better option for them than Tricare for Life. Sen. Tim Johnson (D-S.D.) has reintroduced companion legislation (S 407) in the Senate.

New Legislation

Here are a few of the scores of new bills introduced to improve benefits for active duty service members, reservists, or military retirees:

■ The Guard and Reserve Readiness and Retention Act of 2005 (S 337 and HR 558) would improve retirement and health care benefits for National Guard and Reserve members. Introduced by Rep. Tom Latham (R-Iowa) in the House and Sen. Lindsey Graham (R-S.C.), who is the new chairman of the Senate Armed Services Subcommittee on Personnel, the bill would allow Guardsmen and Reservists to buy coverage under Tricare, whether or not they are mobilized.

It also would lower reserve retirement age based on the number of years served. Current retirement age of 60 would be reduced by a year for every two years a reservist served beyond 20 years. So a 20-year reservist still would retiree at age 60, but a reservist with 34 years could retire at 53.

The bill, which has bipartisan support, would cost $7 billion over five years, Latham said.

■ The Montgomery GI Bill Enhancement Act of 2005 (HR 269) would allow senior enlisted members who entered service before July 1, 1985, to enroll in the Montgomery G.I. Bill. Prior to that date, only the unpopular Veterans Education Assistance Program was offered. Introduced by Rep. Dave Camp (R-Mich.), the 2005 bill would open MGIB benefits in return for a $2,700 reduction in basic pay over 18 months. To be eligible, enlisted members would have to have served on active duty without a break since July 1, 1985, and must continue to serve some or all of the year before enactment of the bill.

■ Reps. Tom Lantos (D-Calif.), Sam Graves (R-Mo.), Jim McGovern (D-Mass.), and Christopher Shays (R-Conn.) have introduced HR 838, the Help Our Patriotic Employers at Helping Our Military Employees (HOPE at HOME) Act, to protect the financial security of families of activated Guard and Reserve members.

The bill would close the income gap between military pay and what reserve component members would have earned in the civilian jobs they have given up. The government would be required to do so for deployed reservists who are federal civilian employees, and the bill would offer incentives for private sector employers to follow that lead.

The key incentive would be a tax credit of up to half the salary that an activated reservist would have earned if he or she had remained a civilian. The amount would be capped at $30,000 per employee.

Sen. Mary Landrieu (D-La.) was expected to introduce companion legislation in the Senate. ■

Verbatim

By John T. Correll, Contributing Editor

Count on It

"The great objective of ending tyranny is the concentrated work of generations. The difficulty of the task is no excuse for avoiding it. America's influence is not unlimited, but fortunately for the oppressed, America's influence is considerable, and we will use it confidently in freedom's cause."***—President Bush, inaugural address, Jan. 20.***

Not Your Father's NATO

NATO "is no longer the primary venue where trans-Atlantic partners discuss and coordinate strategies."***—German Chancellor Gerhard Schroeder, Reuters, Feb. 12.***

Outposts of Tyranny

"To be sure, in our world there remain outposts of tyranny—and America stands with oppressed people on every continent—in Cuba, and Burma, and North Korea, and Iran, and Belarus, and Zimbabwe."***—Secretary of State Condoleezza Rice, Senate confirmation hearing, Jan. 18.***

Technology for the Alleyways

"Information technology is not a bad thing. Technologically advanced sensors are useful even in the most primitive combat zones. But this war clearly shows that the military has evolved a technology culture that all too often fields information systems with scant regard to their utility for saving lives of soldiers and marines. Net-centric technologies give generals and admirals an unprecedented view of the sea and air battle. We need instead to gain 'culture-centric' advantages that will give soldiers an unprecedented view of the enemy lying in wait across an alleyway."***—Retired Maj. Gen. Robert H. Scales, former commander of the Army War College,*** **Washington Times** ***op-ed, Feb. 3.***

Rescoping Precision

"When we've talked about precision warfare in the past, it's been in terms of hitting a tank or an SUV from 15,000 feet in the air with a precision munition. In the future, the talk about precision gets down to the level of using individuals to go after individuals."***—James Thomas, deputy assistant secretary of defense for plans and resources,*** **Washington Post,** ***Jan. 26.***

The Trade-off for Troop Strength

"The long-term modernization of American military power is to be delayed to send a few thousand more troops to Iraq, where they would make no perceptible difference. Perhaps the new destroyer, submarine, fighter, and all other major weapons on the lists now circulating should be canceled or delayed anyway, if only to reduce the federal deficit. But it would be foolish to do so in order to send a few more units to drive up and down in Iraqi towns, where they can protect very little, and sometimes not even themselves."***—Edward M. Luttwak, Center for Strategic and International Studies,*** **Wall Street Journal** ***op-ed, Jan. 14.***

Targeting Auschwitz

"There's no question, we should have attempted ... to go after Auschwitz. There was a pretty good chance we could have blasted those rail lines off the face of the Earth, which would have interrupted the flow of people to those death chambers, and we had a pretty good chance of knocking out those gas ovens."***—George S. McGovern, former US Senator, Presidential candidate, and B-24 combat pilot in Europe in World War II, on whether US should have bombed the death camp,*** **Washington Post,** ***Jan. 30.***

Not Very Worried

"The possibility of a US attack against Iran is very low. We think America is not in a position to take a lunatic action of attacking Iran. The US is deeply engaged in Iraq."***—President Mohammad Khatami of Iran, Associated Press, Jan. 21.***

Others Are Watching

"Given the fact that Iran has a stated policy that their objective is the destruction of Israel, the Israelis might well decide to act first, and let the rest of the world worry about cleaning up the diplomatic mess afterwards."***—Vice President Dick Cheney, referring to, in his words, Iran's "fairly robust new nuclear program," MSNBC, Jan. 20.***

Mistake at the Cutting Edge

"It seems we will repeat the mistake made with the F/A-117 stealth fighter and B-2 stealth bomber. Large sums were spent to design the most advanced warplanes in the world, but only a handful were built. Yet American strategy depends on air superiority, which field commanders have taken for granted since World War II. How can the continued decline in air strength be justified? Can America no longer afford cutting-edge programs?"***—William R. Hawkins, senior fellow for national security studies at the US Business and Industry Council,*** **Washington Times** ***op-ed column, Jan. 26.***

New-Age Air Dominance

"The F-22 is not the focus of air dominance necessarily but, rather, a part of joint air dominance. ... The [Quadrennial] Defense Review is intended to complete a holistic view of air dominance."***—Vice Adm. Robert F. Willard, director for force structures, resources, and assessment, Joint Chiefs of Staff, Pentagon news briefing, Feb. 7.***

Missing Word

"The most significant thing about President Bush's inaugural address was the word he did not utter: terror. Until now, the war on terrorism has been the Administration's foreign policy paradigm, giving unity and coherence to disparate and morally contradictory policies: promoting democracy in the Middle East, for instance, while ignoring undemocratic practices in Russia and China. One would have expected Bush to make the war on terrorism the theme of his address."***—Robert Kagan, columnist and neoconservative notable,*** **Washington Post,** ***Jan. 23. (The State of the Union address, Feb. 2, had 26 references to terror and terrorists.)***

Flying Telephone Poles

It was early in the Vietnam War that Air Force pilots first encountered the threat of surface-to-air missiles—SAMs. North Vietnamese forces using Soviet-built SA-2 "Guideline" SAMs shot down their first USAF aircraft in 1965. This event added a major new dimension to the air defense threat, previously consisting of fighters and anti-aircraft artillery.

US pilots called the SA-2s (above and left) "flying telephone poles." The long, huge missiles could achieve speeds of Mach 3.5 and reach altitudes of 60,000 feet. The SA-2 photos on this page were snapped by an RF-101 reconnaissance aircraft near Hanoi.

Photo via Robert F. Dorr

USAF responded with Wild Weasels, two-seat F-100 fighters optimized for locating and destroying SAM sites. Later, the Air Force converted two-seat F-105Fs to G configuration for Wild Weasel duty. The F-105G pictured in the foreground, above, tail code 63-8320, is now on display at the National Museum of the United States Air Force, Wright-Patterson AFB, Ohio.

Top leaders at AFA's Orlando symposium report many serious challenges ahead.

Headwinds for Air Force

By Adam J. Hebert, Senior Editor

THE DAUNTING array of challenges that confront today's Air Force was the focal point of discussion for leaders who gathered in Orlando, Fla., for the Air Force Association's annual Air Warfare Symposium.

At the Feb. 17-18 event, titled "Expeditionary Air and Space Power—Forging the Interdependent Joint Force," uniformed officers and civilians discussed the effects of continuing operations in Iraq, Afghanistan, and other world hot spots.

Another prominent topic was the Pentagon's new Quadrennial Defense Review (QDR), which is now underway, and the impact of major modernization cuts on an aging and overextended force.

Addressing a packed assembly hall of 1,100 attendees were Gen. John P. Jumper, USAF Chief of Staff; Peter B. Teets, acting Secretary of the Air Force; Gen. John W. Handy, US Transportation Command and Air Mobility Command; Gen. Lance W. Lord, Air Force Space Command; Gen. Paul V. Hester, Pacific Air Forces; Lt. Gen. Ronald E. Keys, deputy chief of staff for air and space operations; and US Marine Corps Gen. James E. Cartwright, US Strategic Command.

The audience heard a mostly somber assessment of the state of Air Force affairs, though officials expressed determination to successfully meet the challenges of a difficult period.

Gen. John P. Jumper

Even when the solutions to prob-

the

USAF photo by SSgt. Suzanne M. Jenkins

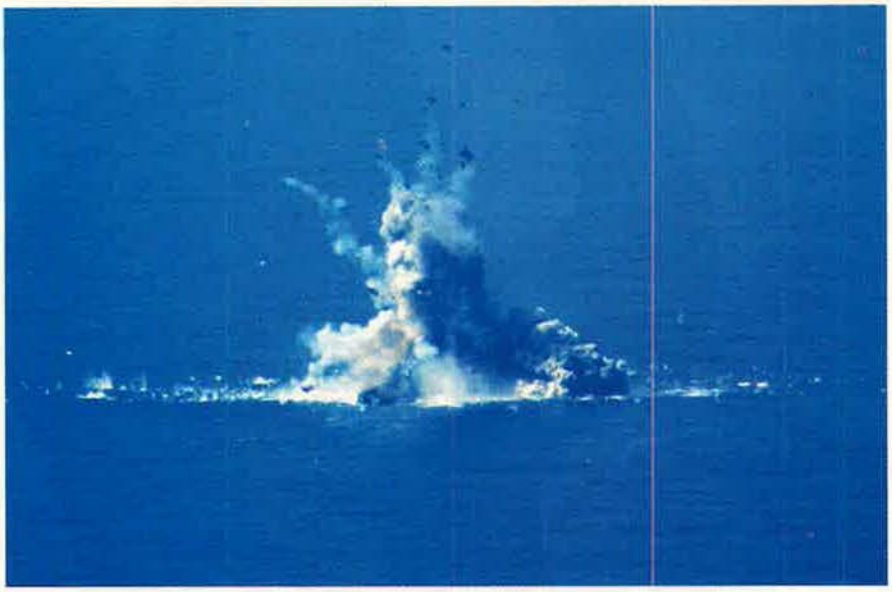
SrA. Robert Mascorro marshals a Predator unmanned aerial vehicle at Tallil AB, Iraq. USAF is increasingly relying on long-duration UAVs to meet the massive need for intelligence-surveillance-reconnaissance capability.

lems are identified, it is not easy to implement fixes, said Jumper, the Air Force Chief of Staff. One of several strategic goals he laid out for the Air Force was to "focus technology directly" on the task of finding solutions to the toughest problems.

For example, he noted, "We have for a long time said that our most difficult problem is hitting moving targets in and under the weather." It is a problem Jumper has been highlighting for years.

Pacific Air Forces recently demonstrated the ability to hit moving targets at sea with satellite-guided weapons. Moving ships were successfully attacked, through clouds, in Exercise Resultant Fury, a demonstration organized by Maj. Gen. David A. Deptula, the PACAF operations director.

In Resultant Fury, Air Force and Navy strike aircraft sank moving vessels off Hawaii, using all-weather Joint Direct Attack Munitions and a developmental target engagement system. (See "Aerospace World:



USAF photo by TSgt. Richard Freeland

USAF's inability to precisely hit moving targets through clouds has been a weakness. In PACAF's Resultant Fury exercise, B-52s destroyed moving ships with satellite guided bombs, as shown here.

Bombers Prove Their Maritime Capability," January, p. 13.)

Jumper cautioned that the "fact that we do this rapidly, in a demonstration," does not mean the problem has been solved. In fact, he said, it marks just the beginning of the effort. USAF now wants to quickly acquire this capability and put it in the field.

That, unfortunately, "is not the way we normally do things, so the system resists it," said Jumper.

The Chief recalled that he encountered the same problem when he pushed to equip the Predator unmanned aerial vehicle with a laser designator and Hellfire missile. The innovative combination of these technologies solved a critical combat need by making a long-duration sensor platform also a "shooter." Even so, the acquisition system resisted the change. "The system will not want to do anything that's not in the [official] program," Jumper said.

Other entrenched ways of thinking also need to be shaken loose, said the Chief.

Jumper cited the problem of exploiting "near space" as a perfect recent example of "*bad* effects-based thinking."

By "near space," he refers to the physical realm above 65,000 feet altitude (the highest point for powered aircraft flight) but below 984,000 feet (the lowest point for orbital spaceflight).

As Jumper sees it, the thinking of most pilots reaches a limit at 65,000 feet, while space operators care little about what happens below 984,000 feet. This kind of thinking leaves a vast "no man's land," between air and space, which remains unexploited, even though it could be used to great advantage for potentially little cost.

The kind of vehicle needed for near-space operations is not pretty. "It looks like a big dirigible," said Jumper. "It's full of gas or something, and it's hard to get off the ground." Still, he went on, near-space vehicles can stay aloft for months and can carry high-demand communications and surveillance capabilities.

Jumper has instructed Air Force Space Command to take the lead on developing near space as an operational realm.

The Air Force is also struggling to defend long-standing priorities. When F/A-22 funding was recently truncated in a "budget drill," Jumper said, there was no opportunity to defend the program. He expects the QDR to do that—to give the Raptor a chance to survive on its own merits.

The Chief says the F/A-22's value is undeniable.

"There are those who think that because Saddam Hussein buried his airplanes in the sand, ... the need for air superiority is over," Jumper said. "That is wrong." Other nations, he pointed out, continue to field advanced aircraft and air defense systems, and air superiority is the foundation of successful operations.

Jumper recently qualified as an F/A-22 pilot and shared the experience of his final training flight. Up against a "bunch" of F-15 Eagles and advanced surface-to-air missiles, the Raptor excelled.

"The Eagles are still trying to find you," but can't because of the F/A-22's stealthiness, Jumper recounted. "You build your shoot list, shoot all the Eagles, light a Lucky, and go home." He noted that some call this "strategic overmatch." By that they mean, "It's too much—you don't need that much." Jumper clearly disagreed.

The question is how many F/A-

USAF photo by Lisa Carroll

Air Force leaders will make a strong case for a larger F/A-22 force in the Quadrennial Defense Review. The Raptor has proved itself far superior to USAF's F-15s in recent operational tests.

USAF photo by TSgt. Keith Brown

Worldwide operations require a Total Force effort. The year 2004 ended with nearly 5,000 Guardsmen and 2,500 Reservists deployed to the USCENTCOM region. Pictured is an F-16 from the Colorado Air National Guard.

22s are needed, Jumper said. The Air Force insists that the minimum number is 381—enough to equip and support one squadron for each of 10 Air and Space Expeditionary Forces. In the QDR, the Air Force will work with the other services to determine how much air dominance capability is necessary.

The armed forces branches are taking steps to maximize coordination in the future, said Jumper.

"The service Chiefs today are discussing a series of 'centers of excellence,'" he said, for further development of joint command and control, unmanned systems, and close air support (CAS) efforts that are currently spread across the individual services.

Centers of excellence could "develop those concepts and procedures together, instead of developing [them] separately and then meeting once a year to fight about which one's the best," he said.

The Air Force can foster "jointness from within," said Jumper. It does not have to have it imposed from outside.

Peter B. Teets

While long-term needs are attracting much attention, Acting Secretary Peter B. Teets reminded the audience that the Air Force is still capably responding to a broad range of current demands.

"We ended 2004 with nearly 31,000 airmen in Southwest Asia, including 5,000 Air National Guardsmen and 2,500 Air Force Reservists flying over 200 combat sorties a day over Iraq and Afghanistan," Teets noted.

Since 9/11, more than a quarter-million sorties have been flown in the US Central Command area of responsibility. These comprise the full range, from intelligence-surveillance-reconnaissance (ISR) sorties to close air support, aerial refueling, aeromedical evacuation, and airlift.

There is no shortage of threats with which USAF must deal. Teets said the service is on guard against ballistic and cruise missiles, weapons of mass destruction, advanced surface-to-air missiles, and sophisticated combat aircraft.

In addition to these customary missions, the Air Force is now heavily engaged in what traditionally have been Army jobs. "When people talk about boots on the ground, many of those boots are worn by airmen," Teets said. At the end of 2004, USAF was filling more than 1,900 positions, in 16 different combat support jobs, for the Army.

The Air Force is, of course, busy worldwide, but Teets said the service's relationship with its airmen remains strong. "Our airmen take great care of their Air Force, and they trust the Air Force to take great care of them," Teets said.

The best evidence is that, generally, airmen "don't want to leave the service." In 2004, USAF lowered its accession goal by 3,000 airmen and still ended the year over its Congressionally authorized end strength.

But Teets noted that all is not well. Infrastructure needs are becoming a problem even at permanent operating locations. "The runway at Offutt AFB, Neb., was declared a safety hazard during an inspection three years ago," he said. "The main runway at Edwards AFB, Calif., ... is rapidly deteriorating. In five years, we don't expect it to be functional anymore."

The Air Force's long list of modernization requirements demands careful analysis. Teets cautioned against indiscriminate cuts. In the budgeting exercise last December,

USAF photo by SSgt. Jeremy T. Lock

More than 1,900 airmen were employed in 16 combat support roles for the Army at the end of 2004. Battlefield airmen, such as these combat controllers, are engaged throughout the combat zones.

USAF photo

$10.5 billion was removed from outyear F/A-22 accounts, a move that would eliminate approximately 100 Raptors. That, he said, means the unit cost of Raptors in those years is a relatively modest $105 million.

"Resources are bounded," Teets said. "That's why it's important to know what the next incremental F/A-22 is going to cost." Rather than kill the program at a time when the fighters are costing $105 million per F/A-22, the Defense Department needs to examine the cost and the benefit that would come from restoring those 100 Raptors.

To that end, Teets said he is "extremely pleased" that the QDR's terms of reference have been modified to give the military services a "very active role in the review. It's appropriate that we participate meaningfully in shaping the future of our Air Force."

Evidently, the original setup laid out by Secretary of Defense Donald H. Rumsfeld did not include adequate service participation.

Gen. John W. Handy

US Transportation Command is trying to adapt to the future, but is hampered by inadequate resources, according to Gen. John W. Handy of USTRANSCOM and Air Mobility Command.

Case in point: the growing airlift requirement in the wake of the Sept. 11 attacks. The Air Force currently has enough money in its budget to complete a purchase of 180 C-17 airlifters. There is a stated requirement for 222, based on the Mobility Requirements Study (MRS-05) released in 2001, before the attacks.

Moreover, pre-QDR cuts proposed an immediate end to Air Force C-130J procurement.

Ending the C-130J program "was a decision made in the dark of the night in a budget drill, ... supported by darn little analysis," the TRANSCOM chief said. Handy added that he was "pleased" when Rumsfeld told him that the cancellation would be reviewed in the QDR.

"We need the C-130J," Handy said. In February, he grounded 30 older C-130s because they had center wing boxes "cracked beyond repair." Another 60 Hercules aircraft were placed under flight restrictions. These restricted transports are now so limited that "all they can carry are passengers," and pilots are ordered to "avoid turbulence."

At the same time, TRANSCOM is flying an "almost inconceivable" number of missions.

"In a typical week, we have 1,900 air missions flying all around the world," Handy said. Cumulatively, that comes to more than 38,000 missions since October 2001, and those are "missions, not sorties," he emphasized.

Obviously, lift requirements today are far beyond what was anticipated when MRS-05 was put together, yet that study is the only analysis available "until we get MCS," Handy said.

MCS is the ongoing Mobility Capability Study being run by the Pentagon's Program Analysis and Evaluation office, in conjunction with the Joint Staff's J-4 logistics directorate.

Handy noted that TRANSCOM and Air Mobility Command are actually "very distant" outside observers of the process that will likely determine their future makeup.

Handy said he is "hopeful" MCS will better clarify the requirements for new and upgraded C-17s and C-5s. Further, the study "ought to identify for us the intratheater requirement for C-130s, how many Js we might need," and how many niche airlifters are needed.

Not only have numbers of missions changed since 9/11, but the way

USAF photo by TSgt. Stephen Faulisi

USAF's requirement for 222 C-17s is unfunded beyond 180. At top, a C-130J from the 815th Airlift Squadron takes off; here, a row of C-17s lines up on the tarmac.

they are flown has changed as well. Airlift is now more tactical.

The Air Force has increased its use of C-130s, to take Army trucks off the roads in the deadly "Sunni Triangle" section of Iraq. Although 85 percent of the materiel (fuel and water) driven around Iraq does not travel by air, TRANSCOM is picking up and delivering as much of the remaining 15 percent as possible. "We have dramatically minimized the convoy operations within the Sunni Triangle," Handy said.

Missions in Iraq and Afghanistan also have put a high demand on short flights of perhaps 1,000 miles, delivering a few pallets or "25 to 30 people—small stuff," Handy said. And they need to operate from very short airfields, too short for even C-17s or C-130s.

Therefore, the Air Force has identified a new requirement for a small, tactical airlifter. Air Mobility Command is "working with our partners in the Army because they have the same requirement—to replace their aged-out [C-23] Sherpas," Handy said.

