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Smoke plumes from the site of the destroyed World Trade Center towers are visible in this NASA photo taken the morning of Sept. 11, 2001.

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About the cover: Two beams of light shine from the site of the destroyed World Trade Center in NYC. See "Airmen on 9/11." USMC photo by Sgt. Randall A. Clinton.


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FEATURES

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Editorial

By Adam J. Hebert, Editor in Chief

Britain's Warning

THE immediate federal budget crisis passed Aug. 2 when President Obama signed the Budget Control Act of 2011. The legislation raised the nation's debt ceiling and set the groundwork for additional action to cut the massive federal deficit.

The national security impact of the deal is to cap "security spending"—a category that includes DOD and other accounts at $684 billion—not including war funding. This represents a cut of $5 billion (or less than one percent) compared to this year.

The real danger lies in the future as the government looks for ways to balance its books, or at least bring the balance of revenues and expenditures back to something resembling sanity. The first hurdle the nation needs to clear comes before Thanksgiving.

The 2011 budget act created a 12-person supercommittee to formulate a plan to cut the budget deficit by $1.5 trillion between 2012 and 2021. This is where things get really interesting.

Most observers expect DOD spending to either level off or decline in the coming years as the wars in Iraq and Afghanistan wind down and the nation moves to put its fiscal house in order. If the committee fails to come to an agreement by Nov. 23, however, the law calls for automatic, across-the-board federal spending cuts. These will slash nearly $50 billion annually from the Pentagon's coffers alone.

Nothing focuses the mind quite like a deadline, so this provision may be a brilliant ploy to force an agreement, to avoid what everyone fears: draconian, arbitrary cuts.

Although a sensible defense budget is the goal, the trigger mechanism could backfire: A sudden nine percent cut to the defense budget courts disaster. To see how, simply look to the situation in the United Kingdom, which is facing a similar set of financial problems.

Newly elected Conservative Party Prime Minister David Cameron released a defense white paper last October that rolled out an austerity plan gutting military capabilities.

This shows the perils of budget-based planning. Among the specifics in the UK's strategy:

- The combined RAF and Royal Navy fleet of Harriers is sent to early retirement.
- A plan to purchase short takeoff F-35 strike fighters is canceled to instead procure the less expensive carrier F-35 at a later date.
- The combination of the first two items will shockingly leave the UK for fully a decade with two new aircraft carriers but no fighters to fly off of them.
- All 20,000 British troops based in Germany will be brought home.

Through military cuts, the UK is accepting a smaller role in the world.

- Three RAF bases will be shuttered.
- 17,000 uniformed troops will be cut overall, including 5,000 from the RAF.
- 25,000 defense civilians will be turned loose onto the mean streets of Whitehall.
- An upgrade program for Nimrod maritime patrol aircraft was canceled, with the aircraft abruptly sent to retirement.
- The separate Nimrod reconaissance fleet was also retired, leaving a gap until RC-135s arrive in 2013.

These dramatic moves represented a roughly nine percent reduction in UK defense spending—the same cut the Pentagon base budget faces if no debt plan is approved this fall.

National security, in both the US and the UK, is derived first from a vibrant economy. It also requires that defense planners be able to plan for what the military is expected to do in the future. Britain negligently skipped the planning part (last October's review was the first of its kind in 12 years) until the fiscal crisis hit.

An August report by the House of Commons' defense committee shines a harsh light on this. "A gap of 12 years between reviews should never be allowed to occur again," the report states.

The UK government's plan reduces power and influence, and the nation's role in the world will be diminished—perhaps never to be rebuilt.

"A period of strategic shrinkage is inevitable," the report states. "The government appears to believe that the UK can maintain its influence while reducing spending, not just in the area of defence but also at the foreign office. We do not agree."

Britain has already felt the strain. Operations in Iraq and Afghanistan from 2006 to 2009 placed more demand on the nation's armed forces than the UK expected to face when it set its force size. In other words, the report notes, these two medium-size wars resulted in UK military "overstretch."

The problem may only get worse. Retired Air Chief Marshal Jock Stirrup, former RAF head and chief of the defense staff, told the committee the UK's plan appears to commit every military capability just to deal with continuing operations. This leaves nothing in reserve for surprises or larger contingencies.

The government's plan to deal with what the report calls "the legacy of overstretch" is to do less and make hopeful assumptions. The UK's plan now implies the nation would not even attempt operations like the Iraq and Afghanistan wars simultaneously.

British cuts leave severe capability gaps. Recovering will require a funding infusion as operations in Afghanistan end.

The UK is, in essence, accepting a smaller role in the world. This comes with consequences—less ability to influence others, defend its interests, and exert power over long distances.

Similarly, the US military defends the nation and its interests across a spectrum ranging from full-scale combat to worldwide disaster relief. It would be a shame to head down the UK's road by ceding global leadership to generate short-term cost savings.

"I will do everything I can to ensure that further reductions … are not pursued in a hasty, ill-conceived way that would undermine the military's ability to protect America," wrote new Defense Secretary Leon E. Panetta in an Aug. 3 message to DOD personnel.

"This potential deep cut … is not meant as policy," he continued. "Rather, it is designed to be unpalatable, to spur responsible, balanced deficit reduction and avoid misguided cuts to our security."

The debt commission and Congress can prevent scorched earth defense cuts by coming up with a rational debt reduction plan. They need to get this right. ■


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Letters

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Where's the Beef?

I read with a great deal of interest the article about UFOs in the June issue of the *Air Force* Magazine *["USAF and the UFOs," p. 68].* I drew a conclusion: "When are we going to quit wasting paper on stories with absolutely no scientific evidence?"

I have flown in Air Force cockpits for over 69 years, in every country in the world and including Area 51 and Tonopah. I have never seen anything in the air that I [couldn't identify].

You can get wild stories from anyone who is interested in getting published including a few beardy people who camp around Site 51 and Tonopah.

Brig. Gen. Charles E. Yeager,
USAF (Ret.)
Penn Valley, Calif.

Back in the 1930s

In your Pollyanna-ish June editorial entitled "Into the Rat Holes and Safe Houses" *[p. 4],* you state unequivocally that "the radical Islam advanced by al Qaeda and the Taliban is being rejected throughout the Arab world." This is a breathtaking inversion of reality. The "radical" part of Islam is the political part, the part that wages a war of enslavement against humanity, the part that bin Laden and his like-minded compatriots and imitators were fighting for. When a government declares itself to be an Islamic state, or puts Islam front and center in its constitution, it is declaring war against free men. It has rejected the concept of Islam as a mere religion, and is instead embracing Islam the totalitarian political cult. The so-called Arab Spring is the rise of political Islam in the Middle East. The only freedom being sought there is the freedom to "purify" society by expunging all non-Islamic influence from it, including specifically Western influence. We are back to the 1930s, witnessing the rise of a virulent global fascism. Only this time, the fascists will be armed with nuclear weapons and wedded to Islamic apocalyptic beliefs.

Maj. Robert D. Klimek,
USAF (Ret.)
Fort Smith, Ark.

Reacquaintance

In response to Adam Hebert's editorial, "Lies, Damn Lies, and the Trillion-Dollar F-35" *[July, p. 4],* I would like to acquaint him with the other half of my article—the part that presents the other side of the story. Here is [where you can find] the other half in full: [http://www.flightglobal.com/articles/2011/06/06/357560/f-35-strikes-trillion-dollar-mark-for-maintenance-bills.html].

Stephen Trimble
FlightGlobal
Sutton, Surrey, UK

Johnny, We Hardly Knew Ye

While looking over a list of the attendees at a reserve general officer conference in the Pentagon in the late 1980s, I recognized the name John Alison *["Alison," August, p. 34].* On the second day of the conference, I brought with me my treasured 1951 copy of *Back to Mandalay* by Lowell Thomas. The book, now long out of print, is a wonderful overview on the role of airpower in Burma and the history of air commando operations. All the key players, Phil Cochran, John Alison, Orde Wingate, Louis Mountbatten, and Joe Stilwell are wonderfully portrayed. Each chapter is entitled with a short Rudyard Kipling quote and illustrated with a small Milt Caniff cartoon.

I approached the good general a bit hesitatingly and said something to the effect, "Sir, I just want to tell you what your father and the others did in Burma was a remarkable achievement considering the tenacity of the enemy, the logistics chain, and the brutal climate." A little bemused smile crossed his face, but I continued. "Sir, I was in high school in the mid-50s when I bought this book. It made a singular impression and it is what really motivated me to join the Air Force and to try to find a way to get into air commando operations. I volunteered for Vietnam and in 1965 finally succeeded in getting assigned to the wing in Nha Trang. In other words, your father is in a very real way responsible for where I am today."

With that wonderful grin of his, he looked up at me and said, "Sonny, what the heck do you mean my father? That was me." I will always treasure that moment and our subsequent friendship. We will not see his like again.

It was an honor to know him. He exemplified everything that airpower is and means.

Maj. Gen. Jacques P. Klein,
USAF (Ret.)
McLean, Va.

What a jolt I received as I read General Alison's story, when I realized that he was "that captain" who was the ranking pilot at Abadan, Iran, who, along with several second lieutenants test-hopped the A-20s that Lockheed techs, along with a few NCOs, were reassembling (if arriving by sea) or inspecting and repairing (if they flew in

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from the US). I had long since forgotten his name until I read the article, followed by some Internet research. He gave me my first flight (in the nose of an A-20), a thrilling experience for a young corporal. When we landed I told him that was my first time in the air, and he replied, "You should have told me and I would have done some [aerobatics]." I am glad I hadn't done so, as it was scary enough anyway with low-level passes over the airfield. He used to come into the Quonset hut where five NCOs, myself included, had established the first military manned point-to-point "high speed CW comm station" in Africa or the Middle East. He was always moaning about not being in combat. I remember when he left, leaving the flight checks to the young lieutenants. Of course, they were old-timers compared to the pilots who came down from Russia to accept and fly the aircraft north.

CWO4 Arthur W. Elkins,
USAF (Ret.)
Belton, Mo.

Seven Years To Drop a Bridge?

As a nav-bomb type, I have to ask one question: Did anyone ever think of sending a three-ship B-52 cell against the bridge *["Breaking the Dragon's Jaw," August, p. 58]?* Trained as a bombardier, I then flew in the backseat of the F-4 Phantom. Believe me, no amount of derring-do on the part of fighter pilots will ever match the awesome power of a B-52 strike.

History shows that we won World War II in less than four years. Your story shows that it took us seven years during the Vietnam War to drop one bridge.

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

The US Navy possessed an asset that could have destroyed the Thanh Hoa Bridge and the air defenses around it in one afternoon. It was the World War II battleship USS *New Jersey.* The *New Jersey* was reactivated and served on the gun line 1968-69 off the coast of Vietnam. Its main armament—nine 16-inch guns—could fire a shell the size of a Volkswagen to a range of over 21 miles.

With the bridge about 11 miles inland from the coast, the *New Jersey* could have stood eight to nine miles off the coast and destroyed the bridge as well as decimated the surrounding air defenses without risk to any Air Force or Navy planes or pilots except for a spotter plane.

Why was this not done? The big brass with their multimillion-dollar modern weapons systems, did not want to admit that an obsolete 25-year-old World War II battlewagon could destroy a target that modern weapons systems could not, and at the cost of about $1,200 per shell. Instead, they expended and risked multimillion dollar airplanes and irreplaceable pilots over a several-year period.

None of the brass who conducted the Thanh Hoa Bridge campaign have given adequate answers as to why the USS *New Jersey* was not used to do this. Sadly, the author also decided to ignore this controversy.

The *New Jersey* was eventually taken off the gun line because the enemy complained that its belligerence was interfering with peace talks.

This is what we got from the idiots in the State Department during the period: "Impress the enemy by negotiating from a position of weakness."

Eugene Bokor
Pittsburgh

Chrome Dome

What a great issue of my favorite magazine! I especially enjoyed the Chrome Dome article as I was stationed at Columbus AFB, Miss., from 1959 to1965 and flew many of these flights carrying nuclear weapons *["The Perils of Chrome Dome," August, p. 54].* Our unit had been selected to fly 24-hour missions to evaluate the concept of Chrome Dome, which we did for nine months. We started with two flights a day and transitioned to four a day, which was quite a task for aircrews and

Letters

maintenance. We flew these "training" missions in 1959-60 and on one of these flights we had a collision between a -52 and a -135 over the Kentucky-Tennessee border. This occurred at night during the first air refueling. I was in the lead -52 and we had connected with the tanker when the pilot of the other -52 said over the air that he had overshot and was going to slide out to the right and come in again.