What is needed is "something smaller than a C-130" for the short-haul combat missions. The Army already has a requirement for approximately 53 C-23 replacements, and TRANSCOM will define exactly what is needed for this mission area "fairly quickly." The Air Force knows this is "our obligation," Handy said.

Gen. Lance W. Lord

Air Force Space Command is looking at near space to "really enhance the effects we can generate," said Gen. Lance W. Lord, AFSPC commander.

The near-space realm is so promising, Lord said, that Space Command recently transferred $3 million in operations funds to the Space Warfare Center at Schriever AFB, Colo., to "help us develop what might be a residual theater capability with balloons," to be used for communications.

The funds will be used partly to develop a glider that will attach to a near-space balloon. "Once the balloon does its mission," Lord said, it will eject the glider, which will fly back to the launch site with the mission payload, allowing the payload to be reused. This concept will be tested in the spring.

A weather balloon-type vehicle, operating in the area between 65,000 and 80,000 feet, successfully demonstrated use of radio transmissions to various aircraft in January, Lord noted. Notionally, a series of balloons with communications equipment could be launched over Iraq, one every eight hours. "Because of the prevailing winds," Lord said they would stream over the territory, providing unbroken connectivity. "And you're not spending millions of dollars for a satellite. ... It's thousands of dollars to do a simple payload."

Near space may also improve time-sensitive missions, such as close air support.

If an air controller on the ground needs to get targeting information to an A-10, the message today may have to go from the controller, to a battle management aircraft, to the combined air operations center (CAOC), and back through the system again to the A-10.

Targeting information could be relayed much faster with near-space systems overhead to provide a line-of-sight communications link. A faster link from the ground forces to the CAS pilot "could really help that A-10 driver out," Lord said.

Gen. Paul V. Hester

The United States owns a valuable hedge against uncertainty in the vast Pacific region, said Gen. Paul V. Hester, commander of Pacific Air Forces.

"From Alaska through Hawaii out to Guam, at Andersen Air Force Base, we have a sovereign, strategic triangle that allows us to be in a defensive posture for our country and yet [have] deep penetration into the western Pa-

The New and Improved Style of US Strategic Command

US Strategic Command is abandoning the top-down, hierarchical organizational structure that worked during the Cold War face-off with the Soviet Union. Today's enemies, said Marine Corps Gen. James E. Cartwright, STRATCOM commander, can only be fought with forces that are fast and flexible.

"In a world that has distributed operations, a collaborative environment, ... if every decision moves from one organization to the bottom of the next one, all the way to the top" again, decisions may take so long they are no longer relevant. Today's technology is probably being forced into "yesterday's decision processes," Cartwright said.

Consequently, he is breaking down the old, slow, vertical decision-making process and investing functional commanders with much of the authority for STRATCOM's diverse missions.

For a variety of reasons, STRATCOM's functional component commanders "have significantly more authority than I do," Cartwright noted.

Using ISR as an example, the general said Vice Adm. Lowell E. Jacoby, head of the Defense Intelligence Agency, has legal and constitutional authority in the intelligence world, and in relations with the Justice and State Departments, that Cartwright cannot have. Therefore, "the decision authorities have been pushed down to a lower level."

Similarly, Cartwright relies on Air Force Lt. Gen. Michael V. Hayden, National Security Agency director, to lead STRATCOM's net warfare efforts. "That goes across the rest of our mission areas," as well, he said.

Some of STRATCOM's mission areas, such as nuclear weapons targeting and security, "need absolute, positive sure control," Cartwright said. But for the most part, STRATCOM's capabilities exist to provide global power to the regional combatant commanders.

STRATCOM's staff at Offutt AFB, Neb., is spreading out to the functional commands. "My headquarters was the largest combatant command when we started," Cartwright said. "Within the next six months, we'll be the smallest. The components are going to do the work."

These moves will put stress on STRATCOM's culture, but the changes are needed to optimize US military effects.

"We've got to find a way to get ... decision cycles flatter, quicker, more responsive, able to take advantage of all the elements of national power," the general said. "We're all type As. If I keep these people in my headquarters, they'll do the component's job for them. We're going to make sure that that doesn't happen."

USAF photo by SrA. Joshua Strang

PACAF has big plans for Andersen AFB, Guam. Bombers such as this B-2 regularly deploy to the island to boost US combat power in the Pacific, and Global Hawk UAVs may be coming to the base.

cific for engagement, ... any kind of action, all under an American flag," he said.

The three points on this "strategic triangle" will likely be growth areas for the Air Force, Hester said. Guam has enormous unrealized potential. "We have taken Andersen into a kind of caretaker status" over the years, he noted, but PACAF has "great plans for Andersen out in the future."

Hester showed a slide with a picture of 175 B-52 bombers sitting on the ramps at Andersen in 1973. Bombers have recently begun to return to the island, in small numbers, as part of the Air Force's expeditionary rotations, and a new shelter allows even B-2 stealth bombers to deploy to the island.

"We look forward to Global Hawk being stationed permanently out there," Hester said, along with fighters, bombers, and tankers on a rotational basis. "We expect to see the full breadth of inventory of the US Air Force" flowing through Guam on AEF rotations in the future, he said.

In the central Pacific, Hawaii hosts one of the Air Force's combined air operations centers and is home to the headquarters of both US Pacific Command and PACAF.

In 2006, Hickam Air Force Base will receive eight C-17 Globemasters, the first to be permanently based outside the continental United States. And like Andersen, Hickam has much unused capacity and room for on-site expansion.

To the north, Hester said, "Alaska is a growth industry for us." The massive Cope Thunder exercises provide "great joint and combined training." The Alaskan ranges are benefitting from long-term investment and have threat emitters on the ground and enough airspace to "enable us to use all of our weapon systems when we go up there," Hester said.

Other nations also like what Alaska has to offer. Many allies from Europe want to come to Cooperative Cope Thunder exercises. For those incapable of traversing the North Pole, Alaska is "a long way" for them to travel, he noted.

The Indian Air Force has come to Cope Thunder as well. PACAF is planning a return trip to the subcontinent, in a follow-on to last year's surprising Cope India exercises. This November, USAF will take ground-attack F-16CJs from Misawa AB, Japan, to India for a large-force exercise. "We're looking forward to that very much," Hester said, as the events show "growing respect between our two nations."

One final growth area will come via a new warfighting headquarters.

The headquarters will give PACAF "the ability to have a standing construct" with an air operations center that can watch daily operations and smoothly transition to wartime operations. It will also have a standing joint task force staff, including a trained air commander.

There are two CAOCs in the Pacific region—one at Hickam and one at Osan AB, South Korea. Hester said PACAF was not yet ready to announce where the warfighting headquarters will be located.

Lt. Gen. Ronald E. Keys

Tight budgets and a broad set of challenges are forcing the Air Force to "make some hard decisions," said Lt. Gen. Ronald E. Keys, deputy chief of staff for air and space operations. This is a familiar quandary for the service—and one that has left the Air Force with no more "low-hanging fruit" to discard.

"People always ask me, 'Well, what do you have too much of, and what do you need more of,' " Keys said. "Let me give you a news flash. I've got too much of not enough. That's my problem."

It will not be easy for USAF to achieve the balanced, adaptable portfolio of capabilities it needs. "The choices are not between good and evil. The choices are between bad and worse," he said. The Air Force is "going to have to start shooting thoroughbreds in order to save the rest of the herd. That is a very tough decision that has to be made."

New capabilities cannot be incremental improvements. Keys said four percent better at something is not good enough—capabilities need to be 24 percent better. "That will frustrate some of you, as you come to me with something that's good, and it works, but it doesn't give me the leverage that I need."

Keys said more thought must go into future capabilities. They must address modern warfighting needs and integrate smoothly into the systems used by the other services.

Air base defense, for example, is not the same as it was in the Cold War.

At Balad AB, Iraq, US troops are "taking between 30 and 50 rockets and [mortar] attacks per month. So I'm going to need some capability that's not resident in the Air Force to protect the base while I generate airpower."

Integration is also key. With the Air Force and Army working closely together, USAF communications gear must be able to talk to Army systems. Tactical air control parties are "out there in the forward edge of the battle," Keys noted, "so don't bring me stuff that's not compatible, because I'm not going to be happy." ■

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For many aircraft that come here, the Aerospace Maintenance and Regeneration Center is a place of renewal.

Like a Phoenix

Photography by Guy Aceto, Art Director, **and Paul Kennedy**

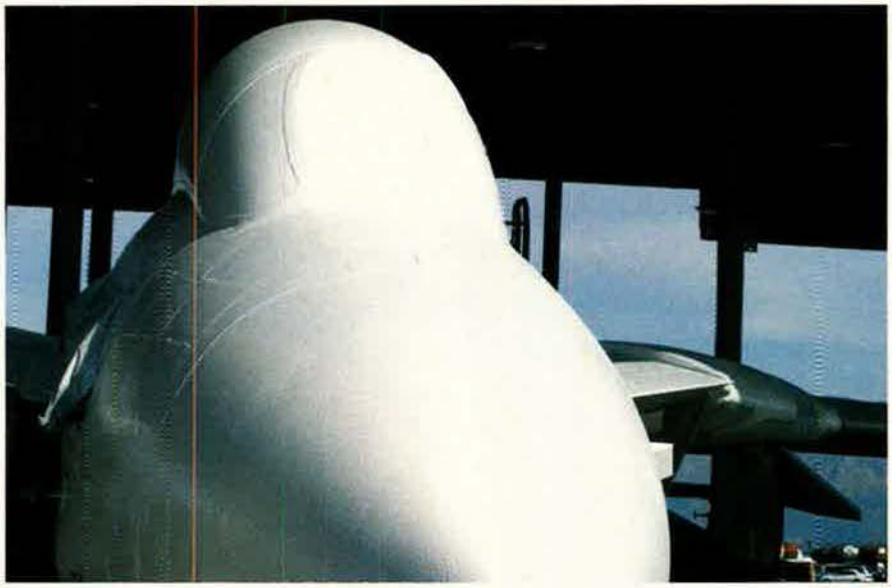
Out on the Arizona desert, row after row of early model F-16As stand carefully protected from the wind, dust, and rain, ready for a possible return to action. The fighters are among the thousands of aircraft from all of the armed services stored at the Aerospace Maintenance and Regeneration Center, a special Air Force Materiel Command site that occupies a 2,600-acre swath of Davis-Monthan Air Force Base, near Tucson.

The place is often called "the Boneyard," but that's a misnomer. Aircraft frequently do not come here to die but to be regenerated. AMARC has adopted as the emblem of its mission a stylized Phoenix rising to new life.

Staff photo by Guy Aceto

AMARC may now be a vast aircraft warehouse, but it started small. After World War II, the Army had a surplus of B-29s and C-47s, and it created at Davis-Monthan a site for storing them until they could be scrapped. The place was perfect—dry, remote, with hard soil. From that humble beginning, AMARC's holdings have grown to some 4,500 fighters, bombers, transports, and other types of aircraft. The services reach into AMARC's stockpile for aircraft and parts of all types.

While thousands of World War II aircraft met with the scrapper's torch, the goal today is to preserve airframes and parts for later use. At right, a Navy F-14 Tomcat sports a covering of Spraylat, a protective coating that dries to form a tough, skintight plastic film that can be peeled off.



Staff photo by Guy Aceto

Staff photo by Guy Aceto

At left, AMARC aircraft preservation technician Manny Vasquez applies a coat of Spraylat to an F-16. Aircraft arriving at the facility go first to this long open shelter. Workers drain all fluids and begin the process that will preserve the fighter. Storage is customized for three different types of use—a return to flying, spare parts, or eventual disposal. In all cases, the ejection seat system is deactivated and aircraft seams are taped over.

In 2004, AMARC processed into storage a total of 217 aircraft. It was a highly diverse fleet, including C-141 cargo aircraft, F-14 fighters, HH-3 helicopters, and F-16s such as the one at right, which last flew with the Minnesota Air National Guard. Doug Anglemyer (left) and Johnny Mendez, both aircraft preservation specialists, are spraying the F-16 with preservation coating.

Staff photo by Guy Aceto

Staff photo by Guy Aceto

Against a backdrop of vaulting southern Arizona mountains, what looks like a herd of F-4 fighters and T-38 trainers (above) stands in the hot and arid desert environment. Some will be turned into unmanned, remotely piloted target drones, while others will be "parted out" to foreign customers. At right, older model KC-135 aerial tankers are parked in a straight line across the rock-hard desert floor.

This desert logistics center in 2004 regenerated 21 F-4 fighters, performed detailed inspections on 24 A-10 attack aircraft, and processed or maintained thousands of aircraft.

Staff photo by Guy Aceto

Staff photos by Guy Aceto

The photo at far left shows a collection of reclaimed C-130 propellers, carefully wrapped and precisely aligned for future use. At near left, a mothballed B-52 bomber still wears its "war paint" from another time, while a preserved C-141 stands in the background.

AMARC ascribes great importance to its role in the A-10 service life extension program—or SLEP. It supports the program, which began at Ogden Air Logistics Center at Hill AFB, Utah. Workers here are on track to complete the reconditioning of 24 sets of wings this year.

At right, aircraft technician Angela Drottz custom fits a piece of antiballistic foam to protect the interior of the Warthog's wing. Drottz created special templates to use as she sculpts each piece by hand. She is the only person in the Air Force who does this work.

Photo by Paul Kennedy

Photo by Paul Kennedy

The facility completed its first A-10 SLEP wings in 2003. At present, it takes about 140 days to complete a set. Each wing has its own individual quirks and problems; many of the repairs are "handmade" in nature.

At left, AMARC technician Scotty McClure prepares to replace the air foil on an A-10 wing.

At right, Nilo Alvarado, an aircraft technician, works on an operational A-10 undergoing SLEP. Other A-10s (below) have been stripped of their wings and await evaluation. The wings from some of these Warthogs may eventually be given to others deemed more flightworthy.

USAF photo

Staff photo by Guy Aceto

Another major program focuses on the F-4 fighter. The air forces of many other countries still operate the legendary Phantom. However, the QF-4 drone has been successful in its own right. At right, technicians (l-r) Bill Griffie, Shane Guerrero, and Jeff Denlinger work on F-4Es withdrawn from storage to undergo regeneration as part of the Full-Scale Aerial Target program. Last year, the Air Force brought out of storage 21 Phantoms. After reconditioning, they were flown to California, where a contractor completed the conversions.

Photo by Paul Kennedy

Staff photo by Guy Aceto

The AMARC workforce also has the task of dismantling and displaying certain weapons under terms of the strategic arms reduction accords of the 1980s and 1990s. The photo at left shows a B-52G, serial no. 6488, which was sent to Davis-Monthan in 1993. It has been partially dismantled and left outside, open to inspection by Soviet (now Russian) satellites seeking to verify US compliance.

At right are the remains—a wing and tail section—of a C-141, whose components were used to supplement the active fleet. In the background is a huge C-5, awaiting reclamation as the need arises.

Staff photo by Guy Aceto

The AMARC workforce is experienced and stable. Many are former members of the armed services. Moreover, they are multiskilled, having been trained to work on more than 70 types of aircraft systems. They modify aircraft to current standards, making sure they are airworthy before they go back into active service. At right, aircraft worker Kim Brown seals the flap on an A-10.

AMARC is a major source of special tooling and special test equipment. It stores more than 318,000 line items of production tooling for aircraft manufacturing. This storage would cost the government millions of dollars at a commercial facility.

USAF photo

Photos by Paul Kennedy

At AMARC, packing and crating is a big deal. Shipped items can be small and fragile, or large and complex. The center maintains a 60,000 square-foot facility dedicated to custom packaging of every shipment. Each crate or box is crafted in the carpentry shop. At left, packaging specialist Dawn McGrew prepares a high-priority aircraft part for shipment.

Each year, workers salvage, inspect, repair, and certify thousands of parts. AMARC's commodities division removes parts and assemblies from the center's stored aircraft and ships them to support active aircraft. In 2004, the center's workers reclaimed more than 22,000 major parts valued at nearly $700 million. Below, David Montano, a packaging specialist, inspects a reclaimed aircraft part prior to shipment.

A visitor to AMARC sees much more than conventional aircraft. The facility serves as a storage site for expensive tooling for the B-2 stealth bomber, as well as for huge sections of Titan missiles, seen at right and below.

Staff photos by Guy Aceto

Staff photos by Guy Aceto

At left is a Spraylat-encased D-21 drone, a somewhat mysterious spy aircraft bearing more than a passing resemblance to the much larger SR-71 Blackbird spyplane. Above, sentimental nose art adorns an F-111 Aardvark fighter-bomber that took part in the 1986 Eldorado Canyon raid on Libya as well as Desert Storm five years later.

The photo at right recalls two legendary Air Force warhorses—the F-4 Phantom and the B-52 Stratofortress (93 of which are still active). With its wide variety of aircraft, the center serves as a microcosm of the Air Force.

The work out in the desert never ends. Of the thousands of aircraft that arrive at AMARC, roughly 25 percent return to flying status of some sort. In no way—mission, outlook, or action—does AMARC qualify to be known as a "boneyard." The Phoenix is the proper image. ■

Staff photo by Guy Aceto

As a new USAF report shows, the March 2002 battle in Afghanistan taught many lessons.

The Echoes of Ana

By Rebecca Grant

When then-Maj. Gen. Franklin L. "Buster" Hagenbeck of the Army published critical remarks about the Air Force in fall 2002, the subject of those words—a battle called Operation Anaconda—became a major sore point between airmen and soldiers.

The public part of the controversy quickly faded into the background. Hagenbeck soon was promoted to a three-star post. Top Army and Air Force leaders worked hard to effect improvements in air support of ground forces, which paid tremendous benefits in Operation Iraqi Freedom in spring 2003.

Even so, Anaconda—a March 2002 battle against Taliban and al Qaeda fighters in Afghanistan's soaring eastern mountain ridges—remained a source of interservice friction.

An official Air Force report, declassified and released in February, makes clear that the argument was not superficial. This two-week battle became the impetus for the services to revise everything from equipment and training for ground controllers to component command relationships at the highest levels.

The Air Force report, "Operation Anaconda: An Airpower Perspective," is the source of most of the facts offered in this article. The rest is based on publicly available reports and published material.

Into Public View

The interservice quarrel flared into public view in September 2002. In that month's issue, *Field Artillery* magazine, an Army journal, published a lengthy interview with Hagenbeck. He had served as commander of Coalition Joint Task Force Mountain in Afghanistan and was, as such, commander of Anaconda.

The Hagenbeck interview marked a low point in the Anaconda affair. In it, the Army officer endeavored to defend decisions he had made in the operation. However, he also took the opportunity to make ill-informed comments about Air Force operations.

Hagenbeck heaped praise on Navy and Marine Corps pilots, pointing out that they routinely flew low in support of the land forces. "They were *terrific*," he said. When it came to the Air Force, though, Hagenbeck took a very different view. Among his complaints:

- "The Air Force had to work through airspace management—aircraft were stacked up to the ceiling and could only be flown in in a few numbers."

conda

US Army photo by Spc. Andres J. Rodriguez

Soldiers of the US Army's 10th Mountain Division observe a CH-47 Chinook delivering troops for action in Anaconda.

■ "By the time the AWACS [airborne warning and control system aircraft] handed a target off, the Air Force said, it took 26 minutes to calculate the DMPI [designated mean point of impact, and] anywhere from 26 minutes to hours (on occasion) for the precision munitions to hit the targets."

■ "We have a huge procedural and training issue we've got to work through with our Air Force friends."

There was more. When asked about close air support (CAS) operations, Hagenbeck said: "The most effective close air support asset we had was the Apache, *hands down*." The Army's AH-64 Apache helicopter is the service's principal combat aviation system.

However, the eight Apaches that he had sent on a sweep of the objective area at the start of Anaconda were hit so many times by enemy fire that only three came through in flyable condition. Hagenbeck had to send out an emergency call for help to Marine Corps AH-1 Cobra helicopters at sea on USS *Bonhomme Richard*. The Cobras made the flight up to Bagram Air Base, near Kabul, to help out. At the same time, Air Force C-17s began moving replacement Apaches from the US to Afghanistan.

It would be fair to say that Hagenbeck's after-action interview showed a commander with a light grasp of the workings of the air component and even key aspects of the battle.

Planning Problems

In Hagenbeck's defense, it should be noted that he had only a few weeks to get to know the operation he was about to lead.

US Central Command had been tracking enemy activity in the Khowst-Gardez region since early January 2002. It was a collection point for al Qaeda and Taliban fighters fleeing south after the fall of Kabul. Special operations forces teams developed a plan to surround the Shah-i-Kot Valley with SOF teams and Afghan irregular forces and then bring in 1,400 Army soldiers by helicopter to take blocking points on eastern ridges above the valley.

This was an encirclement operation. In theory, it would bag all of the al Qaeda and Taliban remnants and be over in 72 hours.

Anaconda was to be the biggest use of conventional ground forces to that point in Afghanistan. For that reason, the original SOF planners, in a series of early February meetings, decided to ask Task Force Moun-

US Army photo by Spc. Andrea J. Rodriguez

tain, led by Hagenbeck, to take tactical control.

Hagenbeck and his boss, Lt. Gen. Paul T. Mikolashek, the combined forces land component commander, or CFLCC, were briefed on Feb. 17, 2002. By then, the execute date—Feb. 28—was 11 days away. (Bad weather pushed the execute date to March 2.)

Army Gen. Tommy R. Franks, head of CENTCOM and overall coalition military commander, knew there was an operation in the offing; in his memoirs, he said that he discussed it at a National Security Council meeting on Feb. 7. The final plan for Anaconda was briefed to him via video teleconference on Feb. 26.

"Love it," he told his commanders.

However, the plan had three major flaws.

■ First, Hagenbeck's final operations order, issued Feb. 20, underestimated the enemy's numbers. Why remains unclear. CENTCOM estimated al Qaeda and Taliban forces in the Khowst-Gardez region at several hundred or even 1,000. These estimates went into detail on the organization of the al Qaeda and Taliban units and offered a spread range, giving the numbers greater weight. Hagenbeck's order placed the number of enemy at 125 to 200 in the Shah-i-Kot Valley.