There was an explosion. The tanker went straight down and the B-52 came apart. Four people escaped from the B-52 and no one from the tanker. We reported the accident to 2nd Air Force command post and continued our flight. After the nine months were up, we went back to normal training routine until the actual Chrome Dome missions began later in earnest. I firmly believe that these missions played a major role during the height of the Cold War.

Col. Ollie H. Edwards,
USAF (Ret.)
Auburn, Ala.

As a retired boom operator of 33 years' service, I believe Ms. Grant's choice of words—"The KC-135's boom struck the B-52's longeron, and the left wing of the bomber snapped off"—to be misleading.

Using a verb to describe action by the KC-135 boom in downing a B-52 does not seem accurate. To me it infers possible inappropriate action by the boom operator.

A more accurate description might be that the bomber overran the tanker due to not following airspeed approach procedures and reporting "stabilized" in the "precontact" position as required.

Air Force boom operators have done, and continue to do, a great job since the late 1940s. It was an honor to serve as such for 30 years.

CMSgt. Richard P. Hoff,
USAF (Ret.)
Omaha, Neb.

The story, "The Perils of Chrome Dome," was interesting reading. I participated in Chrome Dome as an electronic warfare officer on a B-52D while stationed at Glasgow AFB, Mont., in the 91st Bomb Wing, 322nd Bomb Squadron. We primarily flew the "North Country" route which was the "big box around Canada" mentioned on p. 55. There were two air refuelings, each one 100,000-plus pounds of fuel being unloaded. One refueling took place off the New England coast and the second was over Alaska. Each Chrome Dome flight was made by pairs of B-52s. Each aircraft had a third pilot and, sometimes, a third navigator on board.

One of the electronic warfare officer's duties was to monitor the high-frequency radio for important traffic addressed to Sky King. In doing this there were lots of interesting things to hear over the HF radio. One was a series of sounds identical to the Kabuki theater. It made for somewhat boring flying and listening to the radio helped to relieve the boredom.

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

Remembering Fallen Heros

Thank you for the article "To the Top of Takur Gar" *[July, p. 52].* It brought back memories, but of a different kind. Our son, a lieutenant commander in the US Navy SEALs (now commander), swam the English Channel in 2004 in memory of Neil Roberts—12 hours and 24 minutes, 38,600 strokes. He raised over $20,000 for the Naval Special Warfare Foundation, which helped Neil's family.

There is a small church in Galway, Ireland, the Collegiate Church of St. Nicholas, built in 1320, which today serves both Catholics and Episcopalians. In the very back is a WWI life-size brass statue of a tired soldier. At the bottom of this statue is the following engraving. I believe it says it all about soldiers like Chapman, Cunningham, and Roberts: "Pass not this shrine in sorrow, but in pride and may you live as nobly as they died."

Col. John Doolittle,
USAFR (Ret.)
Bodega Bay, Calif.

Radioactive Return

I suspect your mailbox is on overload since publication of your article on the Nagasaki mission *["Near Failure at Nagasaki," July, p. 60].* Here goes one more piece. Forgive me.

Two stories relating to the Nagasaki mission came back to me. They are of some amusement but they probably weren't at the time.

Fred Olivi, as part of his memories of the mission, told the story about landing on Okinawa. As they were getting out of the plane at Okinawa, Sweeney warned every one of the crew not to say anything about the mission. It was around lunch time so they got in the chow line to get something to eat. As they were going down the line, one of the KP guys said to Fred, "Did you hear about the big explosion up north? It was a new bomb. It was the size of a golf ball."

The other fellow I came to know was on the *Enola Gay* mission. After the surrender they got to go up to Japan to see the damage. They were not allowed to go to Hiroshima, but they were permitted to visit Nagasaki. The fellow I'm writing about was Catholic. You know that Catholic missionaries got as far as Nagasaki many years ago. They built a church there. When the Tibbets crew was touring Nagasaki, they passed by the ruins of the Catholic church. My guy picked up a piece of rubble as a souvenir. He took it home with him and had it around the house using it as a door stop or some such unimportant household use. A priest was visiting him at the house in south Chicago and my friend pointed out the piece of rock to him. The priest inquired if it was radioactive. No one had thought of such a thing before. Sometime thereafter, my friend found a way to have it checked for radioactivity. It was radioactive. Another priest who was a missionary in Japan visited his family sometime later and he agreed to take the piece back to Japan and return it to Nagasaki. Probably one of the few times a souvenir ever got back to its place of origin.

Your piece will be the principal topic of discussion at the next WWII Roundtable we will be holding. This has been going on for more than 25 years.

William A. Rooney
Schaumburg, Ill.

Please thank John Correll for another great Air Force Magazine article.

"Majestic" does not express how inspiringly he told the Nagasaki story—another "keeper" for our family library.

David Chigos
San Diego

No, Please, Continue

Robert S. Dudney's title to President Carter's statement in "Verbatim" *["Oh, Please Shut Up," June, p. 28]* is unprofessional, discourteous, unnecessary, and childish. Whether I agree with our current and former Presidents or not, I was taught to respect them. This is the worst insult in *Air Force* Magazine that I have seen in over 40 years of reading it.

Lt. Col. Wayne R. Mathis,
USAF (Ret.)
Fairfax, Va.

I was surprised and disappointed while reading "Verbatim" in the June 2011 issue to see the heading "Oh, Please Shut Up," referring to comments by former President and Commander in Chief Jimmy Carter. Everyone is entitled to their opinion. However, I do not think it is appropriate to tell a former President to "shut up." I hope this was a temporary oversight by Robert Dudney.

Col. Bob Kinsella,
USAF (Ret.)
Chatsworth, Calif.

Coming In From the Cold War

Perhaps this has already been pointed out, but in the August 2011 magazine under "Cold War Scrapbook, p. 69, in the photo of Lt. Gen. Curtis LeMay attending his daughter's birthday party, the General has his hands in his pockets. I realize that this was an informal setting, but when I was in the active Air Force from 1959–1963, we were instructed with absolute conviction, never to put our hands in our pockets when wearing the uniform. It could lead to an Article 15 depending on the TI. Perhaps it is a bit overzealous, but it caught my eye!

SMSgt. Bernie Pfenning,
USAF (Ret.)
South Burlington, Vt.

■ *Photographs only capture an instant in time.—THE EDITORS*

I really enjoyed the pictures from the "Cold War Scrapbook" in the August issue. You should do that more often, like have bases in England, Japan, or Germany through the years, etc. Thanks.

MSgt. Aaron Sikes,
USAF (Ret.)
Alamogordo, N.M.

My sincere congratulations for the feature "Cold War Scrapbook," compiled by Frances McKenney. Excellent recap in capturing the places and mood of such a pivotal period in our nation's history.

Lt. Col. Frederick B. Wynn,
USAF (Ret.)
Basye, Va.

Two problems—first, excellent editorial, right down to the last sentence. "Airpower isn't going anywhere *["Editorial: The False Death of Airpower," August, p. 4].* With all my heart I hope it's going everywhere, stronger, modernized, and ever skyward.

Second, as a former Minot missle man and chief of missile and nuclear safety for 15th AF, I must strongly object to the almost total lack of recognition of the missile force in your truly captivating "Cold War Scrapbook." C'mon guys, you can do better than one picture!

Lt. Col. David B. Bates,
USAF (Ret.)
Duncanville, Tex.

■ *Eight former missileers submitted photos. Three appeared in print. The other five photos appear in "Cold War Scrapbook II" on our website at http://www.airforce-magazine.com/MagazineArchive/Pages/2011/August%202011/0811scrapbook.aspx.—THE EDITORS*

Dueling Historians Come To A Draw

Historian Walter Boyne was quite correct when he stated that the British use of Vulcan bombers during the 1982 Falkland Islands war "proved highly effective" *["Airpower Classics," June, p. 80].* The war in the Falkland Islands (known as the Malvinas War in Argentina) again illustrated the vital importance of air superiority.

Although both the US Navy official report and historian Norman Polmar rightly concluded that the material damage caused by the Vulcan strikes was small *["Letters: Dueling Historians," August, p. 8],* the strategic effect of the long-range Vulcan missions was profound.

Because British Prime Minister Margaret Thatcher demonstrated the will to commit long-range strategic bombers to the fight, the Argentine dictator, Lt. Gen. Leopoldo Galtieri, was convinced that the "Iron Lady" also had the will to use that airpower against his junta (although later the British secretary of state for defense announced no such attacks would occur). This resulted in what Air Vice Marshal Tony Mason described as "a defensive redeployment" by Mirage fighters to the mainland *(Mason, Air Power: A Centennial Appraisal, London: Brassey's, 2000, p. 65).* Overruling the chief of the Argentine Air Force, General Galtieri ordered that air superiority fighters defend Buenos Aires.

By all accounts, the Argentine Air Force acquitted itself admirably during the campaign, sinking several British vessels with the Exocet missile. Were the Argentine fighters able to operate out of Port Stanley airfield and establish air superiority over the Falklands, the outcome may have been quite different.

Without Argentine air superiority, the Royal Navy effectively employed sea power as the dominant arm in this campaign. The Vulcan strikes demonstrated that one must never underestimate the impact of employing long-range strategic airpower.

Dr. Chuck Dusch
Assistant Professor, Department of History
US Air Force Academy
Colorado Springs, Colo.

I would like to offer a correction to the letter entitled "Tanker, Tanker, Tanker" by Mr. George Keeler in your June 2011 issue *["Letters, p. 9].* Prior to the KB-50 which first flew in December 1955 and accepted by the Air Force in January 1956, Boeing was in the tanker business since the KB-29P. My father flew these as an aircraft commander (tail fin No. 4484120) assigned to Biggs Air Force Base, El Paso, Tex., in 1950 to 1952 with the 97th Air Refueling Squadron of the 97 Bombardment Wing of SAC. I still have the original instruction manual.

Doug Thornley
Orland Park, Ill.

I look forward to and enjoy the "Airpower Classics" feature in each month's issue. The feature is always interesting and enlightening, although the choice of subjects is probably surprising to some readers. However, the In Brief portion of the MiG-23 Flogger feature (August issue) erroneously included the AA-10 and AA-12 air-to-air missiles among the MiG-23's armament. No operational MiG-23 ever carried them, although a proposed upgrade to late model MiG-23s had the AA-12 as an option. If the armament listed was specific to the MiG-23MF, it should have omitted the AA-11, which was only employed by the MiG-23MLD, the final interceptor version of the series.

Lt. Col. Barry A. Miller,
USAF (Ret)
Poquoson, Va.

The Last Casualty

I was the gunnery officer on the USN LSMR 409 which had the mission of protecting Cho-Do and the other islands from land invasion *["April 15, 1953," June, p. 54].* We were visited nightly by "Bed Check Charlie" who dropped grenades but caused no damage but loss of sleep.

Our five-inch, 40 mms and 20 mms were not effective. We did mount a

.50-caliber machine gun from our landing force gear and this seemed to make him leery of us.

Our closest call to serious damage occurred when the radar control guns on Cho-Do picked us as the target instead of the low flying plane. They were close but no hits before we got them to cease fire. Thanks for the memories.

Capt. Charles Fox,
USNR (Ret.)
Honolulu

The "no US ground troop has been killed in an enemy aircraft attack since the Korean War" article in the June magazine brought back some memories. Fourteen months before that 15 April 1953 attack, I was a member of a four man radar maintenance team that installed a radar system on the North Korean island (Cho-Do) where that attack by a "Bed Check Charlie" occurred.

After turning down an electronics technician job offer from Hughes Aircraft Corp. in July 1951 because of a pending Korean War involuntary one-year extension of my initial three-year USAF enlistment, I instead elected, as a USAF buck sergeant to re-enlist for another three years (with a whopping $180 re-enlistment bonus). I was subsequently assigned to Japan and was TDY out of Tachikawa Air Base to Korea in early February 1952 to install a World War II-vintage radar system that had been refurbished at Tachikawa.