TF Mountain had for some reason narrowed its focus to counting enemy fighters in a small geographic area. In remarks to a *Washington Post* reporter one year later, Hagenbeck would admit, "We only probably had about 50 percent of the intelligence right." Instead of a 7-to-1 US advantage in numbers, the US and enemy forces would be about equal in size. Among them were well-equipped Arab and Chechen al Qaeda with crew-served weapons, sniper rifles, and mortars. Moreover, Taliban and al Qaeda fighters held the best terrain.

■ Second, the plan had logistical weaknesses. "The operation itself was right on the edge of the logistical envelope," claimed Rear Adm. James A. Robb, CENTCOM's planning head at the time. All troops, equipment, and supplies were coming by air. The director of mobility forces, USAF Brig. Gen. Winfield W. Scott III, recalled that there was "essentially no land support" for operations launched out of Bagram.

The Army needed to move up to 1,000 soldiers from Kandahar to Bagram to stage the operation. They also needed to augment the fuel bladders at Bagram to provide the gas to keep helicopters flying. Yet the commander of TF Mountain was slow to generate even rudimentary airlift requirements and pass them along to the air component.

Just moving fuel was a major challenge. C-17s would "wet-wing" fuel by landing at Bagram, off-loading internal fuel into bladders, and then taking off to hit a tanker overhead. Then, they would repeat the process. Bagram's short, crumbling runway was too treacherous for other aircraft.

"We gathered up every available flying resource that we could in that part of the world," said then-Maj. Gen. John D.W. Corley, who directed the combined air operations center in Saudi Arabia. Those pressed into service included C-17s earmarked to support Vice President Dick Cheney's visit to the region. "We moved 193,000 gallons of gas between the [February] 23rd and 28th, of which zero was moved by ground," Scott said.

■ Third, no one had notified the air component commanders that a major operation was in the works.

Exactly when the air component

US Army photo by Sgt. Kevin P. Bell

At top, a precision B-52 bomber attack sends an enemy position up in a towering plume of smoke. Above, a Northern Alliance irregular surveys damage to another enemy bunker destroyed by US warplanes.

learned of Anaconda is the subject of much argument. CAOC records, as detailed in the Air Force's report, indicate there were working-level discussions of Anaconda by Feb. 21, when the battlefield coordination detachment (BCD) briefed CAOC intelligence staffers. Anaconda was mentioned in a Master Air Attack Plan briefing on Feb. 22. Over the next three days, CAOC staff also discussed the role of AC-130s, status of intelligence-surveillance-reconnaissance (ISR) collection, and potential for the availability of only a single carrier, USS *John C. Stennis,* after USS *Theodore Roosevelt* left the area and before USS *John F. Kennedy* arrived.

Corley said he was first briefed on Feb. 22—six days before the execute date—and became "a little pessimistic" when he learned none of his senior staff had heard of the operation, either. The BCD's job was to sift through dozens of pending potential CFLCC operations and tag those that needed CAOC attention. Mikolashek also asked about air component coordination on Feb. 17. While there was working-level discussion, Anaconda was not elevated as it should have been by either the BCD, TF Mountain, or CFLCC headquarters.

Air Force Gen. T. Michael Moseley, the combined forces air component commander (the "air boss"), was not briefed on the plan until he returned from a trip on Feb. 25.

Not a Clue

Carrier battle group commanders—who would supply the bulk of the fighter sorties—were in the dark, too.

"We didn't have a clue what they were going to do," said then-Rear Adm. Mark P. Fitzgerald, in command of *Roosevelt's* battle group. The Navy forces knew Anaconda was coming, he said, but added, "We had no clear idea of specifically where. We knew it was up in the Tora Bora area, but that was about all we knew. We didn't know what their scheme of maneuver was. We didn't know how many people they were putting in there."

He went on to say that there was no definition of how it was going to work. The communcations plan was to talk to a forward air controller on a normal frequency. It was not an integrated operation by any means.

One F-15E crew member who flew Anaconda sorties observed afterward, "All this planning for a 1,500-man operation, and the Army couldn't pick up the phone and make a call?"

Hagenbeck's failure personally to ensure component coordination was glaring. With over 30 FACs in a 64-mile area, deconflicting strikes would be tricky. As it turned out, the CAOC could easily muster 60 on-call CAS sorties per day, but simply generating sorties was not the whole issue.

"The bigger issue," Moseley later said in the official Air Force report, "is there was never an opportunity to orchestrate and figure out what was needed."

As Moseley recalled the situation: "Had we known this was going to go on, we would have stood up a full ASOC [air support operations center] and moved [the right people] to Bagram a week or two weeks ahead of this and then conducted a set of rehearsals with carriers, with the bombers, with the whole thing. And I would have forward-deployed the A-10s ... [for] indigenous quick reactions."

The lack of advance high-level discussion prevented the coalition air component from imparting to Anaconda planners full knowledge of its capabilities. Moseley later said there was no dedicated ISR plan—a significant lack because infrared sweeps of the terrain might have revealed more information about enemy strength and positions.

There was also little chance to improve air support request management even after a few ASOC personnel headed to Bagram. Communications out of the mountain-ringed "Bagram bowl" were limited. Hagenbeck talked about how hard it was for him to talk to his subordinate commanders. The air coordinators with TF Mountain also had very limited communications.

When one looks back and examines the pell-mell Anaconda planning, one conclusion stands out. By assuming that the combat operation would face fewer than 200 enemy fighters, and that it would be over

The Shah-i-Kot Valley between Gardez and Khowst was a collection point for al Qaeda and Taliban fighters fleeing south from Kabul. US plans called for encircling and rounding up the enemy within 72 hours.

USAF photo by TSgt. Eric M. Grill

A-10 attack aircraft—such as these deployed to Bagram Air Base, near Kabul—were highly effective. Moseley quickly redeployed several Warthogs so that they could be closer to the unfolding fight.

quickly, the forward land component at Task Force Mountain—led by Hagenbeck—thought it had matters in hand and the role of the air component would be small.

In hindsight, it is clear the planners were viewing the Shah-i-Kot Valley operation through rose-colored glasses.

At CENTCOM, No Worries

At CENTCOM headquarters, no one was on edge, either. In a vivid demonstration of the lack of air-land coordination, CENTCOM raised no objection when *Stennis* unknowingly opted out of action in the first day of Anaconda.

The carrier's leaders wanted to help their crews switch back from a nighttime to daytime schedule. On March 2, they shut down the deck for a "steel beach picnic" of barbecue and games. In addition, sailors were treated to movies throughout the ship.

Then came word about Anaconda. "There was a lot of action going on, guys are getting shot at, and there was a lot of frustration on the carrier, 'Well, why are we having a picnic today?' " said Navy Lt. Cmdr. Todd Marzano, an F/A-18 pilot. "There was another carrier out there [*Roosevelt*]. There were also obviously ground-based bombers that could help. So it's not like we're the only show in town, but, when you're up there, you want to help out and participate as much as you can," he said. Instead, for *Stennis* pilots, the first day was a no-go.

Anaconda had no sooner begun than US forces started paying the price for poor component-level coordination. To begin with, there was minimal preparatory bombing of the objective area of caves and trails. Hagenbeck later said he did not want to run a preparatory bombing campaign "arbitrarily" without knowing what was in the al Qaeda cave complex. This was a clear product of underestimating the enemy situation and course of action.

Afghan forces starting the attack on March 2 came under inadvertent fire from an AC-130 and broke off their attack. Other air strikes were called off in the confusion.

Then came the unexpectedly costly Apache helicopter sweep. In the wake of that setback, soldiers hitting the landing zone fell under concentrated enemy attack right away. Mortar and small-arms fire was so intense that Hagenbeck ultimately asked bombers to level two Shah-i-Kot Valley villages. Poor communications links, the lack of a true ASOC at Bagram, and failure to schedule joint planning and rehearsals with the air component now created a tough situation for the ground controllers requesting support—and for the airmen trying to provide it.

It was typical on that day to have three or four "troops in contact" situations running simultaneously. Air support flexed to meet the demand. According to the Air Force report, one B-1 on the afternoon of March 2 spent more than two hours releasing 19 Joint Direct Attack Munitions (JDAMs) on 10 different targets in response to requests raised by multiple ground controllers. Another B-1 dropped 15 JDAMs on six different targets in six bomb runs. Yet another B-1 hit a ZSU-23 anti-aircraft gun as Taliban fighters tried to wheel it out of a cave.

A pair of Marine Corps F/A-18Cs embarked on *Roosevelt* were the first

USAF photo by Capt. Denise Boyd

TSgt. Jim Jochum, crew member on a USAF AC-130U gunship, loads a 40 mm weapon. In Anaconda, gunships attacked at night with 40 mm and 105 mm rounds and passed target coordinates to other aircraft.

aircraft to strafe enemy firing positions. Scarface 73 and Scarface 74 made three passes, each delivering 400 rounds from 20 mm cannons just as darkness fell. That night, Air Force AC-130 gunships attacked with 40 mm and 105 mm guns and passed coordinates for targets to other strikers.

Day 1 of Anaconda saw the air component deliver 177 precision weapons (JDAM and GBU-12s), of which 162 were a result of immediate CAS. That averaged out to more than six precision bombs per hour, or one every 10 minutes. Actual drops ebbed and flowed with the ground situation, but continued day and night. The peak came in the afternoon, when bombers and fighters dropped 64 precision weapons between 1 p.m. and 6 p.m., local time.

USAF photo by MSgt. Terry L. Blevins

Air Force F-15E fighter aircraft flew close air support at Takur Gar and even conducted their first-ever strafing missions. The Strike Eagles used a variety of precision guided munitions.

Thanks—For Now

At the time, at least, TF Mountain certainly seemed to appreciate these airpower operations. "Numerous bombing strikes were made against dug-in enemy forces, ... resulting in moderate to heavy enemy casualties," said TF Mountain's nightly report on March 2. It also cited "near-continuous use of CAS assets," mainly for troops-in-contact situations.

A battlefield airman on the ground that day described his calling for an attack on a threatening enemy mortar. "An aircraft was diverted to our position almost instantaneously," said this staff sergeant. Six bombs knocked out the mortar. Then, he went on, "we did the exact same," putting three bombs on another gun. Finally, they called for a B-52, which dropped six more bombs on another mortar position on the ridge.

Despite the high responsiveness of the air support, Moseley was not content with the battle's first few days. He talked to the CFLCC, Mikolashek, dispatched key officers from the CAOC to Bagram, and brokered a deal to bring A-10 attack aircraft closer to the fight.

Statistics in the declassified Air Force report paint a picture of air operations far different from the image created in Hagenbeck's after-action comments. Drawn from a database compiled by the deputy fire support coordinator—a man Hagenbeck called "my go-to guy"—the catalog of dropped bombs shows constant air strikes, day and night, with a mix of precision and nonprecision munitions.

Immediate CAS supplied consistent support. Total numbers of weapons dropped did not tail off at night. In fact, on some days, nighttime totals were higher than those in daytime.

Within several days, the CAOC also worked out with the land component an arrangement for striking "preplanned" targets found in areas chosen by CFLCC planners. Having preplanned targets available improved the volume of bombs dropped. A total of 751 bombs were dropped into the Anaconda battle area in the first three days.

Tales From the Battle

Accounts of individual missions illustrate the dangers, frustrations, and successes, from the airman's perspective.

The Air Force report recounts the work of Predator unmanned aerial vehicles, which tracked a large body of al Qaeda reinforcements moving down a road. Forward air controllers vectored several two-ships of A-10s and sections of F/A-18s onto the target. A coalition SOF controller surveyed the grisly scene the next day and found the entire al Qaeda group had been wiped out.

Bombers were mainstays of the operation because of their long times on station and heavy payloads. They, too, experienced the push and pull of air control. They could release individual weapons as necessary, and most made multiple target passes.

Navy pilots provided the majority of fighter sorties each day. "There was a lot of chaos down there those first few days of Anaconda," said Marzano, the F/A-18 pilot. "The initial plan that they had constructed for the grid system overhead the target area for organizing the flow of aircraft in and out was somewhat disorganized, and it was hard to work the target area and deconflict with other aircraft out there."

Within days of the start of Anaconda, the increase in preplanned targets and improvements in air control brought the air component to peak efficiency. On March 10, Marzano and his wingman launched their aircraft, with a mix of two GBU-12s on each aircraft and two Mk 82s fused for airbursts. Those Mk 82s were ideal for air-bursting the al Qaeda into the next life, as Moseley put it.

Nightly TF Mountain reports to the land component commander were widely cited in the official Air Force report. They gave a clear sense of the pace of the battle. Smart tactical decisions by soldiers made an enormous difference. So did air support.

Nevertheless, Hagenbeck, when interviewed by *Field Artillery*, dismissed all such reckonings. "A ground force commander does not care about the number of sorties being flown or the number and types of bombs being

US Navy photo by PH2 Bryan A. Dunn

Aviation ordnancemen aboard USS John C. Stennis load a laser guided bomb onto a Navy F/A-18 fighter headed for action in Anaconda. Navy and Marine Corps tactical aircrews were key factors in Anaconda's ultimate success.

dropped and their tonnage," he opined. "Those statistics mean nothing to ground forces in combat. All that matters is whether or not the munitions are time-on-target and provide the right effects."

Examples from the battle showed Hagenbeck was not well-attuned to the actual role played by air support.

In the battle of Takur Gar (sometimes called "Roberts Ridge" after Petty Officer 1st Class Neil C. Roberts, a Navy SEAL who died there), seven Americans lost their lives. Nearly 40 Americans—Rangers and SOF—spent the day pinned down under al Qaeda fire after a helicopter insertion went badly wrong. Two rescue helicopters were shot down near the ridge. With them was a ground forward air controller known as Slick 01. He later said he controlled about 30 CAS strikes that day, which kept al Qaeda forces pinned down. These strikes ranged from the F-15E's first-ever strafing mission to assists from F/A-18 pilots to bombers dropping precision weapons on enemy clusters. Persistent airpower kept the teams covered until the 38 survivors could be extracted around 8 p.m. local time.

Technically, the action at Takur Gar involved troops not under Hagenbeck's command. A week later, though, the situation was different, and, once again, the contribution of airpower was underrated. Hagenbeck mentioned a period "several days into the fight," when "the ceilings dropped [and] we had limited air coverage." This was the bad weather period when the land forces had to delay their final assault to take their main objective, called Objective Ginger. Still, TF Mountain organized more air strikes for a final March 9-10 push that would seal off the Shah-i-Kot Valley. The days of March 9 and 10 were also the single heaviest days for air strikes, with more than 300 bombs dropped during each day.

Good Came From Bad

Harrowing though it was, Anaconda ultimately was a success. The combined efforts of land and air forces succeeded in clearing the enemy from the valley and surrounding hills.

As the Air Force report notes, a rather large amount of future good came from Anaconda. Its problems and mishaps spurred a drive to improve component coordination and fix procedures wherever possible.

Though the report does not say so explicitly, it is nevertheless true that this drive was pushed largely by Air Force officers. Moseley remained as air component commander for Iraq and took the opportunity to forge much closer relations with the new CFLCC, Army Lt. Gen. David D. McKiernan.

Air Force and Army three- and four-stars twice discussed Anaconda in private sessions. Gen. John P. Jumper, Air Force Chief of Staff, made it a priority to review and standardize ground controller training. Air commanders such as Moseley and his deputy, then-Rear Adm. David C. Nichols Jr., vouched for the change in component relationships that took place between Anaconda in March 2002 and Operation Iraqi Freedom in March 2003.

CAS systems in Baghdad in 2003 or in Najaf and Fallujah in 2004 were masterpieces of precision mapping, deconfliction, and component coordination, from working level to three-star level. Those operations made Anaconda seem like ancient history.

In Afghanistan, new procedures led Lt. Gen. David W. Barno, the Army's commander there, to offer this praise in late 2004: "Airpower from all the services—intelligence, surveillance and intelligence assets, mobility aircraft, close air support, and space systems—have given ground forces in Afghanistan the ability to operate in smaller units and respond quicker with more accurate weaponry than at any other point in history."

What lingered, unfortunately, was the ill will engendered by Hagenbeck's intemperate utterances.

Field Artillery later published an article acknowledging that "ground controllers identified targets, and, more often than not, attack aircraft hit those targets." Yet even this article said Anaconda's problems stemmed from a general "lack of adherence to or even understanding of joint doctrine."

The corporate Army was largely silent on the matter.

What the Air Force report makes only too evident is this fact: Responsibility for Anaconda's poor planning rests not with lack of fealty to joint doctrine or the inherent complexities of CAS or the new territory of the war on terror. Responsibility rests with the commander. Better decisions would have produced a better result. ■

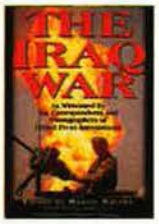
Rebecca Grant was a participant in the USAF Anaconda study. She is president of IRIS Independent Research in Washington, D.C., and has worked for RAND, the Secretary of the Air Force, and the Chief of Staff of the Air Force. Grant is a fellow of the Baker Institute for Aerospace Concepts, the public policy and research arm of the Air Force Association's Aerospace Education Foundation. Her most recent article, 'Expeditionary Fighter," appeared in the March issue.

Books

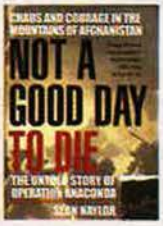
Compiled by Chequita Wood, Editorial Associate

F-8 Crusader: Walk Around No. 38. Ed Barthelmes. Squadron/ Signal Publications, Carrollton, TX (800-527-7427). 80 pages. $14.95.

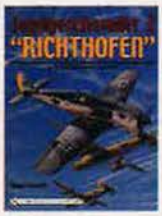
The Iraq War: As Witnessed by the Correspondents and Photographers of United Press International. Martin Walker, ed. Potomac Books, Herndon, VA (800-775-2518). 224 pages. $19.95.



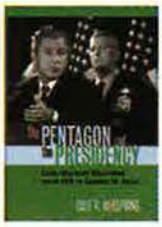
Not a Good Day to Die: The Untold Story of Operation Anaconda. Sean Naylor. Berkley Caliber, New York (800-788-6262). 425 pages. $25.95.



Flying the Hump to China: How Getting the Flying Bug Got this Pilot into the World's First Airlift Flying Gas to China in WW II. Steven C. King. Authorhouse, Bloomington, IN (800-839-8640). 192 pages. $13.50.

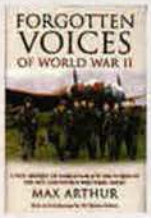


Jagdgeschwader 2 "Richthofen": A Photographic History. Holger Nauroth. Schiffer Publishing, Ltd., Atglen, PA (610-593-1777). 350 pages. $69.95.



The Pentagon and the Presidency: Civil-Military Relations from FDR to George W. Bush. Dale R. Herspring. University Press of Kansas, Lawrence, KS (785-864-4155). 490 pages. $45.00.

Forgotten Voices of World War II: A New History of World War II in the Words of the Men and Women Who Were There. Max Arthur. The Lyons Press, Guilford, CT (888-249-7586). 486 pages. $24.95.



Japanese Aircraft Equipment 1940-1945. Robert C. Mikesh. Schiffer Publishing, Ltd., Atglen, PA (610-593-1777). 198 pages. $69.95.

Poles Apart: The Admiral Richard E. Byrd and Colonel Bernt Balchen Odyssey. Bess Balchen. Red Anvil Press, Oakland, OR (541-459-6043). 165 pages. $19.95

German Aces of World War I: The Pictorial Record. Norman Franks and Greg VanWyngarden. Schiffer Publishing, Ltd., Atglen, PA (610-593-1777). 186 pages. $59.95.

Like Rolling Thunder: The Air War in Vietnam, 1964-1975. Ronald B. Frankum Jr. Rowman & Littlefield Publishers, Inc., Lanham, MD (800-462-6420). 207 pages. $24.95.

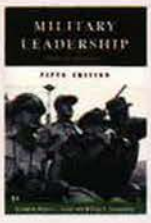
The Russian Military: Power and Policy. Steven E. Miller and Dmitri Trenin, eds. The MIT Press, Cambridge, MA (800-405-1619). 241 pages. $25.00.

Hitler's Jet Plane: The Me 262 Story. Mano Ziegler. Stackpole Books, Mechanicsburg, PA (800-732-3669). 206 pages. $34.95.

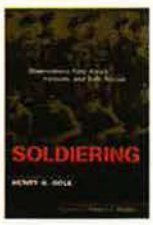
Luftwaffe Over America: The Secret Plans to Bomb the United States in World War II. Manfred Griehl. Stackpole Books, Mechanicsburg, PA (800-732-3669). 256 pages. $34.95.

Secret Weapons of the Cold War: From the H-Bomb to SDI. Bill Yenne. Berkley Caliber, New York (800-788-6262). 335 pages. $7.99.

Into the Wild Blue Yonder: My Life in the Air Force. Allan T. Stein. Texas A&M University Press, College Station, TX (800-826-8911). 185 pages. $29.95.



Military Leadership: In Pursuit of Excellence. 5th ed. Robert L. Taylor and William E. Rosenbach, eds. Perseus Book Group, Boulder, CO (800-371-1669). 184 pages. $24.00.



Soldiering: Observations from Korea, Vietnam, and Safe Places. Henry G. Gole. Potomac Books, Herndon, VA (800-775-2518). 255 pages. $27.50.

The Chart Page

By Tamar A. Mehuron, Associate Editor

The Defense Budget at a Glance

In February, President Bush presented his defense budget for Fiscal 2006. The document requests $419.3 billion in budget authority and $424.4 billion in outlays for the direct program (DOD activities only). The budget request for the total national defense program (DOD activities and defense activities in the Department of Energy and other federal agencies) is $441.8 billion in budget authority and $447.4 billion in outlays.

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

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

The following charts address only the Defense Department program. Numbers on the charts in this section may not sum to totals shown because of rounding. Years indicated are fiscal years. Civilian manpower figures are now measured in terms of full time equivalents.