We were briefed in Seoul and then took off in a C-47 for a landing on the northern beach of the island of Cho-Do. It is located about 35 miles north of the 38th parallel about four miles off the west coast of North Korea (about seven miles southwest of another island of about the same size in the mouth of the Taedong (aka Chinampo) River leading up to Pyongyang, the capital of North Korea. The C-47 was piloted by Brig. Gen. Ernest K. Warburton who informed us in a preflight briefing that the beach was about 8,000 feet long, but failed to mention that there was a large rocky area extending into the water near the middle of the beach. We first saw the obstacle as he headed for it and made a tight fighter-like left turn to land on the eastern half of the beach. A satellite view of that beach today, with protruding land mass near the center, still shows it as a relatively desolate area.

The Navy shuttled us to the installation site on the eastern side of the island where the radar system truck and antenna trailer that they had delivered earlier were located, where we installed the World War II-vintage Signal Corps SCR-270 search radar system, with water cooled triode transmitter and "bedspring-type" stacked 32-element 106 MHz dipole antenna system.

The same type of radar system, with two stacked antenna systems (64 elements to narrow the antenna beam width and concentrate the power), was used to bounce the first radar signal off the moon from Fort Monmouth, N.J., on 10 January 1946 under Project Diana. And an earlier version of the SCR-270 was the radar system that detected aircraft of unknown origin approaching Pearl Harbor on 7 December 1941.

The Cho-Do system was used to extend the range and improve the detection capability (wide antenna beam and resulting large image on the PPI-scope) for the 502nd Tactical Control Group (TCG) Aircraft Control and Warning (AC&W) coverage of MiG Alley to the Yalu River MiG staging area about 85 miles north of the island. The Russian built MiG-15 aircraft of that era were flown by Chinese and North Korean pilots. The later version MiG-21s were flown during the Vietnam War. The SCR-270 system performed as expected and added significantly to our capability to intercept the MiGs.

I also have some not-so-fond memories of North Korean "Bed Check Charlies," with, thankfully, their not-so-accurate crude bombing capabilities, that provided some nighttime harassment during the radar installation period.

Col. Gene Fenstermacher,
USAF (Ret.)
Sierra Vista, Ariz.

Washington Watch

By John A. Tirpak, Executive Editor

Unrelenting pressure on the technological lead; Can USAF prove the need for a bomber?; Exquisite-capability bomber not in the cards ....

SOME SHRINKAGE WILL OCCUR

The Air Force will cope with looming budget cuts by shrinking, to make sure that the force it does field is not "hollow," Gen. Philip M. Breedlove, vice chief of staff, told a House Armed Services Committee panel in July. However, the cuts come at the worst possible time in terms of the service's modernization efforts, he said, and open a window where China and other potential adversaries could catch up and erase USAF's technological lead in key areas.

Breedlove, in testimony before the HASC's readiness subcommittee, said the planned 12-year, $400 billion budget reduction being imposed on the Pentagon is causing "quite some concern" among USAF's senior leadership, and could cause "a fundamental restructure of what it is our nation expects from our Air Force."

Both the tactical air fleet and bomber fleet are "in bad need of recapitalization," and USAF's carefully laid plans to manage modernization will be "challenged," he warned.

The service's must-buy shopping list includes the F-35 fighter, the KC-46 tanker, and a new penetrating bomber—all big-ticket programs.

To live within its means, the Air Force will have to "constrict" in size, Breedlove told the HASC panel, "in order to maintain a ready and fit force to fight." Reducing force structure will free money up to meet deficit reduction targets and needed modernization, but at the cost of needed capability.

"Our capacity would have to come down," he said, adding that a hollow force is not acceptable given the combat requirements of regional commanders. "We can't afford to go there," he said.

Just a week before, Breedlove told the Air Force Association's Mitchell Institute that the Air Force is struggling to figure out "how we're going to make it through the next five years without $49 billion"—a figure that presumably reflects USAF's share of the $400 billion cut.

"We're in a tough spot now," he told the Mitchell symposium attendees. "We see near-peers or peer competitors beginning to build similar capabilities in stealth, … long-range strike, …[and] missile technology on their aircraft." These countries, he said, "have money, and they have a very deliberate plan which they are good at executing, and they will bring pressure [on] our advantages across the world, all at the same time." The fiscal pressure, which is unrelenting, he said, will "challenge our ability to remain ahead of that … technology curve."

The Air Force, Breedlove said, must "think our way through some of these issues, where we clearly will not be able to buy our way through."

The $400 billion reduction—which Administration officials have hinted could balloon to $900 billion or more—is already "about a seven percent cut," Breedlove said. "The effect … will drive us to decisions which are going to be tough across the next few years."

The last time the Air Force faced a significant drawdown—in the early 1990s, when the Cold War ended—the service was flush with new systems across the fleet, and so did not face an onerous procurement bill, Breedlove noted. Now, however, all that hardware has aged 20 years, and USAF is already "flying the oldest Air Force we have ever flown."

Coping with cuts previously imposed, the service has already retired more than 1,500 older aircraft, "canceled major acquisition programs, and deferred much-needed military construction, just to get to where we are."

The Air Force is "clearly … some number of decades ahead of the Chinese in stealth and in the capability to employ stealth," Breedlove told lawmakers. Although no country can close a gap of four decades "overnight," the Chinese are employing cyber espionage, and that is helping them leapfrog ahead of where they otherwise would be.

China is "intruding into the nets of our manufacturers and our government," and as a result, is "catching up at an increased rate because of what they learn from those cyber intrusions," he said. China also has the funds to turn stolen secrets into hardware.

"When [China says] they're going to build 300 [J-20 stealth fighters] in the next five years, they will build 300," Breedlove asserted. "They will put the money to whatever they decide to do." The situation "scares me because of the determination and the fact that they'll deliver."

CONFESSIONS FROM "THE BOMBER HATER"

More than nine months after then-Defense Secretary Robert M. Gates gave the go-ahead for the Air Force to start working on a new penetrating bomber, requirements for the airplane are still undefined, and apparently still the subject of top-level Pentagon debate. At the very least, it is clear USAF hasn't made its bomber ideas apparent to senior defense leaders.

Marine Corps Gen. James E. Cartwright, then vice chairman of the Joint Chiefs of Staff, illuminated the lingering bomber controversy. Talking with defense reporters in mid-July, Cartwright—who, as chairman of the Joint Requirements Oversight Council, had considerable influence over new weapon systems—said he remained unconvinced by Air Force assertions of what the bomber ought to be able to do.

"I'm questioning what it is we're building, and what attributes" the aircraft should have, he said. "What is it we're going to build it for?" Cartwright, who previously oversaw the nation's nuclear bomber fleet as commander of US Strategic Command, confessed that he'd developed a reputation as "the bomber hater."

While he flatly stated, "I think you have to have a bomber," Cartwright also acknowledged he was at great odds with USAF over whether the aircraft should be, as the service suggests, "optionally manned."

"Nobody has shown me anything that requires a person in that airplane," Cartwright said. "I'm waiting for that argument and I haven't found it yet."

He shrugged off the contention that, as a future element of the nuclear triad, the bomber should have a human crew to provide nuclear surety. "I say, 'Gee, I don't remember the last time I manned an ICBM or SLBM or a cruise missile.' I'm not sure I understand that logic."

Further, bombers are "pretty quick," but not quick enough, for the most time-sensitive targets, he said. "There are several places on the face of the Earth [where] bombers can't reach," and have to be serviced by missiles of some sort.

While he recognized that building a cockpit into the aircraft wouldn't, by itself, render the aircraft inordinately expensive, Cartwright said making the bomber optionally manned would force

the design to be hyper-survivable against the toughest anti-access measures, an approach that would definitely raise its cost.

"It takes you to a design and a survivability characteristic of the platform that [is] significantly better" than a simple truck-like remotely piloted aircraft. Cartwright said the new bomber should reflect the design philosophy of the Predator family of RPAs—inexpensive, flexible to incorporate new weapons and technology, and with only as much self-protection as is necessary.

Cartwright noted that the oldest but largest element of the existing bomber fleet is the B-52, and "if you take that out of the inventory, you really don't have much left."

A new manned bomber, however, risks becoming an "exquisite" capability that would cost so much the Air Force would not be able to afford enough of them to be useful, he maintained.

"If we're going to go out and spend billions of dollars to build … less than 20" bombers—which is the size of the B-2 fleet—"then I question the investment," Cartwright said, adding, "I want to be able to think in terms of hundreds" of new bombers, not "10."

BOMBER DEBATE RAGES

Cartwright's comments indicate he is not persuaded by the Air Force's ideas about the new bomber's attributes.

Less than a week after Cartwright made his remarks, USAF Vice Chief of Staff Gen. Philip M. Breedlove, speaking to AFA's Mitchell Institute, insisted that the ability to strike any target on Earth remains a "core capability" of the service, which therefore needs a new bomber.

The Air Force will make affordability a prime consideration in designing and building the airplane, he said, and the bomber will have "a valuable deterrent effect, even in a strictly conventional" role.

"The conventional capability to reach into a target area and take those targets when we want is a strategic effect," he asserted.

The new bomber will be designed to be a conventional platform first, and a nuclear platform later. It will be an "evolutionary" part of the family of long-range strike systems, balancing "existing, evolving, and new capabilities." It's not the Air Force's intent to "lean very far forward" in the design.

"The bomber will not be an exquisite, 'lone wolf' platform capable of accomplishing all the missions by itself. It will rely on the 'family' in many cases," Breedlove said.

As to cost, "we need to be able to afford this system, so we can buy 80 to 100 of these platforms." Affordability, Breedlove said, "is a key parameter."

The Air Force has said it wants to bring the new bomber in at a unit cost of under $550 million, but that figure shouldn't be given too much credence, according to Shay D. Assad, the Pentagon's director of defense pricing. In a separate meeting with defense reporters in July, Assad said USAF's ballpark price for the new bomber is, at best, "a rough estimate," especially since the issue of requirements has yet to "settle down."

Assad said the bomber's cost will be figured by comparing it with historical programs such as the B-2—which has been out of production for 10 years—and with "similar type" programs, "to the degree they exist."

However, if affordability becomes the acute issue it is expected to be, it's entirely possible that the airplane will be designed to fit the available funds, and not the other way around.

"We … might establish, within the department, a position that says, 'This is all we can afford,'" Assad noted. "In that regard, then you have to make the requirements meet that [dollar figure]."

Breedlove also said that, following months of discussions with the Navy about joint and mutually supportive capabilities the two services see as required in the future, they agree that a bomber is essential.

"One of the primary things that came out of discussions in AirSea Battle was this need … to have long-range strike of some form," Breedlove said. Long-range strike "overcomes area denial measures." Long-range strike is a capability "the nation currently depends on" and has relied on for operations in Libya, Iraq, and Afghanistan. "We will continue to need this capability into the future," he asserted.

Assad said he would have "more insight" into the bomber's requirements—and thus cost—in three to nine months. ■

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Martin-Baker Aircraft Company Ltd
Higher Denham
Uxbridge
UB9 5AJ England

Tel: +44 (0) 1895 832214
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Air Force World

By Aaron Church, Associate Editor

Carter Moves up

Ashton B. Carter will succeed William J. Lynn III as deputy defense secretary this fall. Carter has been undersecretary of defense for acquisition, technology, and logistics throughout the Obama Administration, serving as point man for the KC-X recompetition, in restructuring the F-35 Joint Strike Fighter, and terminating the F-22 and F135 second engine for the F-35. He has spearheaded a number of streamlining initiatives at the Pentagon, notably the "should cost" effort and increasing use of fixed-price contracts.

Carter also served in the Pentagon during the Clinton Administration, where he was heavily involved in policy regarding North Korea.

New Defense Secretary Leon E. Panetta said Lynn has provided "outstanding advice and counsel to this department and to the nation over the course of his long career," and made his mark by creating the Pentagon's first-ever energy strategy, a new space policy, and most recently, the Department of Defense's own cyber strategy.

Lynn agreed to stay on until Carter was confirmed in the job.

Joint Chiefs Leaders Confirmed

The Senate approved Army Gen. Martin E. Dempsey and Adm. James A. Winnefeld Jr. as Chairman and vice chairman of the Joint Chiefs of Staff, respectively.

Dempsey succeeds Adm. Michael G. Mullen, who has served as Chairman since October 2007 and is retiring. Winnefeld on Aug. 4 replaced Marine Corps Gen. James E. Cartwright, who retired. Cartwright had served as vice chairman since August 2007.

Following the confirmations, Defense Secretary Leon E. Panetta said the two men bring "immense intellect, proven leadership, and far reaching strategic vision" to their new roles.

Dempsey comes to the Chairman's job having served as Chief of Staff of the Army for only four months. He previously served as head of Army Training and Doctrine Command, and before that, as deputy commander of US Central Command.

Winnefeld is a naval aviator who last served as head of US Northern Command and NORAD. Before that, he served as director of strategic plans and policy for the Joint Staff.

Defense on the Debt Ceiling

Defense Secretary Leon E. Panetta said $350 billion can be cut from defense spending over the next decade without affecting military operations or readiness. He was commenting on the Budget Control Act of 2011, the nation's new debt ceiling legislation.

USAF photo by SSgt. Ryan Crane

F-35 Schoolhouse Preps for Class

With the arrival in mid-July of two F-35As—AF-8 and AF-9—at Eglin AFB, Fla., the joint service F-35 Integrated Training Center there is gearing up for the first regular pilot training course to begin next January, according to 33rd Fighter Wing officials.

"We see ourselves as the beginning of the future for F-35," said Marine Corps Col. Arthur Tomassetti, vice commander of the 33rd FW, which oversees the nascent schoolhouse. "This is where everything will start."

Pilots and maintainers were to begin limited ground operations with the first two F-35s this summer as the force at Eglin grows to five F-35As by fall, augmented by a single Marine Corps F-35B by December.

The training center will conduct a 12-week operational utility evaluation in October, including six weeks of flight operations with the planned training syllabus in preparation for the first regular class. "If the OUE goes as planned, those pilots who go through that will actually come out of that evaluation as fully qualified instructors," said Col. Andrew J. Toth, 33rd FW commander.

January's inaugural class will train roughly 30 US aviators. At full strength, the Eglin joint training center will total 59 F-35A, F-35B, and F-35C variants.

Further reductions, however, would indeed "undermine" the military's ability to function, if executed in a "hasty" or "ill-conceived way," Panetta said in an Aug. 3 letter to military personnel. The debt ceiling agreement contains a mechanism to automatically cut military spending if Congress fails to enact prescribed deficit reduction.

If the "sequester" measure is triggered, it would unleash "dangerous across-the-board defense cuts that would do real damage to our security, our troops, and their families, and our ability to protect the nation," wrote Panetta.

Fraser To Lead TRANSCOM

The Senate confirmed the nomination of Gen. William M. Fraser III as next commander of US Transportation Command at Scott AFB, Ill.

He replaces Gen. Duncan J. McNabb who led TRANSCOM since September 2008 and is due to formally retire Nov. 30, after more than 37 years in uniform.

Fraser previously led Air Combat Command, taking the reins at JB Langley-Eustis, Va., in September 2009. Confirmed by the Senate for the TRANSCOM job Aug. 2, Fraser has spent most of his career in bombers and tankers.

In a series of related command moves, Lt. Gen. Gilmary Michael Hostage III passed command of US Air Forces Central to Lt. Gen. David L. Goldfein Aug. 3. Hostage has been

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MSgt. Jeffrey Needham fires an Mk 48 machine gun at the off-base firing range near Forward Operating Base Mehtar Lam in Laghman province, Afghanistan. Needham is part of a provincial reconstruction team, which comprises USAF, Army, and other government personnel. They aid the provincial government in organizing and guiding economic development of the region.

confirmed by the Senate to receive a fourth star and succeed Fraser as commander of ACC.

Goldfein heads to Southwest Asia after a two-year stint as Air Combat Command's director of operations at Langley.

F-22 Oxygen System Reviewed ...

The Air Force Scientific Advisory Board is studying the F-22's onboard oxygen-generation system—and those of other aircraft—in an attempt to solve pilot breathing problems that have grounded the Raptor fleet since May.

Air Force Secretary Michael B. Donley directed the study, which will be led by retired Gen. Gregory S. Martin, former head of Air Force Materiel Command.

A senior team of scientific and technical experts will gather information to recommend corrective actions for the F-22 OBOGS and any that may be needed on the A-10, F-15E, F-16, F-35, B-1, B-2, CV-22, T-6, or other aircraft.

Airmen Among Victims of Deadly Helicopter Crash

Three airmen were among the 30 US military personnel and eight Afghans killed in the Aug. 6 crash of an Army CH-47 Chinook helicopter in Wardak province, Afghanistan.

The airmen were TSgt. John W. Brown, 33, of Tallahassee, Fla.; TSgt. Daniel L. Zerbe, 28, of York, Pa.; and SSgt. Andrew W. Harvell, 26, of Long Beach, Calif. All were assigned to Air Force Special Operations Command's 24th Special Tactics Squadron at Pope Field, N.C.

In addition to the airmen, 22 Navy SEALs, five Army aircrew, and eight Afghans perished, making it the single most deadly incident for US forces in Afghanistan since the beginning of the war in 2001. "Their deaths are a reminder of the extraordinary sacrifices made by the men and women of our military and their families, including all who have served in Afghanistan," said President Obama in a statement from the White House.

The Chinook was attacked by small-arms fire and likely downed by a rocket-propelled grenade, stated Marine Corps Gen. John R. Allen, commander of US and NATO forces in Afghanistan. At press time, a more complete investigation was still ongoing.

Two days after the Chinook went down, Air Force F-16s launched a precision airstrike that killed the insurgents responsible. This operation was a "continuation of the original mission" targeting terrorist leaders in Wardak, officials said.

"This does not ease our loss, but we must, and we will, continue to relentlessly pursue the enemy," Allen said Aug. 10.

USAF photo by Roland Balik

To Honor the Fallen: *Col. Mark Camerer, 436th Airlift Wing commander, accompanies President Obama at Dover AFB, Del. The President visited Dover to pay respects to 30 US service members, whose remains were flown to the Department of Defense mortuary there for a dignified transfer, final identification, and preparation for return to their families. Dover houses the only military mortuary in the continental US.*

The advisory board planned a series of in-flight tests to examine breathing subsystems, including the pressurization system, mask, and cockpit oxygen levels.

"The safety of our aircrews is paramount," said Maj. Gen. Gregory A. Feest, Air Force chief of safety. "This review is a prudent step to ensure that."

Air Force fleets other than the F-22's will continue to operate normally during the study and the service plans no further groundings due to OBOGS anomalies, officials said.

... As Raptor Deliveries Are Delayed

F-22 Raptors completed for delivery since the fleet was grounded in May have piled up on the flight line at Lockheed Martin's production facility in Marietta, Ga., unable to fly.

By mid-July, four F-22s had rolled off the assembly line since the grounding. All of them are barred from flying to their home bases, according to a Lockheed spokeswoman.

Air Combat Command indefinitely revoked the F-22's flight status as officials investigate potential malfunctions with the aircraft's onboard oxygen-


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generation system providing pilots with breathable air.

Before July, delivery and production timetables were undisturbed, but as the grounding dragged on, disruptions eventually became inevitable.

"We expect to roll out the final jet at the end of the year, so the last one is already coming down the line," said the spokeswoman. "We know we are going to have to make some adjustments. [Serial numbers] 4182 and 4183 were scheduled to be delivered this month, but because of the stand-down, we won't be in a position to deliver them until August," she added in July.

F-35s Also Grounded

All F-35 ground and flight operations were suspended in August as a precautionary measure, after an incident with F-35A test aircraft AF-4, at Edwards AFB, Calif.

The integrated power package, which provides power for engine start and cooling of the aircraft, failed during a standard engine run during ground maintenance Aug. 2, said F-35 spokesman Joe DellaVedova.

Testers immediately shut down the engine and secured the aircraft. Neither the pilot nor the ground crew was injured in the incident. The stand-down affects all 20 F-35s currently in flying status, including both test aircraft and production airframes.

The same aircraft, AF-4, suffered an in-flight anomaly over Edwards earlier this year, resulting in a fleet grounding back in March.

Ground operations resumed in mid-August, but the fleet had not resumed flying at press time.

Allen New ISAF Commander

Marine Corps Gen. John R. Allen relieved Army Gen. David H. Petraeus as commander of NATO's International Security Assistance Force and of US Forces-Afghanistan. The change of command came just as the United States and NATO were beginning gradual handover of security to Afghan forces, July 18.

"We will keep our eyes on the horizon—the future of Afghanistan—a nation of free people at peace, governed under its constitution, pursuing economic enterprise and development, in a secure and stable environment free from the extremism and terrorism that has plagued this wonderful country and its people," said Allen taking command at a ceremony in Kabul. "In the end, together, we will prevail," he added.

Before commanding ISAF and US Forces-Afghanistan, Allen served as deputy commander of US Central Command beginning in July 2008. The Senate confirmed Petraeus as the next head of the CIA in late June. He will lead the agency after retiring from the Army.

Military Ready To End DADT

President Obama certified to Congress that the Defense Department has met all requirements for repeal of the 1993 "Don't Ask-Don't Tell" policy. His signature started a 60-day countdown to allowing homosexuals to serve openly in the ranks of the US military.

Beginning Sept. 20, service members

Cyber Theft Prompts Weapon Redesign

An undisclosed weapon system may have to be redesigned following a cyber attack presumably launched by "a foreign intelligence service," Deputy Defense Secretary William J. Lynn III said in July.

Perpetrated against an undisclosed defense contractor in March, the intrusion resulted in the theft of roughly 24,000 data files, said Lynn at the unveiling of the Pentagon's first-ever cyberspace strategy in Washington, D.C.

While the data breach did not "necessarily" set DOD back in this weapon system's development, it "compromised information relative to the design of military equipment," he said.

If a foreign intelligence service was indeed the culprit, the attack highlights the disturbing fact that "a nation-state was behind it," explained Lynn.

Lynn declined to address how the United States had responded to the attack, saying that the intrusion was just the latest in a series of intrusions that have been growing in number in recent years.

"It's hard to quantify these [cyber attacks], but ... the number of significant intrusions is much, much smaller" than the number of scans that are done on our systems each day, he said July 14.

Lockheed Martin and Booz Allen Hamilton were both recently reported to have been targeted in cyber intrusions.

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Time To Cut the Airlift Fleet?

The Air Force's strategic airlift fleet should be reduced, according to top airlift officials, who asked Congress to lower the mandated fleet size from 316 to 301 strategic airlifters.

The Air Force wants to retire 32 C-5A Galaxys as the last new-build C-17s enter service.

"We humbly ask the committee and Congress to support the President's vision by repealing the 316 strategic airlift floor and enabling us to manage the fleet to ensure we continue to meet [combatant command] requirements," Air Mobility Command boss Gen. Raymond E. Johns Jr. stated in written testimony to the Senate Armed Services Committee.

Basing his arguments on the most recent mobility capabilities and requirements study, Johns said a fleet of 222 C-17s, 52 C-5Ms, and 27 C-5As is fully capable of meeting the highest projected demand of hauling 32.7 million ton-miles per day.

Gen. Duncan J. McNabb, head of US Transportation Command, asserted that the cut would pose no operational risk and would avoid about $1.2 billion in maintenance costs between Fiscal 2012 and Fiscal 2016.

During his confirmation hearing to lead US Transportation Command, Gen. William M. Fraser III added his support, saying that to "take full advantage of our aircrews, maintainers, and aerial porters, the Air Force should be given the authority to retire the oldest, least capable C-5As."

will no longer be subject to separation for admitting homosexuality, under the measure passed by Congress last December.

"I have always been confident that our dedicated men and women in uniform would transition to a new policy in an orderly manner that preserves unit cohesion, recruitment, retention, and military effectiveness," Obama said in a July 22 statement accompanying the certification.

In a joint statement, Air Force Secretary Michael B. Donley, Air Force Chief of Staff Gen. Norton A. Schwartz, and CMSAF James A. Roy said USAF "stands ready to implement this change with the same unparalleled professionalism we have demonstrated with every transformation that we have undertaken in peace and war."