DOD Budget Topline* ($ billions)

	2004	2005	2006	2007	2008	2009	2010
Budget authority (current)	$375.7	$400.1	$419.3	$443.1	$462.4	$482.0	$492.1
Budget authority (constant FY 2006)	$392.0	$407.7	$419.3	$434.7	$443.6	$452.3	$451.6
Outlays (current)	$436.9	$443.2	$424.4	$428.0	$446.5	$468.1	$485.1
Outlays (constant FY 2006)	$455.9	$451.6	$424.4	$419.9	$428.4	$439.2	$445.2

*Does not include supplemental appropriations to cover costs of the war in Iraq.

Defense Outlays as a Share of Gross Domestic Product

Service Shares

(Budget authority in constant FY 2006 billion dollars)

Dollars	2004	2005	2006	2007	2008	2009	2010
Air Force	104.4	120.0	127.5	130.8	133.6	130.1	130.5
Army	127.5	102.2	100.0	109.4	112.7	114.0	114.0
Navy/Marine Corps	103.4	121.5	125.6	126.5	129.1	134.5	135.4
Defense agencies	56.6	64.0	66.2	68.0	68.2	73.7	71.8
Total	**392.0**	**407.7**	**419.3**	**434.7**	**443.6**	**452.3**	**451.6**
Percentages							
Air Force	26.6%	29.4%	30.4%	30.1%	30.1%	28.8%	28.9%
Army	32.5%	25.1%	23.8%	25.2%	25.4%	25.2%	25.2%
Navy	26.4%	29.8%	30.0%	29.1%	29.1%	29.7%	30.0%
Defense agencies	14.4%	15.7%	15.8%	15.6%	15.4%	16.3%	15.9%

Cutting the Pie: Who Gets What

(Budget authority in constant FY 2006 billion dollars)

	2004	2005	2006	2007	2008	2009	2010
Military personnel	101.3	106.0	108.9	109.9	110.7	112.0	113.1
O&M	133.7	139.6	147.8	151.2	154.3	157.0	157.9
Procurement	79.4	79.6	78.0	89.9	97.3	98.8	102.1
RDT&E	67.1	70.1	69.4	65.5	63.8	67.9	63.1
Military construction	5.8	6.1	7.8	12.1	13.0	10.4	9.6
Family housing	4.0	4.2	4.2	3.8	2.9	2.5	2.5
Other	0.7	2.1	3.2	2.4	1.6	3.6	3.1
Total	**392.0**	**407.7**	**419.3**	**434.7**	**443.6**	**452.3**	**451.6**

Manpower

(End strength in thousands)

	1990	2003	2004	Est. 2005	Est. 2006	Change 1990-2004	1997 QDR Goal
Total active duty	2,065	1,434	1,427	1,383	1,368	-638	1,360
Air Force	535	375	377	360	357	-158	339
Army	751	499	500	482	482	-251	480
Navy	582	382	373	366	353	-209	369
Marine Corps	197	178	178	175	175	-19	172
Selected reserves	1,128	875	851	861	849	-277	835
Civilians (FTE)	997	649	650	660	665	-347	640

Operational Training Rates

	1990	2000	2003	2004	Est. 2005	Est. 2006
Air Force						
Flying hours per crew per month, fighter/attack aircraft	19.5	17.2	17.1	16.9	16.9	16.4
Army						
Flying hours per tactical crew per month	14.2	12.7	14.5	13.1	13.1	13.1
Annual tank miles*	800	669	849	913	899	850
Navy						
Flying hours per tactical crew per month	23.9	20.9	22.6	19.3	19.2	19.1
Ship steaming days per quarter						
Deployed fleet	54.2	50.5	54.0	54.0	51.0	51.0
Nondeployed fleet	28.1	28.0	—	—	—	24.0

* Excludes National Training Center miles.

Acronyms

AEHF	Advanced Extremely High Frequency
AFRC	Air Force Reserve Command
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANG	Air National Guard
AWACS	Airborne Warning and Control System
BUR	Bottom-Up Review
DSP	Defense Support Program
EELV	Evolved Expendable Launch Vehicle
FTE	Full Time Equivalent
GPS	Global Positioning System
HLV	Heavy Lift Vehicle
JASSM	Joint Air-to-Surface Standoff Missile
JDAM	Joint Direct Attack Munition
JPATS	Joint Primary Aircraft Training System
JSF	Joint Strike Fighter
J-UCAS	Joint Unmanned Combat Air System
MLV	Medium Launch Vehicle
NPOESS	National Polar-orbiting Operational Environmental Satellite System
O&M	operation and maintenance
ORL	Operationally Responsive Launch
QDR	Quadrennial Defense Review
RDT&E	research, development, test, and evaluation
SBIRS	Space Based Infrared System
STARS	Surveillance Target Attack Radar System
TSAT	Transformational Satellite
UAV	unmanned aerial vehicle
UCAV	unmanned combat air vehicle

Major USAF Programs RDT&E

(Current million dollars)

Program	2004	2005	2006
A-10	30.9	30.8	51.8
B-1B bomber	82.3	83.7	132.5
B-2 bomber	171.3	270.5	285.2
Next generation bomber	44.2	29.7	25.1
C-5 transport	325.9	330.1	226.5
C-17 transport	175.9	199.9	165.8
C-130 transport	103.8	150.9	233.0
C-130J transport	12.9	32.9	6.7
CV-22 transport	124.8	79.1	69.3
E-3 AWACS	250.1	285.7	121.6
E-8 Joint STARS	59.9	88.2	78.1
E-10 Multisensor C2	355.3	419.0	397.0
F-15E fighter	120.5	131.3	124.6
F-16C/D fighter	88.1	105.7	155.7
F/A-22 fighter	918.7	570.5	479.7
F-35 fighter (JSF)	2,021.0	2,181.3	2,474.8
T-6 JPATS	0.0	0.0	0.0
AIM-120 AMRAAM	31.0	33.0	33.3
JASSM	25.5	45.4	67.0
JDAM	36.0	0.0	0.0
Small Diameter Bomb	118.8	75.8	86.0
AEHF satellite	775.8	606.7	665.3
DSP satellite	0.0	0.0	0.0
GPS satellite	234.9	289.3	401.5
Milstar satellite	1.4	1.4	0.0
NPOESS	265.5	0.0	0.0
SBIRS High satellite	621.8	594.2	756.6
Space Radar satellite	165.1	73.8	225.8
TSAT	325.1	467.2	835.8
Wideband Gap-filler Satellite	35.6	69.4	93.9
EELV booster	7.5	26.8	26.1
MLV booster	0.0	0.0	0.0
ORL booster	21.5	33.1	23.5
Titan HLV booster	0.0	0.0	0.0
Minuteman III ICBM	153.6	90.9	32.4
Global Hawk UAV	345.9	333.2	308.5
J-UCAS	0.0	8.4	350.1
Predator UAV	40.0	83.2	61.0
UCAV	162.8	0.0	0.0

Major USAF Programs Procurement

(Current million dollars)

Program	2004	2005	2006
A-10	17.1	52.5	52.2
B-1B bomber	107.6	20.3	41.4
B-2 bomber	120.2	94.5	59.1
Next generation bomber	0.0	0.0	0.0
C-5 transport	91.5	101.5	91.1
C-17 transport	3,494.4	4,058.6	3,497.1
C-130 transport	194.9	136.4	185.7
C-130J transport	472.3	952.0	105.0
CV-22 transport	290.5	437.3	362.2
E-3 AWACS	0.0	0.0	0.0
E-8 Joint STARS	0.0	0.0	0.0
E-10 Multisensor C2	0.0	0.0	0.0
F-15E fighter	188.0	316.1	151.5
F-16C/D fighter	304.5	347.5	381.0
F/A-22 fighter	4,152.8	4,111.9	3,817.5
F-35 fighter (JSF)	0.0	0.0	152.4
T-6 JPATS	271.2	302.4	333.3
AIM-120 AMRAAM	98.4	106.9	120.7
JASSM	100.9	139.3	150.2
JDAM	424.5	514.8	223.3
Small Diameter Bomb	0.0	29.1	59.1
AEHF satellite	0.0	78.3	529.0
DSP satellite	108.5	105.5	42.7
GPS satellite	252.3	327.5	318.1
Milstar satellite	0.0	0.0	0.0
NPOESS	0.0	0.0	0.0
SBIRS High satellite	0.0	0.0	0.0
Space Based Radar satellite	0.0	0.0	0.0
TSAT	0.0	0.0	0.0
Wideband Gap-filler Satellite	21.8	40.2	72.5
EELV booster	624.8	506.4	838.3
MLV booster	90.4	82.1	111.2
ORL booster	0.0	0.0	0.0
Titan HLV booster	44.8	48.3	66.2
Minuteman III ICBM	591.5	645.7	672.6
Global Hawk UAV	246.8	354.2	397.7
J-UCAS	0.0	0.0	0.0
Predator UAV	215.7	205.3	155.9
UCAV	0.0	0.0	0.0

Force Structure Changes

	Cold War Base 1990	1993 Base Force	1993 BUR Plan	1997 QDR Goal	Most Recent Plan 2003[d]
Air Force					
Active fighter wings	24	15	13	12+	12+
AFRC/ANG fighter wings	12	11	7	8	7+
Army					
Active divisions	18	12	10	10	10[b]
Army National Guard/Reserve	10	8[a]	8	8	8[c]
Navy					
Aircraft carriers					
Active	15	12	11	11	10
Reserve	1	1	1	1	1
Carrier air wings					
Active	13	11	10	10	10
Reserve	2	2	1	1	1
Marine Corps					
Active Marine Expeditionary Forces	3	3	3	3	3
Marine Forces Reserve	1	1	1	1	1

[a] Comprising 34 brigades.
[b] Plus two armored cavalry regiments.
[c] Plus 16 separate brigades (15 of which are at enhanced readiness levels).
[d] Force structure plans were not provided in FY 2004, 2005, or 2006 budget data.

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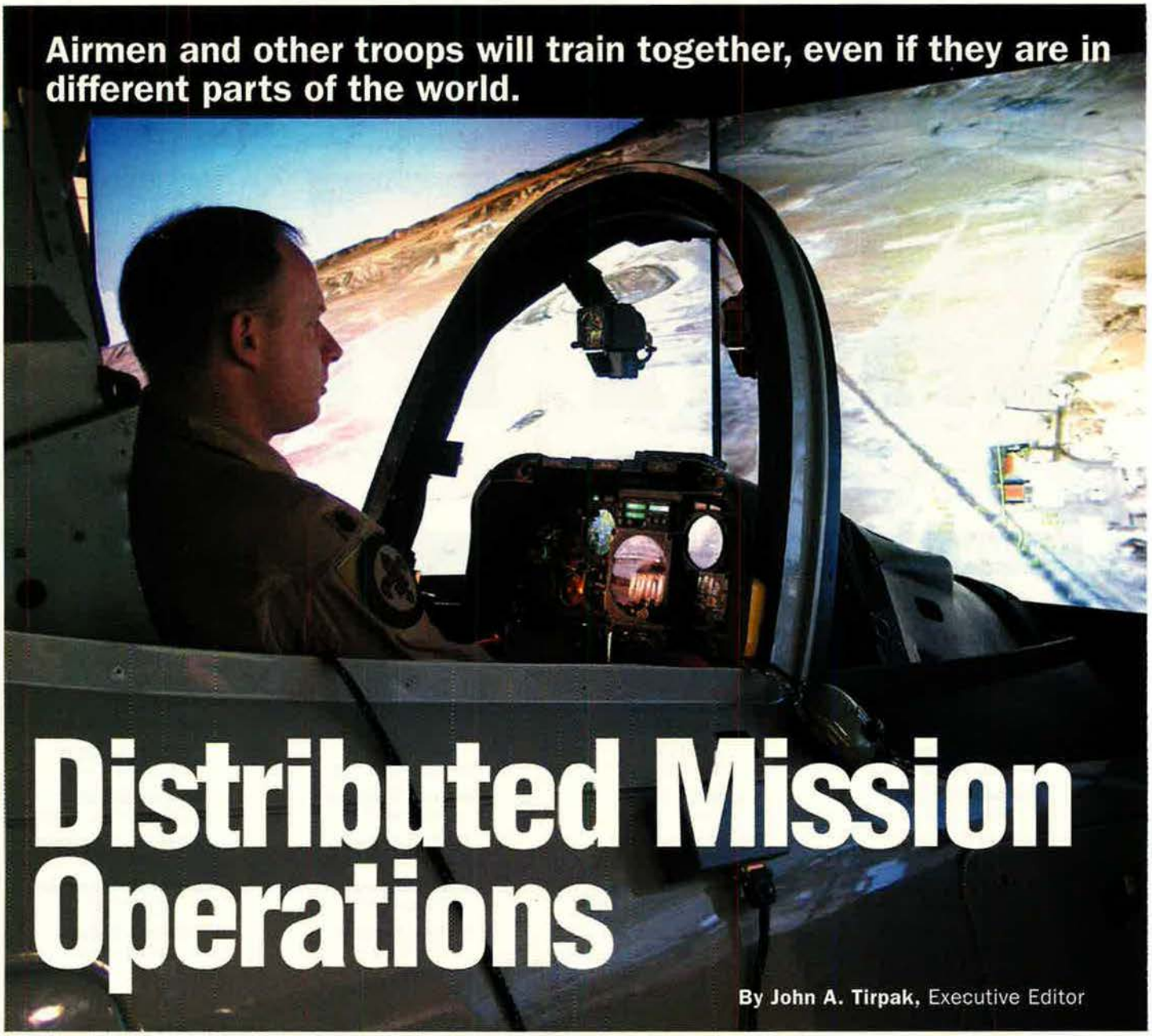


Airmen and other troops will train together, even if they are in different parts of the world.

Distributed Mission Operations

By John A. Tirpak, Executive Editor

To make combat training seem more like real warfare, the Air Force is harnessing new technology that lets groups of airmen half a world apart practice together on virtual battlefields, all without leaving home.

This advantage no longer accrues only to a few pilots operating networked cockpit simulators. The concept is rapidly expanding to permit the exercising of large, massed joint forces at the theater-war level.

Distributed Mission Operations, (DMO) as this type of networked training is known, pulls in participants from all US services and, increasingly, allies and permits them to "game" and rehearse highly complex campaigns, using a mix of local, distant, and virtual players.

Plans called for the concept to go through a major tryout at Nellis AFB, Nev. The layout for this special Red Flag exercise included on-scene and remote players as well as "constructed"—that is, simulated—allies and enemies generated on computers.

Planners consider this exercise a "Virtual Flag," the purpose of which would be to test the training state of the art and identify lessons for future exercises.

The benefits of distributed training are many. Air Force operators not only receive more realistic training but also practice more closely the kind of networked warfare that is sure to characterize future operations, with thousands of inputs and factors. It may spell the end of "set piece" wargame scenarios that contain few if any surprises.

However, "the training value of it is just one aspect," according to USAF Lt. Col. Bruce VanSkiver, chief of exercises and training innovation for the Joint Staff. The DMO structure, he said, will permit "test and evaluation," whether the item to be tested is a new tactic or a new weapon or technology.

Because operators won't always have to move people and machines thousands of miles to train, the service will save time and money, though that's not the primary consideration, VanSkiver said.

Synthetic Battlespace

Already, flights of F-15s from Langley AFB, Va., can fly virtual missions, via simulators, alongside F-16s based at Shaw AFB, S.C., all of them vectored to their targets by E-3 AWACS crews seated at station simulators at Tinker AFB, Okla., and using data supplied by E-8 Joint STARS operators hundreds of miles away, VanSkiver said. They can all talk to each other as if they were flying in the same airspace.

As VanSkiver explained, "You can now have the whole synthetic battlespace developed, without anybody leaving home, and you can do that on call, whenever you choose to set the architecture up."

The DMO concept emerged a few years ago from Air Combat Command, said Orris Hambleton, a contractor who heads the "live-virtual construction" effort under VanSkiver.

"Their idea was just to link the simulators together, so they could fly together," he said.

However, the idea soon attracted high-level attention. It was picked up and given major emphasis by Gen. John P. Jumper, Air Force Chief of Staff, who thought it promised great benefits to the warfighting community. He became an enthusiastic backer, said VanSkiver, and now takes quarterly briefings on the project.

"The grand vision—on just the Air Force side of it—is to be able to tie disparate nodes together," said VanSkiver. These nodes can be simulators, aircraft in flight, or even an entire combined air operations center (CAOC). At some point, said VanSkiver, the training concept will "begin to migrate ... into the joint and ... coalition side."

A DMO charter was signed late last year, and a roadmap for both hardware acquisition and conceptual advances is now in the works.

At Jumper's insistence, the Air Force extended ACC's idea of linking simulators for more realistic fighter training missions, taking it into other areas. That way, said Hambleton, aircraft operators "can, essentially, fly and fight or train to fight in a synthetic battlespace, without the complications of all the safety-of-flight issues of live-fly exercises."

The new training technique reduces some of the stress on Air Force members and their families, in that big exercises can be run without elaborate deployments.

"It's very hard to bring all those people together without disrupting their home life," Hambleton noted. "They don't have to leave home. They can [train] in their local simulators."

From the beginning, said VanSkiver, Jumper's goal was to produce an Air Force capability to practice with other services and allies and to serve as a tool for training flag officers. Jumper demanded "a Capstone event ... where we do live, virtual, and constructive play, in a robust manner," VanSkiver said.

Capstone is a course for newly minted general officers.

According to VanSkiver, the DMO concept is quite new, having emerged only about two years ago. However, he added, it has acquired great momentum in the past 12 months.

Two Realities

In setting up the DMO architecture, two realities became apparent.

First, the Air Force saw that the effective preparation of CAOC crew members required a training effort bigger than anything the Air Force had produced to date. It wasn't enough to simply run a big exercise such as Red Flag, which can involve dozens of aircraft flying a wide variety of missions. Even with so much live-fly action taking place over hundreds of miles of land and airspace, the standard Red Flag "just does not put any strain on an air operations center," said Maj. Bill Otter, chief of DMO on the Air Staff.

What was needed was a way to simulate hundreds of independently acting entities, introduce surprises, and put some heavy stress on a battle plan, the point of which would be to push CAOC officers to their limits and see how they react. The DMO, when joined with exercises such as Virtual Flag, can do that by creating virtual threats, allies, and problems.

Second, planners saw that there was a need for today's aircrew members to practice in a complex, fast-changing, and crowded battlespace. The DMO architecture gives aircrews a much closer picture of what it's like to fly in a modern war, where data pings and calls are coming in from many sensor aircraft, fighters, tankers, unmanned aerial vehicles, and ground units.

Exercises at Nellis mix Red Flag—the live-fly element—with Virtual Flag and Blue Flag, which are command and control events.

"One of the things that DMO is allowing us to do is mix and blend those flags to a great extent," Hambleton noted. "With Joint Red Flag, for

USAF photo

Smart Boards. *Maj. Michael Wang, 302nd Fighter Squadron, uses a digital brief/debrief system to review mission details while a scenario plays out. Networked training knits together local, distant, and virtual players.*

instance, all three of those flag elements will be exercised" at once.

According to VanSkiver, the most recent Joint Red Flag provided "the first demonstration of what is now called an 'integrator event,' where we exercise that operational slice, the command and control, to where the CAOC is stood up, the Navy plays, the Marines play to some extent, and the Army plays. ... We're able to fuse all those different nodes together into one ... fight."

All of this adds new breadth and depth to realistic combat training, particularly in the joint arena, which is not available now without scheduling and organizing a "very complex sort of live-fly exercise, where we bring everybody to the same range and fly aircraft," Hambleton said.

VanSkiver said, "We can replicate day in and day out those complex scenarios that you just can't do anywhere else."

Much of the DMO architecture is coordinated and piped through the Distributed Mission Operations Center, or DMOC, at Kirtland AFB, N.M.

The Air Force is working on these kinds of integrated exercises as part of its effort to meet the Pentagon's "Training Transformation" initiative, which seeks to bring into the mainstream joint training among the services.

Setting ROE

One of the challenges at the exercise is setting the rules of engagement governing how real, simulated, and remote elements will interact.

"We still have a lot of work to do on exactly how to work the ROE between live-fire aircraft," Hambleton said. Participants from different locations have different geography and weather with which to contend. For now, live and remote players must be "carefully separated," he said.

The nation has experienced great strides in simulator technology. Pilots in two fighter simulators now "see" each other as if they were actually flying together. Because the terrain around the simulated bases is so true-to-life, and because things such as local air traffic pattern procedures are specific to particular bases and ranges, pilots easily slip into the belief that they are somewhere else.

The quality of simulation makes it possible for pilots to train safely for flight leadership upgrades and use combat skills they might get to employ only rarely in a real aircraft.

ACC is trying to determine just how much actual flying time can be dropped in favor of simulator time. Much of the funding for simulations and the setup of the DMO architecture has, in fact, been diverted from ACC's flying hours budget.

VanSkiver said that ACC is constantly adjusting its calculus of the correct ratio between simulator time versus live-flying time. Much actual flying time—such as performing an uneventful air combat patrol or transiting to a practice area—does not provide training of the same quality as that found in a stressful simulation of all-out combat maneuvering.

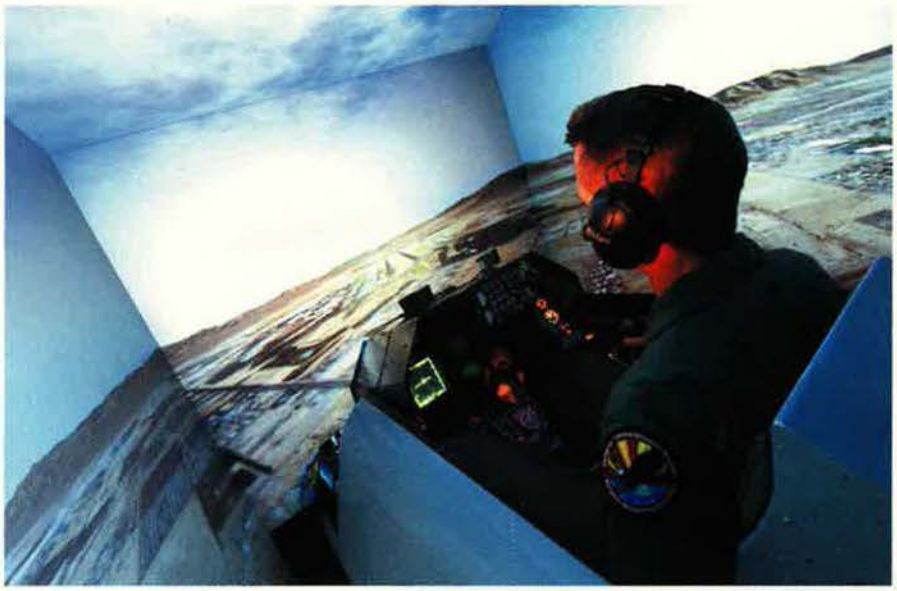
Simulation can be more beneficial than the real thing for some operators. An AWACS mission specialist, who spends much of his or her time inside a windowless fuselage, scarcely feels a difference between a live-fly mission and a simulated training mission.

In an actual mission, the AWACS operator might only have to deal with a few calls from fighters,

USAF photo

Virtual Four-Ship. *Four Vermont ANG pilots "fly" a mission on a new Deployable Tactical Trainer. The mobile DTT lets participants in different areas conduct real-time mission planning, briefing, execution, and debriefing.*

USAF photo



More Realism. ***Higher fidelity systems are in store. Most major commands already have new gear. Air Mobility Command has C-17 simulators; ACC has up-to-date sims for fighters and bombers.***

whereas high-fidelity simulation with scores of participants will tax the operator's abilities and provide a more thorough training experience, Otter said.

The major challenge confronting the use of DMO is the distance—specifically, the distance over which electromagnetic communication waves must travel, Hambleton explained. Long distances can create unacceptable delays, which, in coordinating aircraft operations, is measurable in hundredths of a second.

"Pure physics gets in the way" of using satellites to move the data of simulations, VanSkiver said.

He noted that, even at the speed of light, signals must travel out to a satellite at geosynchronous orbit 26,000 miles up, along with encryption and decoding at both ends of the transmission. "Now you have real issues [affecting] distributed training in any kind of realistic fashion," he said.

Primary Network

The DMO architecture runs over a commercially obtained network not owned by the Defense Department.

"The primary network that we use has got a variable bandwidth, up to whatever we need," said Otter. The Air Force pays only for the amount of bandwidth it uses. In the future, though, the DMO architecture will use the Global Information Grid, the in-development, terrestrial network of communications connections. (See "The Network Way of War," March, p. 26.)

"As we transition to the Global Information Grid"—which the Pentagon is setting up to address issues of bandwidth and security—"we'll see many of these issues begin to go away," VanSkiver said. The GIG will be able to move so much data so fast that it will be akin to using the Internet.

This will also resolve "many" security issues, he added, because access to the grid will be tightly controlled.

Right now, there is "some risk" involved in using commercial networks to carry the electronic traffic of simulations. Someone able to get into the simulation can not only observe it but also record the action for later analysis, VanSkiver noted.

Another goal is to create virtual battlefields in many places around the world. Technology is advancing rapidly. Soon, all of the "connectivity" equipment needed to plug in to an exercise will reside on an aircraft or ground unit. "Virtual ranges" are already appearing.

Otter said the use of virtual battlefields for mission rehearsal has generated much favorable comment. One Air National Guard unit, he said, took special note of a rehearsal for a mission flown in Operational Iraqi Freedom. It was, in the view of unit members, highly realistic and predictive of the actual event. "They said it was just as if they were in the sim," Otter reported.

The DMO roadmap now in the works is starting with the compilation of a pan-Air Force inventory of all simulators and training devices, to assess the general level of complexity and modernity of the equipment. Most major commands already have some new gear. Air Mobility Command has C-17 simulators; ACC has up-to-date sims for all its fighters and bombers. Air Force Special Operations Command also has simulators for its disparate equipment.

One issue will be how much a particular command can participate in big wargames. In the case of AFSOC, the command routinely uses simulators for training and mission rehearsal and can't spare the machines to contribute to larger training events.

"When you do DMO-type training, in an exercise or a synthetic battlespace, that takes training time away from their primary function, and it becomes very difficult for them to do," according to VanSkiver. "So, we're going through that exercise now, to determine what those offsets are going to be in terms of the training value for full mission rehearsal and mission qualification, versus [the] primary flight training [for which] they've been designed ... in the past."

VanSkiver said a key future challenge will be finding a way to incorporate allied nations into the major virtual exercises. A big problem is the machine-to-machine interface. Allied and US technologies are dissimilar. Another problem: security. There is a question about who decides what data can be released.

So far, only Canada and Britain can "play" in Virtual Flags, but more nations should be added soon.

VanSkiver said that his group, in building the DMO roadmap, asked the major commands to voice their own visions of the future of DMO. Some commands demonstrated lots of imagination. Others did not. The trick will be to coordinate these ideas into a scheme that works for everyone.

As VanSkiver explains it: "We want the aircrews and the mission crews and the command and control nodes to be able to do those simulated events exactly the way it happens in the real world, without limitations." ■

USAF photo by A1C Michael Pallazola

Help on the Wing. *At Kadena AB, Japan, Pacific Air Forces airmen board a C-17 bound for Sri Lanka, where they will aid disaster relief operations.*

Operation Unifi

In the wake of the tsunami, USAF airlifters and crews rushed aid to the devastated region.

ed Assistance

By Otto Kreisher

THE POWERFUL earthquake and massive tsunami waves that devastated a huge area of Southeast Asia and killed more than 250,000 persons on Dec. 26 triggered one of the most intensive and challenging humanitarian air operations since the Berlin Airlift, more than half a century earlier.

US Air Force aircraft and crews flew most of the missions that carried relief supplies and equipment into the theater and a large percentage of the flights to distribute the materiel over the vast region affected by the tsunami waves.

By the time the US contribution to Operation Unified Assistance (OUA) was closing down in early February, American aircraft had moved more than 18 million pounds of relief supplies and equipment and nearly 8,000 passengers into and around the tsunami disaster area, according to Maj. Gen. David A. Deptula, director of air and space operations for Pacific Air Forces.

That was a major part of the 24 million pounds of materiel airlifted in a multiservice, multinational relief effort.

More than 2,000 airmen from 100 Air Force units and 14 bases, as far apart as Charleston AFB, S.C., and Kadena AB, Japan, were involved. They supported or flew 30 Air Force aircraft that conducted more than 1,400 sorties in the region and scores of long-haul missions into the theater by Air Mobility Command C-17s and C-5s, said Deptula. He served as the joint force air component commander (JFACC) for Combined Support Force 536, which was formed to conduct the tsunami relief effort.

Marine Lt. Gen. Robert R. Blackman Jr., commander of the III Marine Expeditionary Force in Japan, commanded CSF 536.

Although Unified Assistance did not match the 1948-49 Berlin relief effort in total sorties flown or equal it and some later humanitarian missions in tons of cargo moved, the tsunami

aid operation had to overcome challenges of distances and geographic scope far greater than any of the earlier airlifts, Deptula said.

"In ton-miles per day, Operation Unified Assistance, or the tsunami relief airlift mission, is way up there on top," he said.

The US airlift effort also eclipsed recent humanitarian relief missions in the amount of materiel it moved daily, averaging 522,000 pounds of food, water, and other critical supplies per day over the 47 days of intense operations.

Some relief supplies and support equipment had to come by C-5 Galaxys and C-17 Globemaster IIIs all the way from the United States—more than 8,000 miles—to a central distribution point at U Tapao, Thailand.

From there, C-130 Hercules aircraft distributed the materiel to smaller airfields throughout the devastated area—spanning more than 1,000 miles—where Air Force HH-60 Pave Hawks and helicopters from other US services and other nations moved them to desperate survivors in isolated villages.

The intratheater airlift operated mainly from U Tapao in a "hub and spoke" system similar to that used by most US airlines, Deptula said.

Helicopters flown by the Air Force, Navy, and Marine Corps and other nations then distributed the urgently needed aid to survivors in devastated villages and cities cut off from land routes.

"It is like links in a chain, extending the hand of relief from the American people, all the way from one side of the world to the other side of the world," Deptula said.

Despite the vast distances and the often crude or damaged facilities they had to use, the Air Force aircraft and personnel overcame those obstacles with unmatched speed, joined in the theater by personnel and equipment from the Navy, Marine Corps, Army, and Coast Guard and 14 other nations.

"It is a chain of events, made up by the variety of capabilities that our nation possesses with airlift, that is unmatched by any other country in the world," Deptula said. "We do it routinely and make it look easy, but in fact it's quite a tribute to the airmen who make it all work."

The disaster started with a nine-plus magnitude earthquake west of the Indonesian island of Sumatra. It drove powerful waves at hundreds of miles an hour across thousands of miles of ocean toward the shores of two continents and scores of islands that were home to tens of millions.

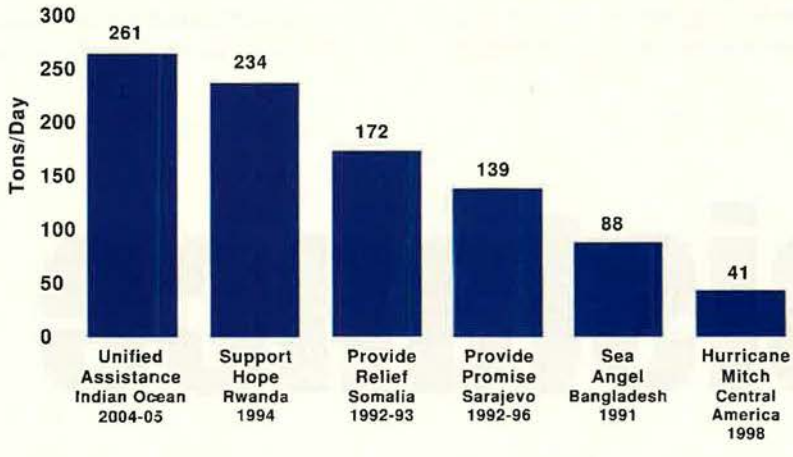
As the waves approached land, they slowed but rose into a towering wall that demolished buildings, uprooted trees, and swept up people by the tens of thousands, then rushed back out to sea, dragging their victims with them.

The tsunami wreaked unprecedented havoc on vast stretches of the coastal areas of Indonesia, Thailand, Sri Lanka, India, Malaysia, Myanmar, Bangladesh, and the Maldives islands Also hit were Somalia and Kenya, 3,000 miles away across the Indian Ocean.

As massive as the instant death toll was, it paled in comparison to the millions of people left injured, without medical assistance, shelter,

USAF photo by MSgt. Val Gempis

Into Sri Lanka. *Airmen across the Pacific joined in the effort. Here, A1C Emily Starcher, a flight engineer based at Kadena, helps two Sri Lankan relief workers unload food from an HH-60G Pave Hawk helicopter.*



Of six recent humanitarian airlift operations, Operation Unified Assistance was the most intense, with the average daily delivery running at 261 tons per day. More than three-quarters of OUA tonnage went by USAF aircraft.

Source: PACAF

food, or safe drinking water, and, in many cases, cut off from potential sources of relief.

Without immediate help, hundreds of thousands more could have died. And, in most cases, that help would have to come by air and by sea from hundreds or thousands of miles away.

Within 36 hours of reports of the massive disaster, Air Force aircraft were taking off from Yokota AB, Japan, carrying relief supplies to U Tapao. Less than a day-and-a-half later, C-130s and helicopters were delivering those supplies to survivors.

US Transportation Command, headquartered at Scott AFB, Ill., put crews and aircraft from Air Mobility Command on alert as soon as it received reports of the disaster. On Dec. 29, it dispatched a C-17 from McChord AFB, Wash., to carry a maintenance package from Yokota to U Tapao, to support the Yokota C-130s that had been providing critical airlift within the tsunami area.

In the next few days, C-5 and C-17 airlifters were called on nearly 20 times, carrying helicopters, relief supplies, support personnel, and emergency responders into or around the disaster zone, TRANSCOM reported.

The theater airlift control center at TRANSCOM responded to the requests from the air mobility division of the Pacific Air Operations Center at Hickam AFB, Hawaii, Deptula said. The Pacific Air Ops Center then provided command and control and integration capability for all US fixed-wing missions within the Pacific theater.

Deptula said he also worked with liaison officers from Australia, Japan, and some of the tsunami-affected nations to coordinate their fixed-wing air missions.

The Navy also responded quickly, moving the nuclear-powered aircraft carrier USS *Abraham Lincoln* to Indonesia and using the Navy SH-60 Seahawk helicopters on board to deliver relief supplies to survivors.

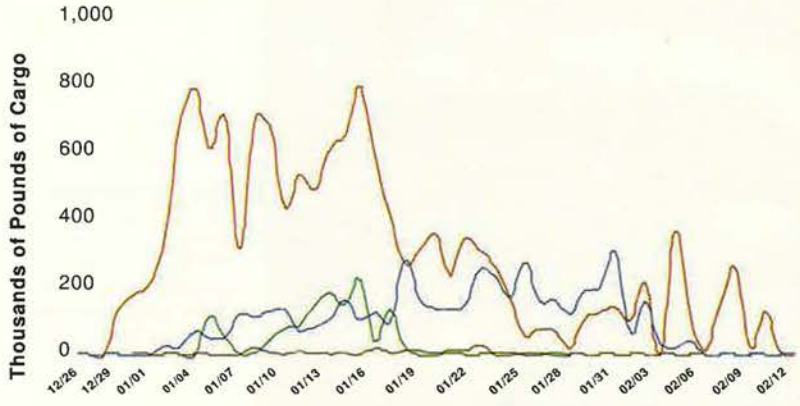
That effort was bolstered with the arrival of an amphibious task force that included the amphibious assault ship USS *Bonhomme Richard,* and later USS *Essex,* which helped carry supplies ashore with Marine CH-46 and CH-53 helicopters and high-speed hovercraft.

Air Force Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, told a Feb. 16 House Armed Services Committee hearing that 15,000 US service personnel, 25 ships, and 50 helicopters were involved in the effort.

The typical role for a JFACC is to help fight a war, but Deptula said the concept is the same whether it's applied to battle or humanitarian relief. In both situations, the goal is "unity of effort and integration of effort to ensure smooth operations," he said.

Air Force aircraft involved in the relief effort included 35 C-17s, 24 C-5s, 21 C-130s, six HH-60s, two

Heavy Lifters and Friends in Tsunami Lift



Fixed-Wing Aircraft
C-5, C-17, C-130, KC-135, MC-130

Helicopters
Expeditionary Strike Group
Carrier Strike Group
Air Expeditionary Task Force (Sri Lanka)

Air Force airlifters had a powerful impact in the critical early days of the humanitarian operation, transporting the overwhelming bulk of critical supplies to the Indian Ocean region.

Source: PACAF

USAF photo by 2nd Lt. Ben Sakrisson

Water Delivery. *In hard-hit Indonesia, C-130 crew members unload water supplies for suffering victims. The post-tsunami operation enlisted the aid of 15,000 US service men and women in a vast humanitarian effort.*

"Candy Bomber." 1st Lt. Gail Halvorsen stands in front of a C-54 with a small parachute airmen used to drop candy to the children of Berlin.

Berlin: Benchmark for Humanitarian Airlifts

It was the greatest humanitarian airlift in history. For those airmen who flew the round-the-clock missions into beleaguered Berlin, it is as fresh as today's headlines.

The Berlin Airlift, a pivotal moment in the Cold War, stretched over 15 months, from June 26, 1948, to Sept. 30, 1949. US, British, and French aircraft flew 278,228 sorties and delivered 2.3 million tons of vital supplies to German citizens and Allied troops left isolated in West Berlin after the Soviet Red Army cut all ground transportation into the city's Allied sector.

The official name of the airlift was Operation Vittles. On its most intense day—April 16, 1949—the US-led Allies flew 1,398 sorties. A new relief airplane was landing every minute at one of the designated Berlin airfields. The fleet on that day delivered 12,940 tons of supplies, according to airlift historians.

Most of the relief flights were relatively short trips into the German city from France or West Germany. The bulk of the missions were flown on twin-engine C-47 and four-engine C-54 aircraft.

Three-quarters of the flights were piloted by Americans. At the peak of the Berlin Airlift, 32,900 US military personnel were in action, backed by another 23,000 civilians from the United States, Allied nations, and Germany. Thirty-one Americans and 17 British airmen died during the 15-month operation.

Soviet dictator Josef Stalin, who had hoped to force Allied forces out of West Berlin by starving the city into submission, finally conceded defeat. On May 12, 1949, Moscow announced it was lifting the blockade after 328 days. The airlift continued, however, for some months afterward and officially ended on the last day of September 1949.

Never again has a humanitarian airlift approached the scope and magnitude of the Berlin operation.

KC-135s, and one C-21, Deptula said. He also controlled nine Navy P-3C patrol aircraft that conducted reconnaissance and survey missions.

TRANSCOM said Air Mobility Command staged out of Kadena three C-5s from Travis AFB, Calif., and one each from the Air National Guard at Stewart ANGB, N.Y., and Air Force Reserve Command at Lackland AFB, Tex., and Westover ARB, Mass. Also, four McChord C-17s staged out of U Tapao. A C-17 flew all the way from Charleston to carry Army civil affairs personnel and equipment into the theater.

Among the loads the airlifters carried were: communications equipment and personnel from the Marines' 7th Communications Battalion on Okinawa; six HH-60s and two CH-46s and support equipment; two Marine Corps Force Service Support Groups; a Navy Seabee unit from Guam; a C-17 maintenance package from McChord; and personnel and equipment from the 18th Communications Squadron at Kadena.

TRANSCOM also provided a tanker airlift control element (TALCE) out of Travis for on-site management of airfield operations, command, control and communications, aerial port services, maintenance, security, weather, and intelligence.

The seven-man TALCE team flew into the badly damaged airfield at Banda Aceh, Indonesia, and turned the small military facility into a major hub for distributing critical supplies into the devastated area.

"Our job was to take the chaos and make some sense of it," TALCE member TSgt. David Satchell told a Pacific Air Forces reporter.

Edward Fox, a spokesman for the US Agency for International Development, said the Air Force's logistical capability is "indispensable" to USAID and others in the international relief area "because we don't have those types of assets."

Deptula said the US relief operation may have gone a long way to improve America's battered image in a predominantly Muslim region.

Deptula recalled flying on a helicopter delivery mission out of Banda Aceh to a small village where his party was "swamped by hundreds of children and the few adults who were there, all very enthusiastic, jumping up and down, patting [us] on the back.

"It was a very emotional event in terms of recognizing how much the people appreciate what we're doing."

"People, not just in Southeast Asia, but around the world, have a better insight into what the United States of America and the military is all about. And that is helping people in need and ensuring peace and stability around the world," Deptula said. ■

Otto Kreisher is a Washington, D.C.–based military affairs reporter for Copley News Service and a regular contributor to Air Force *Magazine. His most recent article, "Sea Basing," appeared in the July 2004 issue.*

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For information on the Air Force Association, see www.afa.org

A1C John Levitow, badly wounded, threw himself on the burning flare and dragged it to the cargo door—saving the entire crew of Spooky 71.

20 Seconds Over Long Binh

By John T. Correll

Night was approaching as Spooky 71, an AC-47 gunship, took off from Bien Hoa Air Base, a few miles northwest of Saigon. It was Feb. 24, 1969, and the second day of the Tet counteroffensive.

The Tet lunar new year of 1968—the one history remembers—had seen large-scale coordinated attacks on cities, provincial capitals, and bases all over South Vietnam. Militarily, it was a failure for the North Vietnamese, but it undercut the confidence of the American public and it was a turning point in the war.

The Tet 1969 offensive was carried out mostly by Viet Cong irregulars. It concentrated on US military installations, especially in the III Corps area around Saigon.

The rocket and mortar attacks on the bases picked up when darkness fell. Nothing was more effective than a gunship in breaking up such attacks.

For the next six hours, Spooky 71 would fly a combat air patrol circuit over the Saigon/Tan Son Nhut area, ready to respond wherever its fire support was needed. It would be relieved by another gunship for the midnight-to-dawn shift.

The loadmaster on Spooky 71 was A1C John L. Levitow, 23, from Glastonbury, Conn. It was his 180th combat mission, but he had never flown with this crew before. He was filling in for a loadmaster who had taken his place when he was sick.

Before the night was over, Levitow would perform an act of astounding bravery for which he would ultimately be awarded the Medal of Honor.

Levitow had joined the Air Force in June 1966, some 20 days ahead of being drafted into the Army. At first, he was a power line specialist with the civil engineering squadron at McGuire AFB, N.J.