Cyber Strategy Complete

The Pentagon unveiled its first strategy for defense of US cyberspace in July. The document outlines the five basic pillars of DOD's approach: Treat cyberspace as an operational domain; employ new concepts to protect DOD networks; partner with other US agencies; build relationships with allies; and leverage the country's exceptional cyber workforce and rapid technological innovation.

"The cyber environment we face is dynamic. As such, our strategy must be dynamic as well," Deputy Defense Secretary William J. Lynn III said in unveiling the strategy during an address to National Defense University in Washington, D.C. "While today is an important milestone, it is only one part of the department's efforts to learn and adjust through time," he said.

Although it's not yet clear exactly what role cyber will play in 21st century warfare, he said it's certain that "bits and bytes can be as threatening as bullets and bombs."

DOD's cyberspace strategy comes on the heels of a White House policy confronting similar threats, issued in May.

Spartans To the Fray

The Ohio Air National Guard's 179th Airlift Wing made the first overseas deployment of the C-27J in August, providing direct airlift support to Army ground units.

Air Guardsmen of the 179th deployed to Afghanistan alongside National Guard soldiers from Georgia and Oklahoma, to support the 159th Combat Aviation Brigade from Fort Campbell, Ky. "I could not be more proud of the folks around the country and the agencies and organizations that assisted with getting these planes out the door," said Col. Gary McCue, 179th Airlift Wing commander.

Based at Mansfield Lahm Airport, the Air Guard unit was also the first unit to convert to the C-27J.

Capable of operating from austere airstrips, the C-27Js will remain in theater for nine months, according to Mansfield officials.

Second GPS Block IIF Satellite in Space

The second Global Positioning System Block IIF satellite achieved orbit in July, transmitting its first signals back to Earth.

The GPS IIF-2 was "functioning normally and ready to begin on-orbit maneuvers and operational testing," prime contractor Boeing announced after the July 16 launch aboard a Delta IV rocket. The launch took place at Cape Canaveral AFS, Fla.

The first Block IIF satellite lifted off in May 2010, becoming operational last summer. The new configuration provides greater accuracy, a more jam-resistant military signal, and a more powerful and secure civilian signal. Boeing is under contract to build 12 IIF satellites.

Whiteman Sets B-2 Nuclear Alert Record

The Air Force's B-2 stealth bombers completed a record-setting, week-long airborne nuclear alert exercise at Whiteman AFB, Mo., in July.

Airmen of the 509th Bomb Wing and Missouri Air National Guard 131st Bomb Wing generated a record 21 sorties during the exercise's peak day, logging 235 flight hours in 64 sorties during the event.

Crews flew two-thirds of an average month's operations in one week, according to Whiteman officials. "We wanted to take the B-2 and the maintenance and operations communities to the limit of

USAF photo by SrA. Corey Hook

Joint Support: *Members of the 702nd Expeditionary Airlift Squadron train on a C-27J at Kandahar Airfield, Afghanistan. The 702nd is a joint Air Force-Army venture supporting coalition ground troops at forward operating locations. Their first combat mission was flown Aug. 4. See "Spartans To the Fray."*

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The War on Terrorism

Operation Enduring Freedom—Afghanistan

Casualties

By Aug. 15, a total of 1,728 Americans had died in Operation Enduring Freedom. The total includes 1,726 troops and two DOD civilians. Of these deaths, 1,368 were killed in action with the enemy, while 360 died in non-combat incidents.

There have been 13,164 troops wounded in action during OEF.

Merciless Hammer

Air Force strike aircraft flew 176 hours of nonstop close air support over Afghanistan's Pech Valley region near the Pakistan border, dropping more than 100 bombs in four days of supporting ground forces during Operation Hammer Down II.

Cooperating with joint terminal attack controllers, F-15Es of the 389th Expeditionary Fighter Squadron and F-16s of the 555th EFS from Bagram Airfield struck precisely multiple targets that were "danger close" to friendly forces, according to Bagram officials.

"There was a period where we dropped seven bombs in a span of 26 minutes, ... some within 250 meters of our forces," recounted Lt. Col. Mark O'Neil, 389th EFS assistant operations director. "It's nerve wracking, but when that JTAC comes on the radio and says, 'Excellent job, not a scratch on friendlies,' it makes it all worthwhile."

Hammer Down eradicated more than 100 insurgents, including several high-value targets at the end of June.

Advisors Train for Gunmen

To teach unit members how to respond to a gunman, the 443rd Air Expeditionary Advisory Squadron recently conducted its first live-fire training at Kandahar Airfield, Afghanistan.

NATO Training Command-Afghanistan initiated the training in response to the tragic shooting of eight US airmen and a US contractor at Kabul Airport, by an Afghan Air Force officer in April.

The three days of instruction helped improve the advisors' reaction to such scenarios with rapid-fire weapons drills, quick-fire reaction drills, and seated reaction drills.

MSgt. Terry Gilbert of Kandahar's 738th Air Expeditionary Advisory Group, said future plans include incorporating "some building clearing techniques, assault maneuvers, and more advanced weapons handling."

Building a Training Superbase

Airmen, soldiers, and contractors have nearly tripled the original size of the Shindand Air Base in northwest Afghanistan since last fall. It is now the country's second largest airfield, surpassed only by Bastion Field in the south.

Construction of a new 1.3-mile NATO training runway is slated to begin early next year as part of the base's overall $500 million transformation, and recent expansions added an eight-mile perimeter fence as well as areas for new housing and work space.

Air advisors plan to build infrastructure at Shindand to make it the premier flight-training base for the Afghan Air Force. It will have space for more than 3,000 coalition forces and government contractors.

Shindand currently hosts AAF Mi-17 helicopter pilot training and is scheduled to receive an additional 18 fixed- and rotary-wing aircraft, according to Col. Larry Bowers, 838th Air Expeditionary Advisory Group commander.

aircraft generation, while safely generating as many sorties and hours as possible," said Capt. Brady Poe, 509th Aircraft Maintenance Squadron operations officer.

With engines still running, ground crews hot-refueled the aircraft on the flight line to achieve optimum sortie rates during the exercise, which ended July 14.

Global Hawk Flies ASIP and MP-RTIP

An RQ-4 Global Hawk Block 30 remotely piloted aircraft recently completed its first production acceptance flight with a full sensor suite—including the Airborne Signals Intelligence Payload intended to eventually equip the entire Block 30 fleet.

Separately, a Block 40 Global Hawk completed a full system flight with the Multiplatform Radar Technology Insertion Program sensor.

Aircraft deployed to Southwest Asia currently carry the electro-optical/infrared Enhanced Integrated Sensor Suite and synthetic aperture radar supplied by Raytheon, but not the ASIP. Block 30s now providing overhead-imagery support of forces in Afghanistan will get the ASIP as an upgrade. All nine Global Hawk Block 30s currently forward deployed will rotate through Northrop's facility in Palmdale, Calif., for the installation.

The added suite "will provide a persistent level of intelligence, surveillance, and reconnaissance that has never before been provided by any aircraft," said George Guerra, Northrop Grumman's vice president of high-altitude long-endurance systems.

The MP-RTIP simultaneously tracks moving ground targets and provides synthetic aperture radar imagery in all weather conditions, day or night. Northrop Grumman and Raytheon jointly produce it.

Now designated the AN/ZPY-2, the MP-RTIP radar configuration was test flown July 21 at Edwards AFB, Calif.

The Air Force plans to procure 11 of the separate Block 40 aircraft, which will operate from Grand Forks AFB, N.D.

Three Dozen F-35s for Nellis

The Air Force approved a plan to base 36 F-35 strike fighters at Nellis AFB, Nev., between 2012 and 2020.

Twelve F-35s will be assigned to test support, while the remaining 24 will be dedicated to weapons training school, according to the record of decision.

The stealth fighters' beddown will increase the Nellis population by 412 personnel, requiring the construction of new facilities, as well as the alteration and demolition of some existing ones, according to officials.

Following Eglin AFB, Fla., Nellis is the second USAF installation to be definitively assigned F-35s.

The record of decision followed a positive environmental impact statement delivered in May, and was signed June 24 by Kathleen I. Ferguson, USAF deputy assistant secretary for installations.

Service leaders are pushing toward final decisions on additional basing for the remainder of planned F-35 units.

C-130s In the Firefight

Air National Guard and Air Force Reserve Command fire bombers flew 242 sorties and dropped 609,960 gallons of fire retardant during a month-long battle

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Senior Staff Changes

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CHANGES: Brig. Gen. Daniel B. **Fincher,** from Dep., Rule of Law, US Forces-Afghanistan, CENTCOM, Kabul, to Cmdr., AF Legal Ops. Agency, Office of the Judge Advocate General, USAF, JB Anacostia-Bolling, D.C. ... Gen. William M. **Fraser III,** from Cmdr., ACC, JB Langley-Eustis, Va., to Cmdr., TRANSCOM, Scott AFB, Ill. ... Brig. Gen. (sel.) Daryl J. **Hauck,** from AF PEO, ISR, Spec. Ops. Forces, ASC, AFMC, Wright-Patterson AFB, Ohio ... Lt. Gen. (sel.) Stephen L. **Hoog,** from Cmdr., 9th AF, ACC, Shaw AFB, S.C., to Cmdr., 11th AF, PACAF, JB Elmendorf-Richardson, Alaska ... Brig. Gen. Lawrence M. **Martin Jr.,** from Dep. Dir., Ops., AMC, Scott AFB, Ill., to Vice Cmdr., 18th AF, AMC, Scott AFB, Ill. ... Brig. Gen. Kenneth J. **Moran,** from Spec. Asst. to the Cmdr., AFMC, Wright-Patterson AFB, Ohio, to Dir., Prgm. Mgmt. & Integration, SMC, AFSPC, Los Angeles AFB, Calif. ... Maj. Gen. (sel.) John F. **Thompson,** from AF PEO, Strat. Sys., AFMC, Kirtland AFB, N.M., to Dep. Dir., Joint Strike Fighter Prgm., Office of the USD, Acq., Tech., & Log., Arlington, Va. ... Lt. Gen. Janet C. **Wolfenbarger,** from Vice Cmdr., AFMC, Wright-Patterson AFB, Ohio, to Mil. Dep., Office of the Asst. SECAF, Acq., Pentagon.

SENIOR EXECUTIVE SERVICE RETIREMENTS: Dee H. **Andrews,** Donald B. **Paul.**

SES CHANGES: James J. **Brooks,** to Dir., Irregular Warfare, Ops., DCS, Ops., Plans, & Rqmts., USAF, Pentagon ... Thomas A. **Fitzgerald,** to Dir., Engineering, SMC, AFSPC, Los Angeles AFB, Calif. ... Jer Donald **Get,** to Assoc. Dir., Prgms., DCS, Strat. Plans & Prgms., USAF, Pentagon ... James R. **Martin,** to Dir., Business Plans & Ops. Directorate, NRO, AFSPC, Chantilly, Va. ... Joseph M. **McDade,** to Dir., Office of Small Business Programs, Office of the SECAF, Pentagon ... Pamela C. **Schwenke,** to Dir., Budget Investment, Office of the Asst. SECAF, Financial Mgmt. & Comptroller, Pentagon. ▪

against wildfires raging in Arizona and New Mexico.

The last two Modular Airborne Firefighting System-equipped C-130s and personnel of AFRC's 302nd Airlift Wing returned home to Peterson AFB, Colo., from a temporary operating base at Kirtland AFB, N.M., July 14.

Over the course of the mission, C-130s from the North Carolina Air National Guard 145th Airlift Wing at Charlotte and California ANG 146th Airlift Wing at Channel Islands ANG Station dispatched a total of four MAFFS aircraft to Kirtland, augmenting the AFRC assets.

"The team success over the past 30 days demonstrated the professionalism and effectiveness of the citizen airmen who volunteer for this vital mission," said Lt. Col. Dave Condit, deputy commander of the 302nd Air Expeditionary Group, which oversaw the operation.

Viper Radar

The Air Force's Aeronautical Systems Center has begun the initial steps of upgrading the F-16 fleet with Active Electronically Scanned Array, or AESA, radars by issuing a request for information to industry.

USAF is considering upgrading between 300 and 600 late-block F-16s with the AESA, which would replace the current APG-68 system. The Air Force envisions installations beginning in 2017, according to the RFI.