He decided to try a different specialty after an experience in which "the power was not turned off when I thought it was turned off," so he cross trained as a loadmaster. He

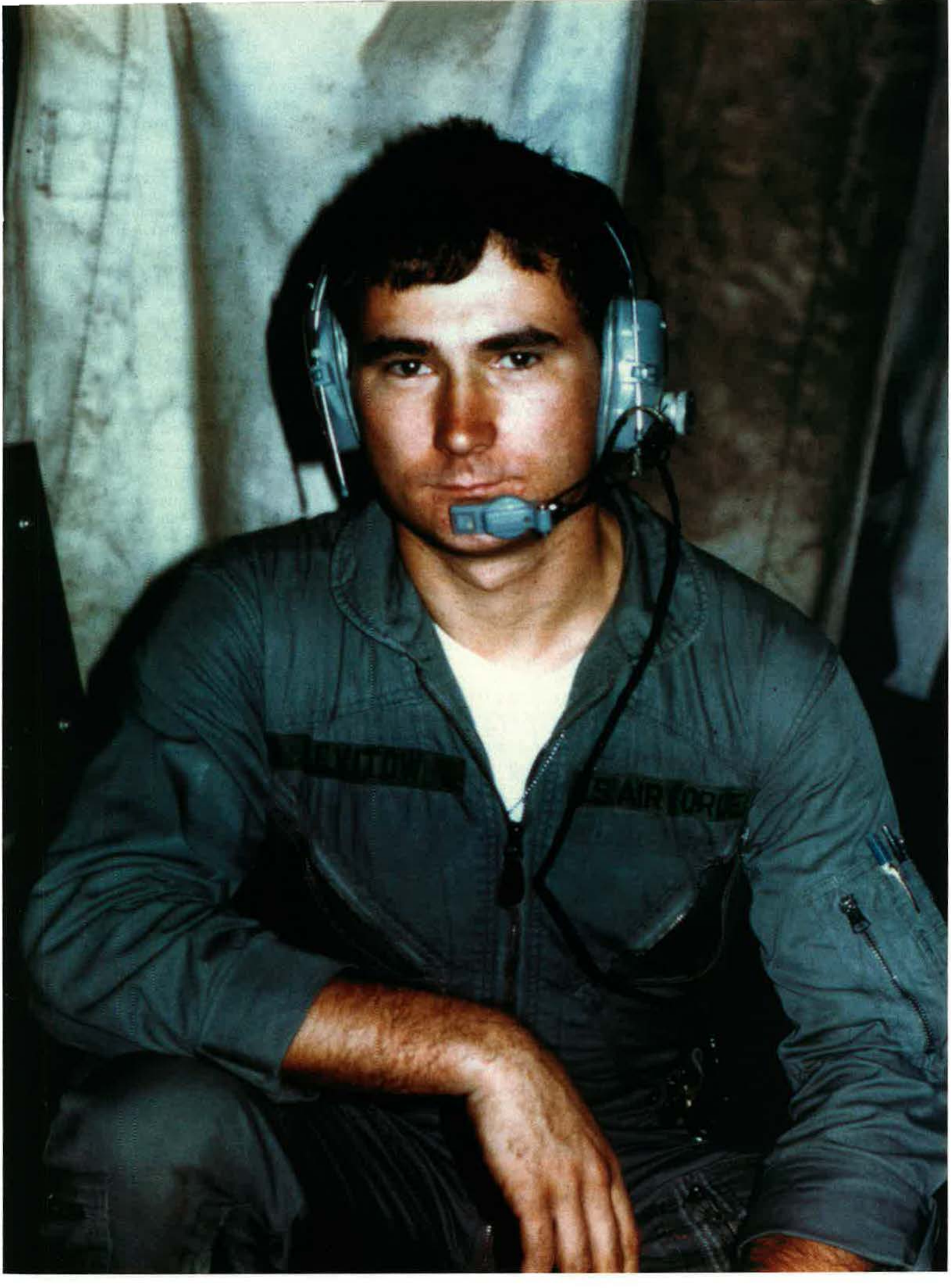

Photo courtesy Air Force Enlisted Heritage Research Institute/Enlisted Heritage Hall

Levitow, sporting sunglasses, joins buddies, l-r, Dan Andrysiak, Jim Miller, and Mike Mayfield. The photo was taken at McGuire AFB, N.J., in July 1966, just a few weeks after Levitow joined the Air Force.

flew as a crewman on C-130s for a short tour, then went to Vietnam to fly on AC-47s.

He reported to the 3rd Special Operations Squadron at Nha Trang in July 1968 and was assigned to the squadron's forward operating location at Bien Hoa.

Guns and Flares

The AC-47 was the first of the Air Force's side-firing gunships. It had been flying in Vietnam since 1964, first with the air commandos and after that with the special operations squadrons. It led the way for the more powerful AC-119 and AC-130 gunships that came later.

It was modified from the C-47 transport aircraft, plenty of which were available. It was originally called the FC-47D (for fighter cargo) but subsequently changed to AC-47 (attack cargo) in response to objections from fighter pilots.

It was also called "Dragonship" and "Puff the Magic Dragon" (after a song, then popular, by Peter, Paul, and Mary) but went mostly by "Spooky," the call sign with which it flew its missions. Spooky's operators had successfully resisted pressure to change the call sign. Seventh Air Force, among others, expressed concern that transmissions might be intercepted and give warning of the gunship's approach to the enemy.

When attacking, Spooky rolled into a level 30-degree bank turn, flying at an airspeed of almost 140 mph. It could lay down an awesome field of fire, with each of its three 7.62 mm Gatling "miniguns" shooting up to 6,000 rounds per minute. At that rate, a three-second burst placed a shot every square foot in an area the size of a football field.

The three guns were mounted in window ports, just forward of the open cargo door. (On earlier AC-47s, one of the guns had been mounted in the door.) The pilot fired the guns, using a sight at the left side of the cockpit. The gunners kept the guns loaded and working during the flight.

"Each one of the guns could fire two speeds," Levitow said. "Slow fire was 3,000 rounds a minute each, or fast fire which was 6,000 rounds a minute each. ... Very seldom did we ever fire fast rounds at 18,000 rounds a minute because it had a tendency to turn the airplane. ... [Three] thousand rounds a minute was more than sufficient."

The gunship carried about 150,000 rounds of ammunition on each flight, Levitow said. Also—and central to the story of Spooky 71—it carried about 50 magnesium flares to illuminate targets on the ground. Flares took away the cover of darkness, on which the Viet Cong depended for their style of warfare.

The Mk 24 flare was a metal tube, just over three feet long and about five inches in diameter. It weighed 27 pounds. It was thrown out of the aircraft and floated to the ground on a parachute, burning for as long as three minutes with an intensity of two million candlepower and making daylight over a square mile or so.

The flare was armed just before it was thrown out the door, with timers set to give it some distance from the airplane before the parachute deployed and the flare was triggered.

"It would light up, oh, about half a mile, a good area, quite brightly," Levitow said.

Diversion to Long Binh

Spooky 71 flew with a crew of eight. The pilot, copilot, and navi-

Flying over Vietnam in 1968 or 1969, Levitow stands in the cargo door of an AC-47. He reported to 3rd Special Operations Squadron in July 1968 and went to its forward operating location at Bien Hoa.

Photos courtesy Air Force Enlisted Heritage Research Institute/Enlisted Heritage Hall

gator were in the forward cabin, and the flight engineer, two gunners, and the loadmaster were in the cargo bay in back. There was also a Vietnamese liaison officer. Partway through the mission he had come forward and was talking to the flight crew when the action unfolded that night. The pilot was Maj. Kenneth B. Carpenter, flying his first combat mission as aircraft commander.

About 11:30 p.m., the gunship was diverted from patrol over the village of Lai Kai, north of Long Binh. The Long Binh Army post, adjacent to Spooky's home base at Bien Hoa, was under mortar attack.

Upon arrival, "we observed a large battle going on in the south and east perimeters of the base," Carpenter said. "On the second firing pass, the mortars firing on Long Binh were silenced."

The attack lifted momentarily, and the gunship began dropping flares to provide illumination requested by a nearby ground unit.

Shortly, another mortar battery began firing. The Spooky 71 crew could see mortar tube flashes about one mile south of the area of the earlier attack. Carpenter rolled the gunship wings level and began his run on the mortar positions. Small-arms fire opened up in his path. Spooky was flying at about 3,500 feet.

Then there was a blinding flash and the aircraft was rocked from nose to tail by a violent explosion. It was an unlucky hit. The gunship had flown into the path of an 82 mm mortar round, which struck the top of the right wing.

Levitow's heroics saved Spooky 71, but it was shot to pieces. At top, a sheet-metal repair crew patches some of its 3,500 bullet holes. Above, the gunship's right wing shows where it was hit by a Chinese mortar round.

"The resultant damage was a hole two feet in diameter through the wing and over 3,500 shrapnel holes riddling the fuselage," said Lt. Col. Robert A. Davidson, commander of the AC-47 forward operating location at Bien Hoa. "The occupants were helplessly slammed against the floor and fuselage like so many rag dolls."

"At that moment, a loud explosion was heard and a bright flash filled the aircraft," said Maj. William P. Platt, the navigator. "Even in the navigation compartment the flash lit up the inside of the aircraft like daylight. The aircraft veered sharply to the right and down."

Shrapnel and jagged shards of metal ricocheted through the cargo bay, and a shock wave from the explosion swept the interior of the airplane.

"I felt as if someone had taken a two-by-four and squarely hit me against the whole right-hand side of my body," Levitow said later. "All ... of the enlisted got wounded and the officers did not. I think it was a very discriminatory flight."

Levitow and one of the gunners, Sgt. Ellis C. Owen, had been working as a team in dropping the flares. Levitow set the timers—allowing 10 seconds after the safety pin was pulled before a minor explosion deployed the parachute and another 10 seconds before the flare ignited—then handed the flare to Owen, who attached a lanyard, which created a little extra distance before the pin was pulled after Owen tossed the flare from the aircraft.

"Airman Levitow was setting [the ejection and ignition dials] and handing me the flares," Owen said. "I had the lanyard on the flare hooked up and my finger through the safety pin ring. When we were hit, all ... of us [Owen, Levitow, Sgt. Thomas Baer, the other gunner, and SSgt. Edward Fuzie, the flight engineer] were knocked to the floor and the flare was knocked out of my hands. Since my finger was through the safety pin ring the safety pin was pulled."

Hot Flare

The flare was armed and rolling loose in the aircraft. At most, there

would be 20 seconds before it exploded. As Levitow dragged one of the other airmen toward the center of the cabin, he saw the flare between No. 1 minigun and a jumble of spilled ammunition.

"I then looked back to see a flare that had slid up against the cans of 19,000 rounds of ammunition," Platt said. "Levitow was struggling toward the flare despite the violent maneuvering of the aircraft. ... Dense blue smoke was pouring out of the burning flare fuze."

The flare posed a deadly danger in several ways.

If it ignited, it would quickly fill the aircraft with toxic smoke, incapacitating the entire crew. Furthermore, the flare would be burning at a temperature of 4,000 degrees Fahrenheit. The spilled ammunition—19,000 rounds of it by Platt's estimate—would start "cooking off" in seconds. The intense heat of the flare would burn rapidly through the aluminum floor of the cargo bay and drop on the empennage control cables, destroying them and causing the aircraft to go out of control.

"They tell me that I had 40 pieces of shrapnel in me at the time," Levitow said. "I couldn't walk. I crawled to the location of the flare. I had a real tough time grabbing hold of it with two hands because of the pain in my leg and everything. They tell me I ended up jumping on it, finally getting control and dragging myself and the flare back to the rear cargo door which was open and just managed to push it outside the door as it ejected and ignited simultaneously."

Later, the citation to accompany the Medal of Honor put it this way: "Unable to grasp the rolling flare with his hands, he threw himself bodily upon the burning flare. Hugging the deadly device to his body, he dragged himself back to the rear of the aircraft and hurled the flare through the open cargo door. At that instant the flare separated and ignited in the air, but clear of the aircraft."

"I had the aircraft in a 30-degree bank and how Levitow ever managed to get to the flare and throw it out, I'll never know," Carpenter said.

Despite his wounds, Levitow helped secure the airplane on the way back. "So here I was, wounds and all, finally managed to stand up and I'm lifting 140-pound ammo cans and stuffing them between the guns [so they would not] go flying all around and really hurt somebody," Levitow said.

It took considerable effort to get Spooky 71 back to base. "I consider the fact that the aircraft was able to fly at all a miracle," Carpenter said.

Shot up and near stalling, Spooky approached Bien Hoa in the dark. Between the town of Bien Hoa and the base was an old French minefield, never cleared and fenced by barbed wire. Landing short would have been a disaster.

The airplane made it over the minefield and onto the overrun, just barely. Carpenter set it down in a full shuddering stall. The right tire was flat, having been cut by shrapnel, and it was all Carpenter could do, standing on the left brake, to keep control until he brought the airplane to a stop.

Aviation gas was leaking from the fuel lines on the right side, and that wasn't all. Back in the States, the aircraft had been fitted with a tank inside the fuselage to hold isopropyl alcohol. For reasons unknown, it had not been emptied when the AC-47 went to Vietnam. It was full until ruptured in the battle. Thus, Spooky 71 was leaking two highly inflammable substances.

Carpenter waved off taxi instructions from the tower and the crew got out fast. Spooky 71 had gone as far as it was going.

Medal of Honor

Inbound, Carpenter had called for an ambulance and a medevac helicopter to meet them on the ramp. Levitow declined to board the helicopter until he was finally ordered to do so by Carpenter.

The medics cut away the dead and contaminated flesh to prevent infection, and Levitow was flown to the big Air Force hospital at Tachikawa, Japan, where 40 pieces of shrapnel were removed between his knee and his hip. He spent almost two months recuperating in Japan before returning to Vietnam in April.

He flew two more AC-47 combat missions and showed up at the flight line for a third when the squadron commander told him he was grounded. He had been nominated for the Medal of Honor—at Carpenter's urging, Gen. George S. Brown, the 7th Air Force commander, had marked the recommendation up from an Air Force Cross—and he was no longer allowed to fly in combat.

The nomination package included statements from Carpenter and most of the crew. "Others were there, others were wounded, but Levitow being the furthest removed from the flare, recognized the danger, took action when seconds counted, and saved the lives of the entire crew," Carpenter wrote. "Levitow's progress was clearly marked with his own blood on the floor of the aircraft."

At the end of his tour in Vietnam,

At a White House ceremony, President Nixon presents the Medal of Honor to now-Sergeant Levitow on May 14, 1970—Armed Forces Day. The young airman "took action when seconds counted and saved the lives of the entire crew."

Photo courtesy Air Force Enlisted Heritage Research Institute/Enlisted Heritage Hall

This 1970 photo shows Levitow on duty at Norton AFB, Calif., where he served as a C-141 loadmaster. Levitow held himself to a high standard of personal behavior, hoping to live up to the honor bestowed on him.

Levitow was assigned to Norton AFB, Calif., as a loadmaster on C-141s. He was the center of much attention but also the victim of bureaucracy. The paperwork for advancement in skill level (from three to five) in his original specialty had been lost. He did not yet have a five-level as a loadmaster, and without a five-level, he could not be promoted, and if not promoted, he could not re-enlist. Instructions to promote Levitow to sergeant without regard to skill level had not been followed. To the Air Force's embarrassment, a hero was not eligible to re-enlist.

"The next day, I was promoted to E-4, retroactive nine months with pay," Levitow said, but by then, he had decided to take an early out.

Back home in Connecticut, he learned that his Medal of Honor had been approved. The Air Force sent a C-54 to Hartford to pick up him, his wife, and his parents and take them to Washington.

The Medal of Honor was presented to John L. Levitow at the White House by President Nixon on May 14, 1970.

Veterans Advocate

After Levitow left the Air Force, he worked in veterans affairs for more than 22 years. "I spent nine years working for Congressional Liaison between the Veterans Administration and members of the Congress," he said. "I hated it." More to his liking, he went home to Connecticut and became a medical administration officer in the VA hospital system and special assistant to the chief of Medical Administration Service in New England.

"I'm very careful what I do," he said in an oral history interview in 1986. "I realize that what I say will be represented not only as a Vietnam veteran but as a Medal of Honor recipient, and the media will have a field day. I try to control what I say, although for the most part, I'm very quiet. I stay away from publicity and things like that. ... If I got stopped drinking and driving, it's going to say, 'Medal of Honor Drunk.' I realize that. I'm not going to bring shame on either the medal or myself, so I do watch it very carefully."

Over the years, there were numerous other recognitions. Top graduates of Air Force Airman Leadership Schools receive the Levitow Honor Graduate Award. The training group headquarters building at Lackland AFB, Tex., is named for him. In 1998, Air Mobility Command named a C-17 Globemaster, *The Spirit of Sgt. John L. Levitow.* He is remembered at the Walk of Fame at Hurlburt Field, Fla.

Levitow died Nov. 8, 2000, at his home in Connecticut after a lengthy battle with cancer. He was 55. He was buried at Arlington National Cemetery, Nov. 17, 2000. More than 500 airmen attended the funeral, and most of them followed the caisson to the grave site.

At the ceremonies, his son, John L. Levitow Jr., said: "I have only one apology to make. Dad wanted to be buried standing up. He was a man that was proud to stand tall. Sorry, Dad, I couldn't make that happen."

Levitow's hometown, Glastonbury, dedicated a memorial to him on the town green May 31, 2004. Among the family members present were his son and grandson, John L. Levitow III.

The Gunter Connection

Nowhere, however, is Levitow's memory recalled more vividly than at the Enlisted Heritage Research Institute at the Senior Noncommissioned Officer Academy at Maxwell AFB, Gunter Annex, Ala.

Levitow willed his Medal of Honor to the Enlisted Heritage Hall there. It was presented in ceremonies in February 2002 by his son to CMSgt. David L. Hamel, director of the institute. Levitow also gave Enlisted Heritage Hall his father's uniform and ribbons, the original Medal of Honor citation signed by President Nixon, photos, and other memorabilia.

Among those present was Carpenter, the commander of Spooky 71, now retired and living in Marshall, Tex. He delivered the keynote address.

Levitow's Medal of Honor is prominently displayed at Enlisted Heritage Hall. The award-winning exhibit, designed by curator William I. Chivalette, includes a lifelike mannequin of Levitow, paintings, photographs, uniform items, and artifacts. Visitors can also watch a videotape of Carpenter and John Levitow Jr. talking about the Medal of Honor mission.

More recently, Enlisted Heritage Hall obtained a surplus C-47 and converted it to a mock-up of an AC-47, with the colors and markings that Spooky 71 bore in February 1969. Inside the aircraft is a mannequin of Levitow, struggling to get the flare to the door. The gunship, situated on the lawn of the museum, was dedicated in October 2004.

Thirty-four years after it happened, the story of John L. Levitow has lost none of its power to excite and inspire. ■

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributing editor. His most recent article, "Rolling Thunder," appeared in the March issue.*

AEF's 2004 Teacher of the Year is bringing the world of aerospace to New Hampshire students.

Mr. Caron's Opus

By Bruce D. Callander

If you remember high school shop as the place where students spent the year making ash trays and table lamps, take another look. At Kingswood Regional High School in New Hampshire, what now is called the Technology Education Department offers courses in computer-assisted design, electricity and digital electronics, wood technology, metals technology, and graphic communications and design.

None of the department's programs is further from the industrial arts courses of past generations, however, than the aerospace courses taught by Daniel W. Caron, who was recently named 2004 Teacher of the Year by the Aerospace Education Foundation, an affiliate of the Air Force Association.

Daniel Caron helps some students from the Aerospace Pre-engineering class at Kingswood Regional High School test a model rocket's stability.

The award itself is named for the late Christa McAuliffe, the teacher who died in the 1986 space shuttle explosion. The award is given annually to a classroom teacher in kindergarten through 12th grade who demonstrates excellence in furthering the concepts of aerospace technologies through successful, innovative classroom programs.

Caron received his award Sept. 13, 2004, at the AFA Air and Space Conference and Technology Exposition in Washington, D.C.

Making the distinction between earlier industrial arts classes and his courses, Caron said, "The old shop classes used to be for kids who could do only simple things such as cut out a piece of wood from a pattern and put it together. The aerospace courses require more imagination."

Caron has taught at Kingswood since 1999. School administrators credit him with building the aerospace program and improving the school's physical facilities. Earlier jobs with industry and NASA have given him valuable contacts within the space community, and his success in writing grant applications has helped him add useful teaching aids.

Each of his aerospace students is assigned an e-mail mentor from the aerospace industry. They help with problems and, at the end of the year, evaluate the teaching program and suggest changes.

Various grants have provided Kingswood with computers, projectors, air rocket launching sets, helium blimps, and a portable planetarium. One grant paid for ham radio antennas that Caron mounted on the school's roof.

"I brought in a small mobile radio that I used to have in my truck," he said, "and we are using it to transmit and receive with the antennas that are up there."

Tracking Satellites

One class is now setting up a com-

puter, which the students will use to track satellites. The computer will control where the antennas are aimed, but "the antennas themselves, hooked up to the radio, work fine."

Caron has offered three primary courses at Kingswood: Aerospace Pre-engineering, a Cooperative Satellite Learning Project, and Aerospace Studies.

The pre-engineering course calls for students to design and carry out an aerospace experiment. The project is used to compete for a flight opportunity under NASA's Student Involvement Program or a similar competition.

The Aerospace Industries Association (AIA) started the Team America Rocketry Challenge several years back, Caron said. The students were excited about that, he said, and so, "for the past three years, we have been entering that competition." The challenge gives students a realistic experience designing an aerospace vehicle to meet specific mission and performance requirements.

According to AIA's instructions, "The rocket contest will challenge students to design, build, and fly model rockets that carry one or two raw eggs for precisely 60 seconds, returning the eggs to the ground safely"—that is, without breaking.

More than 16,000 students, representing every state, have participated in the last two competitions.

The contest is co-sponsored by the National Association of Rocketry, and the American Association of Physics Teachers is an educational partner this year.

The Kingswood team will practice for the event on the launch range, which is on an athletic field and includes two pads with five rails each to accommodate up to 10 rockets. "We make solid-fuel rockets," Caron said, "with black-powder motors."

Fail-Safe

The school's procedures ensure safety. "Someone is always in charge of making sure that everyone is well away from the pad," Caron said. Spotters check the airspace "to make sure that everybody is aware that you are launching. Then, your ignition system has fail-safes on it so you can't just launch by accident."

For an earlier AIA competition, a class designed and built a two-stage model rocket capable of reaching a specified altitude and returning safely to earth. Each student was given a specific function such as project manager, payload specialist, propulsion system worker, or safety expert.

Caron's Aerospace Pre-engineering students watch a rocket booster test. The class calls for students to design and carry out aerospace experiments.

Caron convinced a retired rocket engineer from the New England Council of the American Institute of Aeronautics and Astronautics to act as class mentor and recruited a sounding rocket engineer from NASA's Wallops Flight Facility, Va., to serve as e-mail mentor.

This year's team is divided into four major elements: propulsion, recovery/payload, structural/design, and management. Students have jobs such as machinist, designer, financial officer, and recovery specialist. Several also are responsible for corresponding with team mentors.