Issued at the end of June, the RFI specifies the Air Force's interest in existing AESA systems that can be retrofitted onto "the existing F-16 Block 40/42/50/52 aircraft without extensive structural, electrical, or environmental cooling system modifications."

Target Missile Launched From C-17

The Missile Defense Agency successfully fired a short-range air launched target missile in a test shot over the Pacific Ocean near California in July.

Deployed via parachute from the rear ramp of a C-17, the test validated the missile's redesigned deployment mechanism, modified to correct problems identified in previous tests.

Pulled free of the aircraft by the parachute, the SRALT's rocket motor then ignited, sending the missile on its planned overwater trajectory about 500 miles off the coast of southern California. It simulated a tactical ballistic missile.

Sensors based in California tracked the missile during the test, as did the MDA's two Space Tracking Surveillance System demonstration satellites.

"This was the first demonstration of stereo acquisition and track handover of a short-range target by the STSS," stated MDA's release.

The agency intends to use SRALT as a test body for tracking and shootdown tests of the nation's ballistic missile defense system.

Last KC-135 GATM On Time

Rockwell Collins delivered the 419th and final C/KC-135 upgraded with the Global Air Traffic Management system during a ceremony at Kelly Field near San Antonio.

"This program set a new performance standard for Air Force procurements with 100 percent of the upgraded aircraft delivered on time and within budget," said Dave Nieuwsma, Rockwell vice president, in a company statement, July 12.

GATM enables Air Force KC-135 tankers to move safely and efficiently between military and commercial airspace, and save fuel by using the most efficient air routes.

Rockwell won the contract in 1999. KC-135s with GATM were the first Air Force aircraft certified to international

Trouble Over the Taiwan Strait

A Chinese Su-27 fighter crossed the centerline of the Taiwan Strait—the unofficial dividing line between communist China and democratic Taiwan—in pursuit of a U-2 reconnaissance aircraft in June, prompting a warning from the US.

Adm. Michael G. Mullen, Joint Chiefs of Staff Chairman, called on China to be careful in responding to US reconnaissance flights in international airspace. "We have to make sure that we don't repeat what happened in 2001," he said referring to the incident when an aggressive Chinese fighter hit a Navy EP-3E surveillance aircraft over international waters near China's southern coast.

The *Washington Times* reported that the U-2, flying from Kadena AB, Japan, was over the international waters on a routine recon mission on June 29, when two Chinese Su-27s were scrambled to intercept it over the strait.

One Su-27 turned away before reaching the dividing line, but the other continued until a pair of Taiwanese F-16s were scrambled, causing it to break off. Warned of the fighters, the U-2 cut its mission short to return to base, according to press accounts.

The incident occurred less than two weeks before Mullen made a previously scheduled official visit to Beijing to promote improved US-Chinese military-to-military ties.

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Rockwell is also prime contractor for the KC-135 Block 45 cockpit upgrade, slated to begin delivery in 2013, and is a major avionics supplier to Boeing for the Air Force's KC-46A tanker.

B-1 Situational Awareness Upgrade

Boeing will modify the Air Force B-1B bomber fleet with three new capabilities under $99.5 million contract announced in July.

"The Integrated Battle Station upgrades will provide B-1 bomber aircrews with a higher level of situational awareness and a faster secure digital communication link," said Rick Greenwell, Boeing's B-1 program director.

The contract covers procuring the first lot of kits with parts for the Vertical Situation Display Unit in the forward cockpit, as well as the Fully Integrated Data Link and the Central Integrated Test Systems for the B-1B's aft cockpit.

All three modifications fall under the Integrated Battle Station initiative and will be installed at the same time beginning in late 2012. Fleetwide modification should be completed by 2019, according to the company.

While the Air Force planned to retire six B-1Bs in Fiscal 2012—intending to use the savings to update its 60 remaining Lancers—language in the House version of the Fiscal 2012 appropriations bill would bar USAF from retiring the aircraft.

Wright-Patt Transitions to C-17s

Air Force Reserve Command's 445th Airlift Wing at Wright-Patterson AFB, Ohio, transitioned to the C-17 this summer. A ceremony marking the transition took place at the base July 9.

Wright-Patterson previously operated the C-5A, and the 445th is the latest Reserve unit to change over to the C-17.

The base had received five of its nine C-17s by mid-July, with the remaining four slated to arrive by the end of Fiscal 2012, according to Boeing.

Pilot Escapes QF-4 Crash

A QF-4 Phantom pilot assigned to the 82nd Aerial Target Squadron, Det. 1, ejected safely from his aircraft, which crashed July 6 near Holloman AFB, N.M.

The 49th Wing at Holloman operates the QF-4s as full-scale aerial targets over White Sands Missile Range. The aircraft's dual control system allows it to either be flown in the manned configuration by a pilot in the cockpit, or in the drone role by remote controllers at a ground station.

According to Col. David Krumm, 49th Wing commander, the pilot survived in good condition. The accident is under investigation.

Soaring Performance at Edwards

The Air Force Academy's new TG-16A sailplane underwent safety and performance test flights over the California desert, ahead of final evaluations at the academy in August.

Testers with the 445th Flight Test Squadron at Edwards AFB, Calif., completed aerobatic, maneuvering, stability, and high-cross-wind landing tests with the high-performance glider over the course of the flight activities in July.

"This is the first time we've taken it to the corners of the envelope and really put it through its paces," said squadron commander Lt. Col. Jason Schott. "The glider has been handling well with no significant areas of concern," added test pilot Maj. Andrew Martin.

With flying at Edwards complete, testers shipped the aircraft to Colorado Springs, Colo., for final evaluations at the academy. The academy is acquiring 19 German-built DG-1000 high-performance sailplanes, designated TG-16, to replace its aging TG-10B and TG-10C gliders in the aerobatic training role.

Rescuers Decorated by France

Three airmen with the 83rd Expeditionary Rescue Squadron at Bagram Airfield, Afghanistan, received the French National Defense Gold Medal with bronze star for their heroism during the rescue of a French helicopter crew.

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Braving high winds, poor visibility, and an unsecured crash site, two HH-60 crews from the squadron located the downed French helicopter. Pararescue jumpers TSgt. Kristopher Burridge and SrA. Jackson Rogers then rescued the French crew.

HH-60 pilot Capt. John Mosier said he "set up a blocking pattern" with his helicopter to shield the ground team from potential fire from a nearby village as the rescuers found, secured, and treated the badly injured French pilot and copilot during the June 11 rescue.

The copilot later succumbed to his wounds, but the pilot is recovering from a broken back.

"Getting a medal is a huge honor, ... but getting this guy back to his family is what's most important," said Mosier upon receiving the medal.

Mosier, Burridge, and Rogers were decorated in a ceremony July 8, at Forward Operating Base Morales-Frazier.

9/11 Memorial March

To mark the 10th anniversary of the Sept. 11, 2001, terrorist attacks, the 4th Security Forces Squadron at Seymour Johnson AFB, N.C., has organized a 2,181-mile march from San Antonio to New York City.

The march began in San Antonio July 12, and will end Sept. 11 at "Ground Zero" in lower Manhattan.

Fifteen security forces units across the United States are participating, each to cover a distance of about 140 miles.

"We're doing this to reflect on the changes 9/11 had on our career field and our lives," said TSgt. Kenneth Broughman, 4th SFS training noncommissioned officer in charge. Those changes include "the time we've been away from our loved ones due to deployments, [and] the effects those deployments have had on each person." He said the march is "ultimately to remember the defenders who lost their lives by enemy hands since the start of Operation Enduring Freedom."

Obituary

Robert H. Widmer, aeronautical engineer and designer of the Convair B-58 Hustler—USAF's first operational supersonic bomber—died in Fort Worth, Tex., on June 20 at age 95.

Widmer joined Convair at its headquarters in San Diego and later transferred to the company's main aircraft factory in Fort Worth, establishing the company's design and engineering department there. He worked at Fort Worth well into his 80s, as the company transitioned to become General Dynamics, then part of Lockheed, and ultimately Lockheed Martin.

Among his many aeronautical accomplishments, Widmer played instrumental roles in developing the F-111, F-16, and Tomahawk cruise missile, according to the *New York Times.* ■

News Notes

■ The 97th Air Mobility Wing at Altus AFB, Okla., claimed the top honor of "Best Air Mobility Wing" at Air Mobility Command's airlift rodeo. Some 150 teams including seven international crews competed in the week-long challenge held this year at JB Lewis-McChord, Wash.

■ An unarmed Minuteman III ICBM making a test flight from Vandenberg AFB, Calif., was intentionally destroyed over the Pacific Ocean after an anomaly was detected, the Air Force said. The flight was terminated over the open ocean northeast of Kwajalein Atoll in the Marshall Islands, July 27.

■ Air Force officials issued updated dress and personal appearance regulations, releasing Air Force Instruction 36-2903. The manual includes items new since the last edition in 2006, including the Airman Battle Uniform and green fleece outerwear now in use.

■ Maj. Jon Williams, an AWACS mission crew commander, became the first officer and one of a few airmen to log 10,000 hours on the E-3 Sentry, July 4. Assigned to the 963rd Expeditionary Airborne Air Control Squadron, Williams attained the milestone during a deployment to Southwest Asia.

■ Pacific Air Forces showcased USAF airpower in Brunei for the first time, during the week-long Brunei Darussalam International Defense Exhibition in July. An F-16 from Misawa AB, Japan, performed a flying demonstration, and a C-17 from JB Pearl Harbor-Hickam, Hawaii, was on static display.

■ Capt. Cole Davenport on June 28 became USAF's first electronic warfare officer to graduate from the Navy's EA-18G Growler electronic attack course at NAS Whidbey Island, Wash. Embedded with the Navy, Davenport is a member of the 390th Electronics Combat Squadron.

■ The first of eight C-17s destined to replace New York Air National Guard C-5As arrived at Stewart ANGB in Newburgh, N.Y., July 18. The 105th Airlift Wing will slowly begin phasing out C-5s this summer as C-17s arrive and crews requalify on the new aircraft.

■ More than 140 Air National Guardsmen and F-16s from Alabama, California, Iowa, Massachusetts, and Washington participated in Safe Skies 2011, at Mirgorod AB, Ukraine. Sponsored by US European Command, the air defense exercises with Polish and Ukrainian aircraft in July marked one of the first USAF fighter aircraft visits to the former Soviet state.

■ The first Northrop Grumman-built Euro Hawk arrived in Germany from Edwards AFB, Calif., after completing flight testing July 21. A specialized electronic intelligence variant of the RQ-4, the aircraft is the first of five being outfitted with sensors by EADS for delivery to the Luftwaffe in 2012.

■ Air Force and Boeing officials dedicated the service's newest C-17 (tail No. 99211) to recipients of the US military's highest decoration, unveiling *Spirit of the Medal of Honor* in a ceremony during the 2011 Air Mobility Rodeo at JB Lewis-McChord, Wash., July 26.

■ An Alabama Air National Guard F-16C assigned to the 100th Fighter Squadron overran the runway on landing during the Experimental Aircraft Association's annual fly-in convention at Wittman Regional Arpt., Wis., July 28. Though the pilot was unhurt, the nose undercarriage collapsed, causing extensive damage to the aircraft.

■ A former 1st Fighter Wing F-15C, transported by road from JB Langley-Eustis, Va., arrived at its new home at the Chico Air Museum in California, July 31. Museum officials hope to locate the final pilot of serial No. 80-0014, dubbed *Freedom Eagle,* for a dedication in September.

■ Lockheed Martin delivered the last of 12 new-build AN/AAQ-39 electro-optical/infrared targeting systems for Air Force AC-130U Gunships. Begun last July, delivery of the system enables improved crew safety by enabling identification and engagement of hostile targets from longer ranges than before.

■ The Air Force Research Lab wants to develop an automated off-road vehicle for special operations forces, capable of operating undetected behind enemy lines. According to the request for information issued July 20, AFRL envisions an all-terrain vehicle sized to fit inside the tilt-rotor CV-22.