In Caron's Cooperative Satellite Learning Project, students study the history of space exploration, rocketry, and the design of various spacecraft. The course is modeled after one Caron taught in the late 1990s at a Maryland high school. At Kingswood, he modified the approach to allow for the fact that New Hampshire is farther removed from the space industry.

In the program, students build and launch model rockets and simulate satellite launches—in addition to studying the history of rocketry and teleconferencing with NASA officials. The course is designed to give entering freshmen their first taste of the space science experience.

The Aerospace Studies course is for students who have completed the two earlier classes. Each pupil signs a contract calling for an independent study in some aspect of space of interest to the student. Past students have chosen areas such as the principles of aeronautics and the nature of deep-space objects such as quasars and pulsars.

The students in all courses are required to participate in public outreach programs. Some help in another of Caron's activities—teaching evening classes in continuing education.

"An example might be when we set up the planetarium," he said. The aerospace students will do advance research on different constellations, and "we'll do a night-sky presentation and talk about the various constellations that might be in the night sky at that particular time of year. I'll have the kids explain about the different constellations and the stars in those constellations."

In 2004, Caron's continuing education classes included a seminar exploring the night sky and the autumn constellations using the portable planetarium.

Another class showed how to use a space explorer handbook CD and how to use the Internet to find space information. This seminar was recommended for parents who homeschool their children.

A third class was designed to explain how Global Positioning System satellites work. Participants did

Photo by Paul Kennedy

Caron receives his award from AEF President Mary Anne Thompson, Board Chairman Boyd Anderson (right), and John Politi, then AFA Chairman of the Board.

hands-on work with GPS receivers to plot their positions on Earth.

A fourth class, open to parents and children, covered rocketry basics and let students build and launch their own model rockets from supplied kits and motors.

The evening courses are popular in the community.

Space Camp

Even more appealing to younger students is the Knight Space Academy, a week-long space camp for grades three through eight. Caron directs that summer camp.

"I had a couple of kids who participated in space academy who came back and took one of my classes later on," he said.

With so many movies and TV programs set in the future, it may be difficult for some students to distinguish between what is state of the art in the aerospace world and what is Hollywood fiction. Caron does not always draw a fine distinction.

"Science fiction is all right," he said. "Look at Leonardo DaVinci's notebooks. When I ask students to design a space station, they have requirements that must be met."

Caron instructs his students to design their plans using current technology. For example, a student might want to use expendable space launch rockets to deliver space station parts to orbit. "If they say they want to use a rocket that does not exist, but could, possibly, with current technology, I let it slide," he said.

Caron doesn't recall taking an interest in aerospace as a boy. He began working in the area while already teaching high school. "There was a physics teacher in the room right next door to me," he explained. The other teacher "had always been interested in space, and I could hear him talking about it through the wall. He and I ended up building a space shuttle simulator."

Another of his earlier experiences put Caron in touch with space engineers and scientists as a facilitator with a NASA educational workshop at the Goddard Space Flight Center, Md. The two-week program operated out of Goddard and at Wallops Island on Virginia's Eastern Shore.

"I was hired as the teacher coordinator for that program at Goddard," he said. The University of Idaho and Oklahoma State University offered credit to teachers who went to the workshop. "We had to certify that the teachers did the work, and the universities made us adjunct faculty."

Recognition

The McAuliffe Award is not the first honor Caron has received. In 2002, he was chosen as Teacher of the Year by the Pease (N.H.) Chapter of AFA, and Educator of the Year by the American Institute of Aeronautics and Astronautics-New England Section.

When not teaching, Caron has served in numerous community positions. Since 2003, he has been aerospace education vice president for the Pease Chapter.

In 2002, he was named to the Preengineering Technology Curriculum and Advisory Council, a group that advises New Hampshire's education department on technology curriculum and fund-raising.

He has also been on the Technology Education Foundation of Maryland board and chairman of its Professional Relations Committee.

Aerospace studies are still considered elective courses at Kingswood. However, Caron said he hopes eventually to see aerospace education become accepted as mainstream courses, along with the other physical sciences. His argument is that aerospace contains many of the same elements of traditional disciplines such as physics. When his students build and fly their own model rockets, for example, they learn about Newton's three laws of motion.

Other teachers often borrow equipment from Caron to reinforce their own lessons. The portable planetarium is a popular tool in other courses, as are some of the teaching aids that NASA has sent him, such as tiles from a shuttle.

His aerospace courses feature all types of students, who tend to have different strengths and "work together well," he said. He noted that one autistic student was making presentations in front of the whole class by the end of one semester. His presentations "weren't perfect, but he was up there doing it."

Caron believes his aerospace courses have an enduring value for students.

"Having a student explain concepts to me weeks after we went over them is pretty satisfying," he said. "I have a special education student who will explain Newton's laws of motion and give examples. We went over this in class months ago. Would he have remembered if he learned them in a regular science class? I'm not sure, but my guess would be no."

Bruce D. Callander is a contributing editor of Air Force *Magazine. He served tours of active duty during World War II and the Korean War and was editor of* Air Force Times *from 1972 to 1986. His most recent article for* Air Force *Magazine, "From Air to Ground," appeared in the March issue.*

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The three mysterious EC-121 crashes a generation ago cost the lives of 50 airmen.

The Fall of the Warn

By Peter Grier

As 1st Lt. Joseph L.H. Guenet sat in the ditching position, waiting for his crippled EC-121 radar aircraft to crash, he noticed a pile of books on the table in front of him. Despite the heavy smoke pouring through the fuselage, despite the burning hydraulic fluid flowing across the cabin deck, the navigator decided that those books had to be moved.

They were technical manuals used by the flight engineers, and they were heavy. They might become deadly projectiles if they started flying around. Guenet got up from his seat, which was directly behind the cockpit, facing the rear. He reached over and started tossing the books into a baggage compartment.

At that moment, the EC-121's left wing struck the Atlantic about a half-mile off Nantucket Island. The military version of the graceful Constellation airliner burst into a fireball and skidded 1,000 feet parallel to shore. Guenet remembers this as a moment of instant silence, as the roar of engines on full power had been extinguished.

He must have blacked out for a short period. He awoke face down, pinned by something heavy on his back, with water rising around him. Then whatever pinned him broke away, and he was under the water, swimming up toward a bright light. He surfaced to find the light was a fast-spreading fire.

Contrary to procedures, his survival suit was unzipped and he wore no life preserver. He'd had no time to attend to these details, as he had helped other crew members into their gear.

"Doing things wrong saved my life," Guenet recalls today.

The survival suit hindered his movements, so he shed it. Moreover, a bouyant life vest, had he been wearing one, would have kept him from bobbing his head under the flames.

Three Crashes

It was April 25, 1967. Of the EC-121's 16-person crew, Guenet was the only survivor. It was not the only EC-121 accident. In a turbulent, 21-month period at the height of the Cold War, the 551st Airborne Early Warning and Control Wing, Otis AFB, Mass., lost three giant EC-121 aircraft in catastrophic overwater accidents. Fifty of the total 54 crew members died.

In the first accident, on July 11, 1965, an EC-121 ditched in the Atlantic about 125 miles off Nantucket; three crew members survived, but 16 perished. In the second accident, on Nov. 11, 1966, an EC-121 cartwheeled into the sea for no apparent reason, without a word of emergency communication from the crew. The third accident—Guenet's—was particularly devastating, because the lead pilot was the wing's commander, Col. James Perkins Lyle. Five months earlier, Lyle had presided at a memorial for victims of the second accident.

The crashes are little-remembered today. They involved now-retired aircraft, flown by a since-disbanded wing, fufilling a mission made obsolete a generation ago. At the time, however, they were shocking to New England and the Air Force, particularly in light of the fact that the 551st had flown thousands of sorties for a decade without a single loss of life.

Today, the crashes are reminders of the sacrifices by military members during the last era of concerted perimeter defense of the US homeland. The Cold War was not

ing Stars

casualty-free. From the Distant Early Warning (DEW) Line above the Arctic Circle, to the Texas Tower radar platforms at sea, and EC-121 Warning Stars off both US coasts, thousands of personnel served, and some died, on freedom's frontier.

"Was the mission worth it?" asks John J. Hughes, a radar crew chief for the 551st during the late 1950s and early 1960s. "I think if you look at the fall of the Berlin Wall, that will tell you it was worth it. That's why we were out there, in the long run."

Air defense was a top priority for the Air Force in the pre- and early ballistic missile age. At the time, the Soviet Union was steadily upgrading its bomber force, replacing World War II-vintage aircraft with more modern models. Defense planners found it conceivable that World War III could start with a swarm of air-breathing attackers racing for targets in the continental US. Thus by the early 1950s, the Pentagon was attempting to surround the nation with a belt of protective radar coverage.

The Pinetree Line, a series of some 30 ground radars that roughly followed the US-Canada border, reached operational status in 1954. That same year, the US started awarding full-scale construction contracts for the DEW Line, a fence of stations so far north on the continental landmass that many looked out on the icy expanse of arms of the Arctic Ocean.

Extended Coverage

These radars would only alert against aircraft flying the direct polar route from Russia. Extension of coverage to guard against bombers curving in from the flanks would require something other than ground stations. Texas Towers were one attempted solution. Essentially radars bolted to offshore oil well platforms, Texas Towers were scattered off the northeast US coast to provide early warning of a strike from the Atlantic. Five were planned but only three built.

In this context, mounting early warning radars on aircraft seemed an obvious way of plugging holes in coverage. Thus was born the Lockheed Warning Star, precursor to today's AWACS and the airplane that proved the concept of airborne early warning and tactical air control.

The Warning Star was the result of a marriage between a powerful search radar and a Super Constellation airliner. The Air Force ordered 82 of the dolphin-shaped aircraft, with the first entering service in the mid-1950s. (The last retired from the Air Force Reserve in 1978).

The EC-121 was powered by four Wright R-3350 Cyclones, which were among the most powerful radial engines ever built in the US, producing an astonishing 3,400 hp each. The aircraft's ceiling was 18,000 feet, an altitude that crews routinely neared during operations. Range was about 4,000 miles, with a top speed of just under 300 mph.

Pilots liked flying the EC-121, but it was, in general, heavy on the controls, says Roger Horrell, a pilot who served with the 551st. "The Connie was a handful to learn how to fly," he says.

The Wright engine was high-powered but temperamental. Failure was common, particularly when switching to a high blower setting at alti-

tude. EC-121 electronics also could be fragile.

On the West Coast, protection was provided by the 552nd AEW&C Wing, which flew Warning Stars out of McClellan AFB, Calif. On the East Coast, the 551st provided similar coverage from Otis. A subsidiary unit, the 966th Airborne Early Warning Squadron based at McCoy AFB, Fla., attempted to gather intelligence on Cuban activities.

Otis is located on sand flats near Cape Cod's shoulder, at the point where the peninsula juts out from the Massachusetts mainland into the Atlantic Ocean. It is a huge base, big enough so that the Army could bring in 155 mm guns mounted on railcars and fire them on the range, according to Dean Boys, an Air Force radar operator in the early 1960s. His recollections appear in *Fifty Fallen Stars,* a period history of the 551st AEW&C compiled by A.J. Northrup, a retired USAF senior master sergeant who served with the unit.

The 551st AEW&C was fortunate—for a while. On March 2, 1965, the wing marked its 10-year anniversary having accumulated 350,000 mission hours without a fatality or even injury in an aircraft accident.

In its normal Cold War operations, the wing logged long hours flying figure eights over the Atlantic, with occasional sightings of a wayward airliner or Bear turboprop probing the US perimeter. All of that changed on July 11, 1965.

July 11 that year was a Sunday. At around 9:30 p.m., an EC-121H, serial No. 55-0136, took off from Otis, bound for an ocean area past Nantucket. At around 11,000 feet, the No. 2 engine failed to shift into high blower. The pilot decided to continue up to mission altitude of 15,000 feet, with the aircraft running in essence on three-and-one-half power plants.

"Not So Good"

At 10:10, air controllers received a transmission from the aircraft. The No. 3 engine was on fire, and the pilot had declared an emergency. At 10:13, the pilot radioed that the balky No. 2 was also "not so good" and that he was preparing the crew for ditching. The airplane was 144 miles off the Nantucket coast. At 10:19, another airborne Warning Star heard the transmission, "Ditching in two minutes." At 10:22, the burning aircraft hit the water, hard.

Darkness hampered a massive sea search for survivors. At around 9 a.m. the next morning, search boats picked up three survivors and nine bodies. In total, 16 men died. "There were several of our buddies with us for a while, but then they just drifted away," A2C David A. Surles told a local newspaper.

Surles left the Air Force in November 1966 and went to work for the Norden Co. In a recollection included in *Fifty Fallen Stars,* he said he can't remember if he ever actually saw flames coming from the No. 3 engine, though it was certainly feathered. There was never any smoke in the cabin, he said. Preparation for ditching was calm and orderly.

"You didn't want to abort a mission," says Northrup, whose reports on the 551st are a comprehensive collection of reminiscences and documents concerning the unit's accidents. "You had to keep the stations covered all the time, no matter what."

Sixteen months later, disaster struck again. On Nov. 11, 1966, at around 12:37 a.m., EC-121H No. 55-5262 took off after a minor delay to change spark plugs, coils, and leads on one engine cylinder. Weather was clear, with visibility of 10 miles.

At 1:22 a.m., a radar tracking station determined that operations aboard the aircraft were normal.

Four minutes later, the crew of a New Bedford-based fishing boat, *Stephen R,* saw an aircraft roar overhead at an altitude of 200 feet. It was level, navigation lights off, and emitting a smoke or vapor trail. Two miles on, the EC-121H passed over another fishing boat, *Terra Nova,* whose crew noted the airplane's engines sounded as if they were backfiring. One mile later, at 1:27 a.m., the airplane struck the water and exploded. There were no survivors.

Unlike the previous accident, the second had no obvious cause, such as fire. Perhaps the airplane threw a prop.

"That, to me, was the scary accident," says Horrell. "We never got any defined reason why it occurred."

Lyle's Sad Duty

A crowd of 2,000 turned out for a memorial service at the base on Nov. 15. Lyle, commander of the 551st, helped present triangular folded flags to next of kin. The massive door of the hangar in which the service was being held was rolled open, and the strains of "Taps," followed by three volleys of rifle fire, concluded the proceedings.

For members of the 551st, Lyle was a memorable officer. James Perkins Lyle was born in Springtown, Tex., on Dec. 21, 1919, the youngest of four children. He joined the Army's aviation cadet program just before World War II. Trained as a B-24 pilot, he eventually served as commander of the 827th Bomb Squadron in Europe.

Atlantic Watch. ***This EC-121H Warning Star is pictured flying over the Cape Cod Canal, near Otis AFB, Mass. Three of the elegant radar aircraft, plus 50 crew members, were lost while on patrol over the Atlantic.***

He flew missions in World War II and Korea.

He assumed command of the 551st in July 1966. Lyle was a firm public supporter of the EC-121. By all accounts, he loved to fly and, as a committed four-engine man, wasn't about to let his position ground him. He had standard Air Force flight requirements to fulfill as well.

On April 25, 1967, Hughes, the radar crew chief, got a call from Lyle's secretary. At the time, Hughes was a year from retirement and was grounded. He'd been put to work scheduling pilots. The secretary said Lyle wanted to fly that night's 6:30 p.m. mission.

At that moment Maj. Howard N. Franklyn, an evaluation pilot, was standing in the scheduling area, reading a newspaper. He told Hughes to put him on the mission, too.

The crew for the mission began filing in around 3:30 that spring afternoon. Preflight inspection and engine starts were normal. The aircraft—No. 53-0549—took off from Runway 23 right on time, at 6:30 p.m. Visibility was nine miles. Surface winds were about 4.6 mph.

At about 6:58, the airplane crew reported that the aircraft had climbed past 6,000 feet. Shortly afterward, the pilot radioed that it appeared the No. 3 engine was on fire, and the airplane was returning to base. One minute later, the pilot reported an even more ominous development. It appeared the fire was actually in, or had spread to, the root section of the right wing. At that moment 53-0549 was 22 miles from Otis and eight from Nantucket. Controllers cleared the airplane for landing at Nantucket Airport.

At 7:03, the pilot made his last transmission, requesting that the lights be turned on at Nantucket's Runway No. 6. But as it passed over the island's west end, the Warning Star, burning fiercely by this time and still laden with fuel, veered away from the airport and passed on out to sea. Many eyewitnesses felt that Lyle had pulled to avoid crash-landing in a populated area of Nantucket.

Inside the doomed EC-121, smoke was pouring from the ventilation system. Guenet recalled that a flight engineer was lugging barrels of hydraulic fluid to the flight deck, perhaps trying to bring hydraulic controls back up, but to no avail. About one mile off Madaket Beach, the airplane skipped off the water and burst into flames. After traveling 1,000 feet, it broke up and sank in 50 feet of water.

Lone Survivor. *Lt. Joseph Guenet, an EC-121 navigator, is taken from a rescue craft en route to the Otis base hospital. Guenet was the only crew member who lived through the April 25, 1967, disaster.*

"I think the fire in the belly finally burned through the cables and they lost it," says Horrell. "The problems they had were much more than probably the greatest aviator in the world could have overcome."

Struggle for Survival

With that battle lost, the struggle for survival began. To this day, Guenet does not know how he lived through the impact. He does not know if anyone else made it out of the wreckage. He'd been trained that, to stay alive in a burning sea, you have to push the water up and away from your face, as if splashing a friend in a day at the beach. He quickly discovered that when the fire in question was fueled by high-octane aviation gas, all that maneuver did was aerate droplets and create a fuel-air explosion.

Bobbing upward as violently as possible, on the other hand, turned out to be an effective way to momentarily splash the fire away. After some minutes, the fire burned itself off, and the airplane's navigator found himself drifting parallel to the beach, with the headlights of searchers clearly visible.

He climbed aboard a floating segment of bulkhead—debris that he has since kept through the years—and hung on until a helicopter arrived. By that point, he was unable to lift his arms enough to don the horse collar rescue preserver. He clung to it fiercely with clasped hands, and the crew hauled him up anyway.

After that, all he remembers is waking up the hospital. He had multiple bruises and contusions, plus a broken clavicle, right arm, and left ankle. A few months later, Guenet was playing softball with colleagues when he bent to field a grounder and lost all feeling in his arms and legs. It turned out that the crash had also broken his neck—something the local doctors had unaccountably missed.

Guenet recovered after treatment and stayed in the Air Force, serving on a wide variety of aircraft. He retired as a lieutenant colonel in 1985 after a 27-year career.

What happened? Why did one unit lose three large and valuable aircraft to such accidents, after years of relatively safe operations?

One answer, say veterans of the 551st, may lie in the age and condition of those airplanes. By 1965, many EC-121 airframes had seen years of hard use. Their Wright engines had always been something of a hazard. Guenet notes that in his extensive experience flying in C-5s, only one engine had to be shut down—and his pilots did that as a precautionary measure. By contrast, in his first ride in a Connie, one

engine was shut down in the air—and a second upon landing.

In addition, H models were much heavier, due to the addition of airborne data processing equipment necessary to link into the then-new Semi-Automatic Ground Environment (SAGE) system, an early attempt to use computers to control fighters and fight the air defense battle. The aircraft also had to fly higher to gain the range for SAGE communications to work.

Deterioration

While they were working harder, the Connies were being maintained by less and less experienced crews. Many of the best maintenance people were being sent to bases in Southeast Asia. "The overall quality of the aircraft began to deteriorate," says Horrell.

The Air Force has not released the full records of its investigations into the EC-121 crashes, but some have been obtained from the Air Force Safety Center. Reprinted by Northrup, they provide additional details about all three accidents.

The primary cause of the first crash was the near-simultaneous failure of two engines, according to USAF records. A possible contributing cause was pilot error, probably due to anxiety and task saturation, as evidenced by the lack of warning announcements to the crew and high rate of descent.

The cause of the mysterious second crash is listed by the Air Force as "undetermined." Possible causes run from flight-control cable separation to release of toxic fumes from a fire extinguisher, which might have incapacitated the crew.

The primary cause of the third crash is also listed as "unknown," but the most probable cause of the accident, according to the Air Force Safety Center documents, was a fire stemming from a fuel spill that occurred while the Connie was on the ground and its fuel tanks were being serviced.

Some of the fuel from this spill apparently seeped into the right wing root. It evaporated into an explosive vapor, which was ignited by a hot electrical connection. This rapidly turned into a major fire in the right wing and lower radome, fed by fuel from ruptured main tanks.

Underlying all this was maintenance and personnel error, according to the Air Force investigation.

Postmortem. ***Salvage crews managed to retrieve some of aircraft No. 53-0549's parts, which were arrayed in a maintenance hangar at Otis. Within two years of the third crash, all remaining EC-121s went to reserve units.***

Horrell flew Connie 53-0549 two weeks before it crashed. He says that prior to takeoff, a crew member discovered fuel streaming from a filler neck on the right wing. Flight engineers diagnosed thermal expansion of the fuel, as the temperature that spring day was quickly rising. They stopped the gusher, cleaned up, and completed an uneventful mission.

The last pilot to fly the aircraft before its fatal mission has testified to a similar problem. This pilot, Don Borowski, estimated that 10 gallons of fuel from the leak ran into the wing root. He waited out a lengthy delay while the wing was flushed out.

The fire in Lyle's airplane started just when it reached 7,000 feet. That was the altitude where radar technicians typically turned on their radars. "It may have been RF [radio frequency] energy that set off fuel that had puddled in the wing root," says Horrell. "That is my educated guess as to what happened."

The loss of the third EC-121 in under two years was a stunning blow to the Air Force and surrounding region—indeed, the nation at large. The House Armed Services Committee named a special panel of lawmakers to study the circumstances of the crash. Some asked whether the Air Force's Connies had outlived their usefulness.

The fleet was grounded until a thorough inspection had tightened maintenance procedures, but the clock was ticking for Air Force Connies. The 551st was deactivated on Dec. 31, 1969. Active EC-121s already were being phased into the Air National Guard and Air Force Reserve. The emergence of Soviet ICBMs had made air defense something of an anachronism. The future of airborne early warning and control lay with the E-3 AWACS aircraft.

Today, Otis is an Air National Guard Base. F-15s based there were among the first US military aircraft to take to the air on Sept. 11, 2001. Otis Memorial Park contains a fountain surrounded by three boulders, each inset with a plaque honoring the dead of one of the lost Connies.

They did not prosecute a war, but they helped prevent one. That is what many of the family members and colleagues of the 50 men who lost their lives in the EC-121 crashes believe.

Northrup has spent years lobbying for further recognition of the men. A handful received medals, but most did not. "Those people deserved a medal," says Northrup. "They were defending the country as much as the people in Vietnam." ■

Peter Grier, a Washington editor for the Christian Science Monitor, *is a longtime defense correspondent and a contributing editor to* Air Force Magazine. *His most recent article, "The Intelligence Gamble," appeared in the March issue.*

AFA / AEF National Report

afa-aef@afa.org

By Frances McKenney, Assistant Managing Editor

Gala in Orlando

As part of the Air Force Association's Air Warfare Symposium in Lake Buena Vista, Fla., in February, the **Central Florida Chapter** and the Aerospace Education Foundation sponsored their 21st annual black-tie Air Force Gala.

This year's formal event honored Air Mobility Command. As Central Florida Chapter President John Timothy Brock told the audience, AMC is "our nation's primary means of getting the right resources to the right place at the right time." AMC's "air mobility warriors" were named AEF Jimmy Doolittle Fellows at the gala, with Gen. John W. Handy, AMC commander, accepting the honor on behalf of the command's 150,000 personnel.

In keeping with this theme, other Jimmy Doolittle Fellows named that evening were selected for air mobility-related achievements. AAR Cargo Systems was honored for creation of a cargo-handling system that did away with the manual labor of loading individual pieces onto C-130 aircraft. The Civil Reserve Air Fleet received the honor for volunteering aircraft for AMC missions. Reach 3210, an AMC crew from the 10th Airlift Squadron at McChord AFB, Wash., accepted the honor in recognition for a two week-long C-17 mission in support of tsunami relief in Asia.

Photo by Dan Higgins

Acting Air Force Secretary Peter Teets, AFA Board Chairman Pat Condon, USAF Chief of Staff Gen. John Jumper, AFA National President Bob Largent, and AMC Commander Gen. John Handy (l-r) applaud at a briefing at the Air Warfare Symposium in Florida in February.

Tommy G. Harrison, gala chairman, joined Brock in formal presentations of several chapter donations that are a highlight of the ball each year. The Air Force Memorial Foundation received a check for $10,000 from the Central Florida Chapter, an amount that brings the chapter's total contribution to $180,000. AEF Board Chairman L. Boyd Anderson and AEF President Mary Anne Thompson accepted a $45,000 donation from the chapter, which has raised more than $550,000 for the foundation over the past two decades.

Photo by Dan Higgins

Gala Chairman Tommy Harrison (far left) and Central Florida Chapter President John Timothy Brock (far right) present the chapter's donation to AEF President Mary Anne Thompson and AEF Board Chairman Boyd Anderson.

Half-Price Membership

In January, AFA instituted a half-price membership fee for junior enlisted Air Force personnel. This dropped the annual fee for grades E-1 to E-4 from $36 to $18.

The move is one of the association's recent membership initiatives. At its national convention last September, delegates extended full membership benefits to lineal ancestors or de-

scendants of those serving or who have served honorably in the armed forces, including the Guard and Reserve. Among other benefits, being full members entitles them to hold AFA office.

Surplus of Recruits

A top Air Force recruiter told the **Pasadena Area Chapter (Calif.)** that the service has a waiting list of young people who want to cross into the blue. The Army and the Marine Corps, on the other hand, must work hard to meet their accession goals. The Navy, he said, has been meeting its quota for recruits.

MSgt. Andrew E. Bistarkey Jr., from the 369th Recruiting Squadron at Los Angeles AFB, Calif., was guest speaker at the chapter's February meeting. He noted that all military branches met their recruiting goals in 2004, but the Marines fell short of their monthly quota this January.

Bistarkey, who was named as his squadron's top senior NCO in fourth quarter 2004, said his unit has more than 300 potential recruits on a waiting list. Retirees and former USAF personnel have proved to be the best source for names of such prospects, he said.

He also said that the Air Force was perceived as the most high-tech oriented of the services and as the military branch most concerned about quality of life for its personnel.

A veteran of 19 years in USAF and the son of an Air Force recruiter, Bistarkey worked on officer and enlisted personnel accessions in New Mexico and Ohio before being assigned to the Los Angeles area.

A Thousand Mouths To Feed

At the February meeting of the **Columbus-Bakalar Chapter (Ind.),** David W. Brown spoke about a support activity vital to military operations—food service.

A former USAF airman in the food service career field, Brown talked about flight-line box lunches, mobile kitchen trailers, and PRIME RIBS.

Brown said he joined USAF in 1989, choosing food service as his specialty after watching a recruiter's video on career fields available to enlistees. He received food service training at Lowry AFB, Colo., and was assigned to the 317th Services Squadron at Pope AFB, N.C. There he prepared in-flight and box lunches for aircrews and troops on joint service exercises.

He then became a member of the squadron's humanitarian disaster response team, called PRIME Readiness in Base Services—PRIME

AFA In Action

The Air Force Association works closely with lawmakers on Capitol Hill, bringing to their attention issues of importance to the Air Force and its people.

AFA Leaders Meet With New Members of Congress

In a three-day series of meetings, AFA Chairman of the Board Stephen P. "Pat" Condon, National President Robert E. "Bob" Largent, and Executive Director Donald L. Peterson went to Capitol Hill to meet with 35 new Congressmen to help start a continuing dialogue.

The AFA leaders briefed each lawmaker on the association's mission, its statement of policy and top issues, and described resources AFA can provide to the members and their staffs. They also discussed current issues of concern, such as DOD's program budget decision to terminate USAF's C-130J program and to curtail significantly the F/A-22 program. Other topics included adequate funding for the Department of Veterans Affairs and the proposed $250 enrollment fee for some categories of veterans and increases in prescription drug co-payments. (See "Action in Congress," March, p. 20.)

New Senate offices visited were those of: Richard M. **Burr** (R-N.C.), Tom **Coburn** (R-Okla.), Jim **DeMint** (R-S.C.), Ken **Salazar** (D-Colo.), and John **Thune** (R-S.D.).

Congressional offices visited were those of: John **Barrow** (D-Ga.), Melissa **Bean** (D-Ill.), Dan **Boren** (D-Okla.), Russ **Carnahan** (D-Mo.), Emanuel **Cleaver** (D-Mo.), Michael **Conaway** (R-Tex.), Jim **Costa** (D-Calif.), Henry **Cuellar** (D-Tex.), Geoff **Davis** (R-Ky.), Charlie **Dent** (R-Pa.), Thelma **Drake** (R-Va.), Michael G. **Fitzpatrick** (R-Pa.), Virginia **Foxx** (R-N.C.), Louie **Gohmert** (R-Tex.), Al **Green** (D-Tex.), Brian **Higgins** (D-N.Y.), Bob **Inglis** (R-S.C.), Bobby **Jindal** (R-La.), Daniel J. **Lipinski** (D-Ill.), Connie **Mack** (R-Fla.), Patrick T. **McHenry** (R-N.C.), Cathy **McMorris** (R-Wash.), Gwen **Moore** (D-Wis.), Ted **Poe** (R-Tex.), Tom **Price** (R-Ga.), John **Salazar** (D-Colo.), Joe **Schwarz** (R-Mich.), Allyson Y. **Schwartz** (D-Pa.), Mike **Sodrel** (R-Ind.), Debbie **Wasserman-Schultz** (D-Fla.), and Lynn **Westmoreland** (R-Ga.).

While the AFA officials were on the hill, they also visited the offices of lawmakers from their home states of Utah and Georgia.The primary topic of conversation was the proposed budget cuts to the F/A-22 and C-130J. They met with Bill **Castle,** counsel to Sen. Orrin G. **Hatch** (R-Utah) and four Congressmen: Rob **Bishop** (R-Utah), Jack **Kingston** (R-Ga.), Jim **Marshall** (D-Ga.), and Cliff **Stearns** (R-Fla). Stearns, who serves on the Veterans' Affairs Committee and is co-chairman of the House Air Force Caucus, was recently appointed to serve as an AFA National Director.

Photo by Chris Cross Photography

On Capitol Hill for meetings with freshman Congressmen, AFA Board Chairman Pat Condon and AFA National President Bob Largent meet with Rep. John Barrow (D-Ga.), at left, to acquaint him with Air Force issues and AFA's mission and statement of policy.

In Florida, the Hurlburt Chapter hosted a luncheon and awards ceremony in January for personnel from the 16th Special Operations Wing, some of them shown here. (See "Hurlburt's Unsung Heroes," at right.)

RIBS. The team took their mobile kitchen trailer to Charleston, S.C., when Hurricane Hugo hit the coast in September 1989. For two weeks, PRIME RIBS provided hot meals, as team members worked 12-hour shifts.

Brown went to the Mideast twice, the second time for Operation Desert Shield. He was part of a field kitchen at Masirah, on an island off Oman. The team served a tent city of 1,000 military personnel, whose favorite meal, he said, was surf 'n turf.

He got out of the kitchen—and the Air Force—in 1992 and now has a promotional products business imprinting logos onto items.

In Their Judgment

"What were *you* doing in the seventh grade?' asks Henry L. Marois Jr.

As aerospace education VP for the **Gen. Nathan F. Twining Chapter** in Florida, Marois and Robert F. Cutler, chapter president, helped judge the annual Pinellas Regional Science and Engineering Fair in Seminole in January. They came away impressed by the project of middle-schoolers Hayden Duersor and Clark Gairing. Marois could hardly believe they were only in the seventh grade. The boys, from Shorecrest Preparatory School, had measured the effect of different gas and air ratios on an internal combustion engine.

Because of the sophisticated level of their science project—titled "Zoom! Zoom!"—Duerson and Gairing were selected as the chapter's science students of the year. Marois and Cutler named the students' teacher, Tracie Belt, as the chapter science teacher of the year.

More than 300 public and private school students competed in this regional science fair.

Hurlburt's Unsung Heroes

Eleven enlisted and civilian personnel from Hurlburt Field, Fla., received honors as "Unsung Heroes" from the **Hurlburt Chapter** in January.

They were MSgt. Duane A. Douglas; TSgts. Adam Grabowski, Jeffrey A. Grimm, Tina M. Jung, and Janice Rundquist; SSgts. Catrina L. Dean, Tamiko L. Foster, Kavanzo Holland, and Jewel Pryor; A1C Karen Rhodes; and civilian Nathan Page.

At a luncheon during the chapter's quarterly meeting at a Hurlburt all-ranks club, the awardees from the host 16th Special Operations Wing and its units received a framed certificate and a chapter coin.

Guest speaker was Col. Kenneth F. Rodriguez, commander of the 720th Special Tactics Group. Emil Friedauer, chapter member, said Rodriguez walked through the audience, talking about integrity, service, and excellence and related those core values to the job performances of the 11 awardees.

Friedauer said he began the Unsung Heroes program as the chapter's awards VP in 1997. It was a way to recognize airmen who, as he put it, "are always there, supporting the mission, and quietly performing their jobs." The chapter honors these airmen and one civilian twice year. The base's First Sergeant's Group selects the recipients from the host wing in the winter quarter and from Hurlburt's tenant units in the spring.

Chapter VP for Programs TSgt. Ann K. Blodzinski, from the 23rd Special Tactics Squadron, directs the program for the chapter.

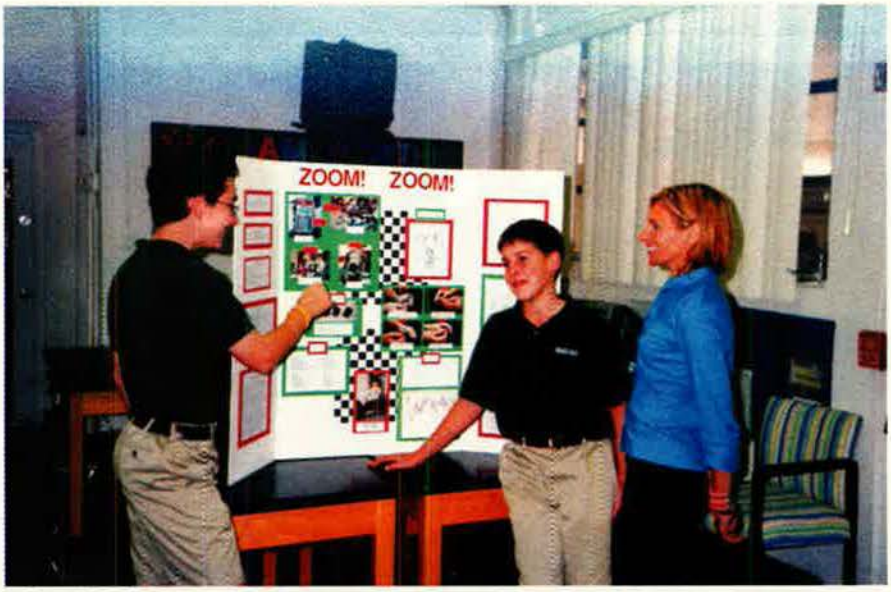
More AFA/AEF News

■ In January, the **Gen. Charles A. Horner Chapter** donated $500 to AFROTC Det. 250 at Iowa State University in Ames, Iowa. Charles McDonald, chapter treasurer, and Bruce Bachellor, the communications VP, visited the detachment to deliver the funds to cadet Andrew Radloff. McDonald reported that the unit plans to use the donation for new drill team uniforms and equipment.

■ The **Rushmore Chapter** held a membership luncheon in January at Camp Rapid, the South Dakota National Guard facility near Rapid City, S.D. Chapter members from Ellsworth Air Force Base, as well as from Air National Guard and the community, listened to a presentation by Ronald W. Mielke, the state president. "The US military needs the support of the public," he told them. Mielke then described AFA's role in supporting the Air Force and the chapter's responsibility to ensure member involvement, groom future leaders, build recognition programs, and perform community outreach activities.

■ Some chapters change officers every year, but by the time **Kitty Hawk Chapter** Treasurer Ed Greene handed over his reins to Hank Frazier in North Carolina recently, he had been keeping the books for more than 20 years. To mark the occasion, Chapter President Joseph M. Hardman and VP C.T. Halfhill joined the incoming and outgoing treasurers for a changeover ceremony in front of a replica Wright Flyer. It's located inside the visitor's center at the Wright Brothers National Memorial park. A local newspaper ran a photo of this event, with the headline "Longtime Money Man."

■ The **Carl Vinson Memorial Chapter** president, Lynn Morley, attended a staff meeting for the 78th Air Base Wing at Warner Robins AFB, Ga., in February to formally thank SMSgt. Kevin C. Swenson before an audience of his co-workers and bosses. Swenson had been the chapter's newsletter editor over the past year and was being reassigned to Yokota AB, Japan. Morley gave Swenson a certificate of appreciation and a signed copy of *God Is My Co-Pilot*, by chapter member Robert L. Scott Jr. ■



Hayden Duerson (left) and Clark Gairing show their science fair project to teacher Tracie Belt. The Gen. Nathan F. Twining Chapter chose the trio as science students and teacher of the year. (See "In Their Judgment," p. 85.)

Have AFA/AEF News?

Contributions to "AFA/AEF National Report" should be sent to *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: afa-aef@afa.org. Digital images submitted for consideration should have a minimum pixel count of 900 by 1,500 pixels.

AFA Conventions

April 29-30	**South Carolina State Convention,** Shaw AFB, S.C.
May 6-7	**Tennessee State Convention,** Memphis, Tenn.
May 19	**New Jersey State Convention,** Atlantic City, N.J.
June 10-11	**California State Convention,** Beale AFB, Calif.
June 10-12	**Oklahoma State Convention,** Tulsa, Okla.
June 25	**Mississippi State Convention,** Columbus, Miss.
June 27	**Alaska State Convention,** Fairbanks, Alaska
July 15-17	**New York State Convention,** Niagara Falls, N.Y.
July 16	**Pennsylvania State Convention,** Mechanicsburg, Pa.
July 22-24	**Texas State Convention,** San Angelo, Tex.
July 23	**Florida State Convention,** Cape Canaveral, Fla.
July 30-31	**Washington State Convention,** McChord AFB, Wash.
Aug. 12-13	**Midwest Region State Convention,** Omaha, Neb.
Aug. 13	**North Carolina State Convention,** Raleigh, N.C.
Aug. 19-20	**Colorado State Convention,** Colorado Springs, Colo.
Aug. 20	**Georgia State Convention,** Warner Robins, Ga.
Sept. 11-14	**Air and Space Conference,** Washington, D.C.

Reunions

reunions@afa.org

22nd Tactical Fighter Sq. June 2-5 at the Doubletree Paradise Valley Resort in Scottsdale, AZ. **Contact:** Carl Schneider (480-595-7668) (dukesch@aol.com).

27th FW, Kearney Field, NE, and Bergstrom AFB, TX. Sept. 22-24 in San Antonio. **Contact:** John McConnell (210-824-1329) (johnmc@stic.net).

310th BW Veterans Historical Assn (1954-65). Sept. 15-18 in Bozeman, MT. **Contact:** Norman Mueller, 3323 Vale Cir. S.W., Prior Lake, MN 55372 (952-440-5952) (ccmnfm@aol.com).

319th FIS. Sept. 21-25 in Nashville, TN. **Contact:** David Headen, PO Box 615, Mortons Gap, KY 42440-0615 (270-258-5633) (dwheaden@charter.net).

351st BG Assn, Polebrook, UK (WWII). July 14-17 at the Golden Phoenix in Reno, NV. **Contact:** Clint Hammond, PO Box 281, Mechanicsburg, PA 17055 (717-766-1489).

459th BG Assn. Sept. 29-Oct. 2 at the Holiday Inn in Shreveport, LA. **Contacts:** Charles Johnson, PO Box 6419, Bossier, LA 71171 (318-549-0522) or John Devney, 90 Kimbark Rd., Rochester, NY 14610 (585-381-6174).

4060th ARW, including 71st/341st ARS, Dow AFB, ME. Sept. 15-18 at the Bangor Motor Inn in Bangor, ME. **Contact:** Peter Derrico, 36 Meadow Brook Rd., Bangor, Me 04401 (207-941- 8075).

6911th RGM. May 5-7 in Kissimmee, FL. **Contact:** Rich Merrill (303-985-3575) (rich1pat2@aol.com).

7406th Support Sq. May 19-21 at the Holiday Inn in Philadelphia. **Contact:** Harry Cleet, 2619 Pennsylvania St., Allentown, PA 18104 (610-437-0823) (harrylucycleet@aol.com).

Jolly Green Assn. April 29-30 at the Ramada Plaza Beach Resort in Fort Walton Beach, FL. **Contact:** Lee Massey (850-863-3131) (leetmassey@earthlink.net).

Korean War Veterans. Oct. 3-6 at the Ramada Express in Laughlin, NV. **Contact:** Richard Gallmeyer, 1125 Evert Dr., Virginia Beach, VA 23464 (800-523-4715) (msg1gal@aol.com).

Pennsylvania AACS Alumni Assn. July 12-14 at the Hampton Inn in DuBois, PA. **Contact:** Ed Rutkowski, 301 Blakley Ave., DuBois, PA 15801 (814-371-7167).

Pilot Class 44-D. May 19-22 in Colorado Springs, CO. **Contact:** Lloyd Johnson (402-423-2304).

Pilot Class 56-B, including all bases, cadets, and student officers. May 16-18 at the Radisson Opryland Hotel in Nashville, TN. **Contact:** Nate Hill, 231 King St., Lancaster, OH 43130 (740-653-3835) (natehill@tactankers.com).

TAC Missileers, including all personnel associated with Mace and Matador missile systems. June 1-3 at the Embassy Suites in Nashville, TN. **Contact:** Joe Perkins (904-282-9064) (perkster@fcol.com).

World War II bombardiers. May 10-15 at the Pere Marquette Hotel in Peoria, IL. **Contact:** Bob Thompson, 280 Sharon Dr., Pittsburgh, PA 15221 (412-351-0483.)

Seeking members of the **20th Tactical Fighter Wing,** Upper Heyford, UK (1972-77), for a reunion. **Contact:** Jim Angel, 12500 Hammersmith Ct., Charlotte, NC 28262 (704-510-1701) (jimangelnc@aol.com).

Seeking members of **Cadet Class 44-D,** Blackland AAF, TX, for a reunion **Contact:** Frank Nash, 3716 Pepperridge, Mobile, AL 36693 (251-660-2921).

Seeking members of **Pilot Class 54-K** for a reunion. **Contact:** Robert Thorpe, 6616 E. Buss Rd., Clinton, WI 53525-8814 (608-676-4925). ■

Mail unit reunion notices four months ahead of the event to "Unit Reunions," *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

Pieces of History

Photography by Paul Kennedy

Jonah's Seat

In the 1970s, offices at Northrop's advanced projects division featured whale pictures—many whale pictures. These were winking, insider references to a classified Air Force effort to build a stealthy aircraft. Its official name was "Tacit Blue," but its fat, boxy profile (right) earned it a nickname: "The Whale." The cockpit (above) accommodated one pilot. Northrop used off-the-shelf parts such as the ACES II ejection seat. Northrop built one Whale; it was flown by only five pilots in a 1982-85 test period. Its contribution was in development of stealth technologies, some of which live on in E-2 and F/A-22 aircraft. After the last flight, the 15-ton Whale was stored for 10 years at a classified facility. It is now on display at the National Museum of the United States Air Force, Wright-Patterson AFB, Ohio.

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We proudly salute our customer and partner, the Italian Air Force, on the February 24 rollout of the first Boeing KC-767A, the world's most advanced tanker aircraft. With its ideal size and proven platform, the KC-767A sets a new benchmark in aerial refueling – more capable, more deployable, and more efficient. We congratulate Italy for leading the way to the future of tanker technology.

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