■ The Air Force will purchase a previously leased C-37A executive transport from Gulfstream Aerospace for $26.8 million. The Air Force operates a fleet of 10 Gulfstream V-based C-37As. They augment USAF's 757-based C-32 fleet shuttling military and government officials. ■

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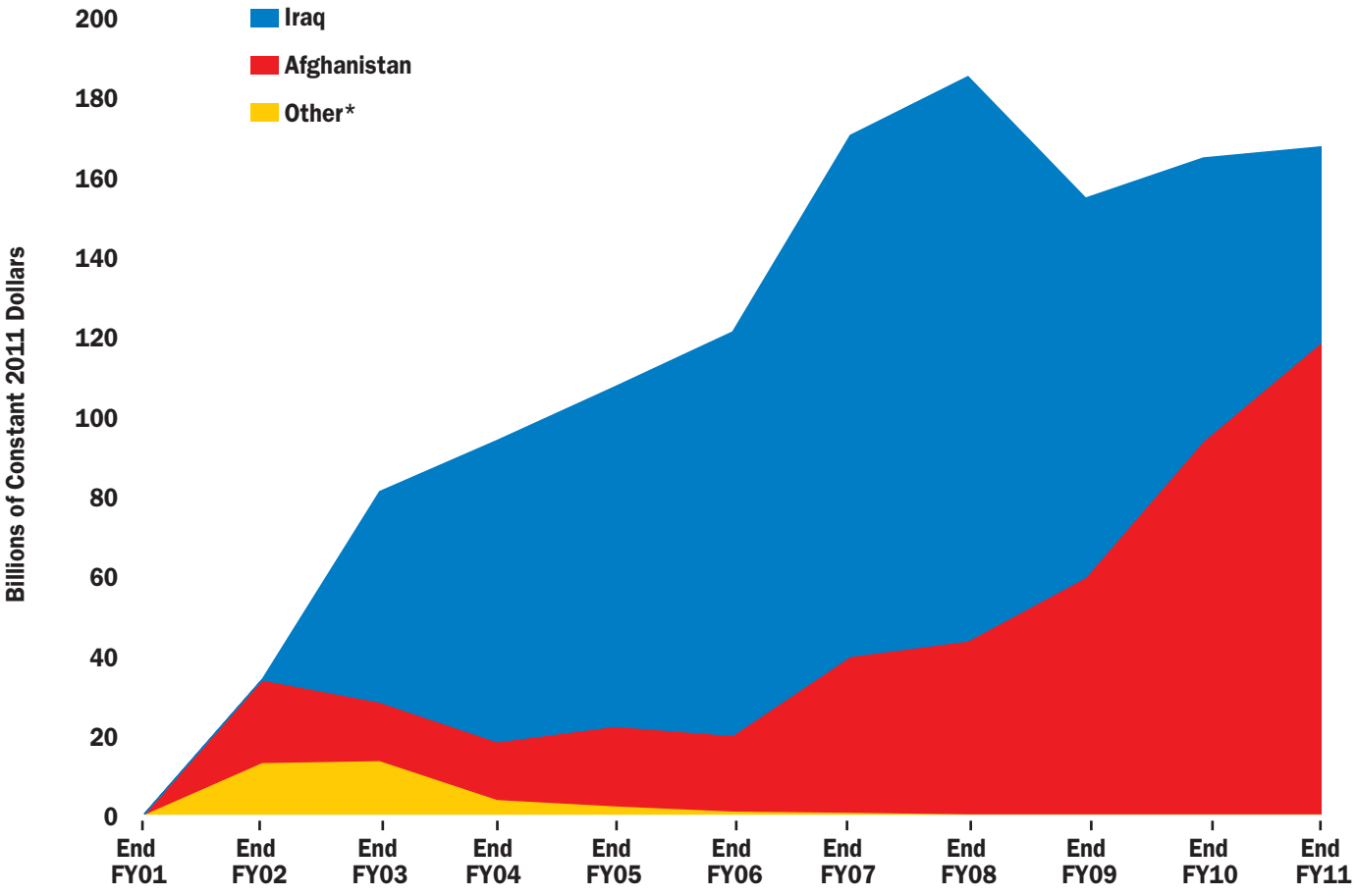
Ten Years of War

America this month completes a decade of continuous war that started with the al Qaeda terrorist attacks of Sept. 11, 2001. US combat operations soon commenced in Afghanistan and within 18 months in Iraq. The cost has been high—especially in casualties. More than 6,000 US troops have been killed, and more than 45,000 have been wounded. The financial cost also has been heavy. In a recent report, the Congressional Research Service pegged the 10-year outlay for both wars at nearly $1,283 billion. Expenditures peaked in 2008, when Washington spent nearly $186 billion.

Cost of US Operations in Afghanistan and Iraq



*"Other" refers to general security measures.

Source: "The Cost of Iraq, Afghanistan, and Other Global War on Terror Operations Since 9/11," Amy Belasco, Congressional Research Service, Washington, D.C., March 29, 2011. Figures are expressed in budget authority. Fiscal 2011 is an estimate.

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By Robert S. Dudney

Top of the Line

"There is no alternative to the [F-35] JSF program that delivers an acceptable level of capability at a lower cost."***—Deputy Secretary of Defense William J. Lynn III, letter to Senate Armed Services Committee, quoted in NationalJournal.com, Aug. 8.***

A Job To Finish

"This is a reminder to the American people that we remain a nation still at war. ... As heavy a loss as this was, it would be even be more tragic if we allowed it to derail this country from our efforts to defeat al Qaeda and deny them a safe haven in Afghanistan. ... Here today we affirm our even greater resolve and commitment to complete the mission at hand."***—Secretary of Defense Leon E. Panetta, remarks at MacDill AFB, Fla., following the deaths of 30 US servicemen in a helicopter crash in Afghanistan, Aug. 8.***

McCain on the Debt Deal

"I am very concerned about the defense-spending side of [the debt ceiling deal]. I wouldn't have put that in there. ... But I also don't believe it will come to [big cuts], in that I believe that this select committee—they'll come up with some pretty good and viable solutions. I'm convinced."***—Sen. John McCain (R-Ariz.), remarks on CBS News program, "The Early Show," Aug. 1.***

Pentagon Frick-tion

"I'm Italian. What the frick can I tell you?"***—Secretary of Defense Leon E. Panetta, interview with NBC News in which he jokingly explains his frequent resort to salty language, July 11.***

One Man's Opinion

"The military budget is not on the table. The military is at the table, and it is eating everybody else's lunch."***—Rep. Barney Frank (D-Mass.), during House debate on the defense budget, July 7.***

Food Stamps Trump Defense

"Core commitments that we make to the most vulnerable have to be maintained. And so a lot of the spending cuts that we're making should be around areas like defense spending, as opposed to food stamps."***—President Obama, interview with National Public Radio, July 22.***

In the Dead of Night

"What is it that you do, when you get the President up in the middle of the night and you say, 'So-and-so is attacking. The only thing I've got that can get there for the next 24 hours or 48 hours is a nuclear weapon'? ... We have to find some way to get a range of action that allows us to be credible in those first few hours."***—Marine Corps Gen. James E. Cartwright, JCS vice chairman, remarks to the Defense Writers Group about the need for a conventional prompt global strike system, July 14.***

No Illusions

"It is my intention to maintain the momentum of the campaign. ... There will be tough days ahead. I have no illusions about the challenges ahead."***—Marine Corps Gen. John R. Allen, new coalition commander in Afghanistan, change of command ceremony in Kabul, Afghanistan, July 18.***

Silent Cyber War

"It is a significant concern that, over the past decade, terabytes of data have been extracted by foreign intruders from corporate networks of defense companies. In a single intrusion this March, 24,000 files were taken. When looking across the intrusions of the last few years, some of the stolen data is mundane, ... but a great deal of it concerns our most sensitive systems, including aircraft avionics, surveillance technologies, satellite communications systems, and network security protocols."***—William J. Lynn III, remarks at National Defense University, Washington, D.C., July 14.***

Military Power in Context

"I wouldn't describe our economic condition as the single biggest threat to national security. There are a lot of clear and present threats to our security in the current operational environment. ... National security didn't cause the debt crisis, nor will it solve it. ... We have to address our economic stature, but that doesn't mean we can neglect the other instruments of national power."***—Army Gen. Martin E. Dempsey, incoming Chairman of the Joint Chiefs of Staff, answering advance questions for confirmation hearing, Senate Armed Services Committee, July 26.***

Well, Do Something

"Iran is very directly supporting extremist Shia groups [in Iraq] which are killing our troops. And there's no reason, with some 46,000 troops that I have there now, for me to believe that they're going to stop that as our numbers come down. ... And they are shipping high-tech weapons in there ... which are killing our people. And we have—and the forensics prove that."***—Adm. Michael G. Mullen, Chairman of JCS, in remarks to reporters at the Pentagon, July 7.***

Is Victory at Hand?

"I think we really can strategically defeat al Qaeda. ... I think now is the moment—now is the moment, following what happened with bin Laden, to put maximum pressure on them because I do believe that if we continue this effort, that we can really cripple al Qaeda as a threat to this country."***—Secretary of Defense Leon E. Panetta, remarks to reporters while en route to Kabul, Afghanistan, July 8.***

The Nukes of Pakistan

"I'm as comfortable as I can be that they've taken significant steps, including steps in recent years, to improve the security with respect to their nuclear weapons. There are limits to what I know and to what anybody outside Pakistan knows, but I know that they have invested a great deal. They've improved their procedures and they take it very seriously. ... So those steps are—I think are—very positive steps. But again, there are limits. This is a sovereign country. These are their weapons. There are limits to what we know, in that regard."***—Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, in remarks to reporters at the Pentagon, July 7.***

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European Crossroads

US Air Forces in Europe supports the full range of Air Force missions, and props up a faltering NATO, but is no longer considered the tip of the spear.

By John A. Tirpak, Executive Editor

US Air Forces in Europe is struggling with its identity. Once the tip of America's Cold War spear, standing ready with the very best aircraft to face down the Soviet Union, USAFE is now seeking the right posture in a theater where direct large-scale military threats are vague and allied partners seem to be disarming via budget cuts.

Intentionally or not, the Pentagon has drawn the identity issue in high relief, downgrading the position of USAFE's commander from a four-star billet to a three-star job, when the next boss takes over on a timetable still to be worked out. Allies could easily construe the move as a sign that Washington considers European airpower less important than missions in other areas.

Asked how allies have reacted to the news that the Air Force's European

USAF photo by SrA. Ethan Morgan

component will soon be led by a three-star, USAFE commander Gen. Mark A. Welsh III said the move hasn't created any obvious distress. The other NATO countries are preoccupied with the "thrash and turmoil" of their own economic difficulties.

However, "the comment I get—kind of a joking comment—is, 'Are you losing interest in Europe?'" For the allies' part, he said, this is "a legitimate question."

As NATO moves to a single air command, "it does create an interesting perspective from the NATO side," Welsh noted. "Will a US three-star compete with other country four-stars" for the Alliance air commander job? "It just remains to be seen," he said.

There are other hints that Washington's focus has shifted elsewhere. The Air Force has never sent its top-of-the-line F-22s to Europe for a long visit, though it has sent them on extended deployments to Japan and Guam and based them in Hawaii. Likewise, USAF still has no firm plans to base F-35s in Europe, although bases in England, Germany, and Italy that are currently home to A-10 and F-16 squadrons are logical destinations.

To save money, the staffs of USAFE and Air Forces Africa—the air component to US Africa Command—will be reduced and combined. Third Air Force, USAFE's operational component, will absorb AFRICOM's17th Air Force, which will be inactivated. For USAFE, there's "lots of pressure to create more efficiencies, figure out how to do the job for less money [and] fewer resources," Welsh said in a June interview.

A few years ago, 17th Air Force was activated to meet the needs of AFRICOM, to manage interchanges with African air forces and supply airpower to AFRICOM's commander. However, by the end of Fiscal 2012, 17th Air Force will fold its flag and 3rd Air Force will again provide planning and assets to serve both continents.

AFRICOM doesn't want to lose "the momentum that they've gained" in doing partnership events with African countries, Welsh said. "We don't want to lose it either, so as 17th Air Force is folded into our staff ... we need to ensure that we continue to provide that same kind of support to Africa Command."

With no additional assets to do that, though, choices must be made, Welsh said.

Left: A USAFE KC-135 from RAF Mildenhall, UK, tops up an RAF Tornado. Below: A C-17 is prepped for loading on the ramp at Ramstein AB, Germany. Ramstein is headquarters for USAFE.

USAF photo by MSgt. John E. Lasky

USAF photo by A1C Desiree W. Esposito

In Grafenwoehr, Germany, TSgt. Joel McPherson briefs TSgt. Steven Love (l) and SrA. Ian Johnson (r) on advanced shooting tactics during Allied Strike, the US and NATO premier joint close air support exercise.

"We are going to have to very clearly prioritize activity both in Europe and in Africa," he observed. He frankly admitted, "I don't know if we can continue ... the same level of effort." That will be dictated by USAFE's future force structure, he said. Both command staffs will have to "clearly understand where we can place priority of effort—who we can support, and who we can't, and why."

In cases where "both combatant commanders are very focused on a particular activity that involves the same resources in the same time span," and negotiations can't produce a workable answer, "I guess ultimately the Joint Staff will be the deciding body" on who gets priority. "But I don't expect that to happen very often."

Adm. James G. Stavridis, head of US European Command and NATO Supreme Allied Commander, Europe, has established three priorities for EUCOM—and thus USAFE—which Welsh summed up as: Win in Afghanistan, strengthen the NATO team, and shape the future of the Alliance.

Given those priorities—and the absence of a Soviet-style threat—what is USAFE's principal mission?

"Building partnership and partner capacity," Welsh said. "It is the mainstream mission of the command—not just for USAFE, but all the components of EUCOM."

To that end, Welsh said, USAFE conducts between 1,700 and 1,900 engagement events every year, both within the NATO Alliance and with other countries, under the Partnership for Peace program. These range from top-level military summits and major air exercises to delegations of one airman visiting a Belgian squadron for a week's "immersion."

"Strengthening the team" is a critical mission for USAFE.

Brainstorming

"The partners we have here in Europe are arguably the strongest partners the US has," Welsh said. By helping them get stronger, it "gives us the ability to surge with capabilities we might not have resident in the US military." More capability among the partners means less the US Air Force itself has to contribute.

Welsh noted that some NATO allies—particularly among the smaller, newer members—have little to no air capability. However, they make a strong effort to contribute within their means.

"Last year, we trained 72 NATO JTACs," or joint terminal attack controllers, Welsh said. This year that number will double. "Right now, there are 214 NATO JTACs in Afghanistan," he noted. "Every one of those guys is a JTAC the US doesn't have to send."

When he came to the job late last year, he expected to see some allies "doing everything, some nothing." But he has been surprised by small countries "that don't have a lot to give except their energy and their effort and their people. They're all really committed."

In an earlier interview, Welsh had included two more priority items with Stavridis' top three: "Look for creative solutions and nontraditional partnerships."

Creative solutions are a key to USAFE's and NATO's future. Partners are cutting their defense budgets significantly, and USAFE's own resources will have to stretch to meet the needs of both EUCOM and AFRICOM.

One idea that may well prove a model approach is called the Strategic Airlift Capability. Based at Papa AB, Hungary, the SAC is a cooperative effort by 12 countries: 10 NATO partners, including the US, and two non-NATO members, Sweden and Finland. The organization owns three C-17 airlifters, flown and maintained by all participants.

The organization is not a NATO unit and doesn't come under NATO's chain of command. However, a steering committee of partners chaired by a USAF general officer decides how the aircraft will be used, and how to apportion flying hours among the members. The SAC members all had a need to move people and large equipment long distances, to meet both NATO and independent requirements, but the purchase of C-17-like aircraft was beyond the means of most. By pooling their resources and creating a joint operating entity, called the Heavy Airlift Wing, all were able to meet their needs by chipping in on the airplanes and dividing flying time.

Welsh said the USAFE staff is "brainstorming ways" to use the SAC as a model for other needed capabilities.

One spinoff could be in remotely piloted aircraft, Welsh noted. USAFE is expecting to acquire MQ-9 Reapers when operations with that aircraft wind down in Afghanistan. Other NATO allies are pursuing their own RPA programs; Britain and Italy have already bought their own Reapers. Using the Air Force's existing satellite communications and processing, exploitation and dissemination assets, RPAs could be a pooled mission.

One idea is to create an RPA center at Ramstein AB, Germany, where both USAF and partner air forces could develop "common architectures that allow you to share assets and sensor data," Welsh observed. Partners with RPAs need more refinement of their RPA infrastructure, and "I think we can help [them] build that."

Maj. Gen. Mark O. Schissler, then director of plans, programs, and analyses for USAFE, said in a June interview there's "no reason" why an RPA consortium couldn't work.

"ISR tends to be very expensive," he noted, a principal reason NATO oper-

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ates an AWACS program jointly. "No single nation wanted to shoulder the cost of that." An ISR consortium would want the US to be a member, though, because "we have … the backbone of the ISR system. We already own that; it's essentially in place."

Just as in the US, however, the major obstacle to combining an RPA capability in Europe is how to integrate it with a congested commercial air traffic control system. In the US, FAA approval to operate Reapers is still in discussion; it will take even longer in Europe, Schissler said.

Another possible consortium approach to hardware would be in Baltic air policing, Welsh said.

Latvia, Lithuania, and Estonia have no air arms of their own, are in NATO's far northeast, and clearly remember the decades they spent forcibly absorbed into the Soviet Union. The Baltic states have relied on NATO partners to perform air sovereignty patrols since 2004.

The three countries do have pilots, however.

"In my NATO hat, we've looked at … [whether] we can buy surplus fighters from somewhere, train a coalition, … a squadron, to live and operate in the Baltics and do the air policing full time," Welsh said. That would be an improvement over USAF or other member air arms "rotating squadrons in for three or six months at a time."

Such a consortium would "want to pick an airplane that many countries are flying, so they could use crews from many countries." He declined to nominate an airplane, but more NATO countries fly the F-16 than any other combat type.

Building a Bridge

There are "a lot of questions involved in this," Welsh admitted—such as who would buy the airplanes, how the operations and maintenance costs would be shared, and "who's going to manage the airfield."

Schissler agreed that a fighter consortium poses some unique and thorny problems.

"It's a little easier to think about a consortium doing airlift than it is about doing offensive combat missions," he said. It is "hard to share" the authority for ordering an attack among 12 nations. There would have to be "extensive additional agreements about who's got weapons release authority and things like that." Such a deal would be arduous to negotiate, he said.

"That doesn't mean it can't be done, but it's an additional challenge." Tactical airlift could follow a model almost exactly like the SAC. Such an approach would be an extremely useful "bridge" for certain countries whose current tactical airlifters are almost out of useful life and that have seen delays in getting new A400s, built by EADS.

European partners in NATO have three main things they are anxious to learn from the US.

One is general tactics, techniques, and procedures, particularly with regard to "national sovereignty, airspace protection," Schissler said.

Eyes and Ears Over Libya

By June, the Air Force's role supporting Operation Unified Protector, the NATO mission to defend civilians in Libya's civil war, had switched away from direct attack to that of central support element. US Air Forces in Europe was providing "a lot of the key enablers," said Gen. Mark A. Welsh III, USAFE commander. These include tankers, command and control, intelligence, surveillance, and reconnaissance assets, and other capabilities and capacities unique quantitatively to the United States.

Is the Libya mission a strain on USAFE, which is already heavily supporting Afghanistan operations?

"I think everything is a strain," Welsh replied. "Everybody is busy, … but it's also what we do. … It's why we have an Air Force; it's why we're trained."

However, when asked how long USAFE can continue at the pace it's on, Welsh said, "It's all a question of resources. It depends on the priorities of the nation. If it's a high enough priority to the nation, we can sustain it."

A C-17 taxis to the crowded ramp at Ramstein AB, Germany. The base is a critical waypoint for people and cargo moving to and from Afghanistan.

Staff photo by John A. Tirpak

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Second is how USAF does aeromedical evacuation.

"Our system is recognized as being … successful" at getting injured people rapidly out of the combat zone and back to full-capability care, he said. Allies have seen it work not just for American personnel, but for their own injured who have been transported by USAF.

"Most of them don't possess that and they invited us to show them our system, our people, our equipment."

Finally, allies—particularly those in the East—are interested in how USAF manages logistics and aircraft maintenance. Schissler said the legacy Soviet-style "push" system sends parts as they are available, not necessarily when required. The American model is a "pull" system, in which parts are requested when needed.

"We find it to be more efficient, and it gives us a better mission reliability rate." He explained that "if you're waiting for the 'push' and it doesn't come, …your jet's always down."

Welsh also anticipates a central role for USAFE in the European missile defense mission.

"One of the things the Air Force brings to [a] fight is the ability to command and control on a theater level," Welsh said. The function of providing C2 to missile defense architecture isn't much different from the "kind of command and control necessary to command big air operations across the breadth of a theater. Missile defense fits very neatly into that construct."

USAF photo by TSgt. Wayne Clark

Soldiers and airmen unload military vehicles from a Strategic Airlift Capability consortium C-17 at an airfield in Lithuania. SAC, which comprises members from 12 countries, owns three C-17 Globemaster III aircraft.

While the Army and Navy have more extensive experience with "the tactical end of that business," Welsh said USAFE's air operations center will be the ideal place to manage missile defense, as it has pipes coming in from a variety of space-based and ground-based sensors that can provide data "from early warning to potential impact sites, to define and refine target areas, to allow some of the other pillars of missile defense to operate."

Given that missile defense is a new mission, does USAFE need more people to do the job? Schissler said, "I'm really reluctant to say we'll need more people because that's something no one wants to hear." He said USAFE hasn't "sized" the mission yet, but "it will certainly be an additional task to what we do in Europe and USAFE."

USAFE is doing more "expeditionary" work within the Alliance, and not just to Afghanistan. Command airmen regularly go on rotational trips to Bulgaria and Romania—"two-week trips, mostly," Schissler noted. The Air National Guard also does it through the Partnership for Peace program.

Such excursions are usually to take advantage of what Schissler described as excellent training ranges in the eastern region of NATO.

"Those countries"—he included Poland in the group—"offer us really superb airspace to train in. They have way better ranges than we can get in some of the countries we currently operate in."

Range access and limits on low-level flying in particular have been Alliance irritants for decades. Now, countries such as Britain and Germany don't allow such training flights at all. To maintain proficiency, USAFE pilots must either go back to the US to participate in Red Flag exercises or go to the former Eastern Bloc.

"Sometimes, price comes into play," Schissler said. Some countries "want

The Base as a Weapon System

Ramstein AB, Germany, is headquarters to US Air Forces in Europe, but the base should more accurately be regarded as a weapon system, asserted Brig. Gen. Mark C. Dillon, commander of the 86th Wing.

The base in southwestern Germany is constantly transited by Air Mobility Command "heavies" transferring cargo and passengers to and from Afghanistan and other US Central Command locations. On a typical day in June, Ramstein's ramp bulged with four C-5s and 12 C-17s, as well as its own 12 C-130J tactical transports, two large charter aircraft, three KC-135 tankers, and an array of resident VIP transports.

The base also hosts air operations centers for both USAFE and US Air Forces Africa, the air component of US Africa Command.

Nearby Landstuhl hospital is the way station for injured US troops airlifted from Afghanistan. Regular flights bring the injured to Ramstein for care at Landstuhl; those with more serious injuries are rapidly moved Stateside.

Security forces at Ramstein give a refresher course to airmen being sent to Afghanistan in ground assignments "outside the wire." The week-long course refamiliarizes the airmen with checkpoint procedures, convoys, small-arms tactics, spotting improvised explosive devices, and other combat skills.

Ramstein offers a one-of-a-kind "decompression" program called "Combat Bridge," designed to prepare airmen returning from Afghanistan to cope with the unexpected pressures and difficulties of returning to home life.

In addition to base support functions, Ramstein is also a key storage area for munitions—important during the recent Libyan operations, Dillon noted. It hosts a construction organization that travels around USAFE and nearby areas, providing unique services such as maintenance and repair of runway arresting gear. The base also is home to a contingency response group that can set up expeditionary base communications and networks.

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an exorbitant price to operate there because we're America." Frequently, the cost avoidance of journeying back to the States for training makes the payment worthwhile. Under a recent agreement, the Air Force will, on a rotational basis, operate some of its F-16s and C-130s at two Polish bases. The aircraft will come from USAFE, the Guard, and the Reserve.

"Two-week rotations happen to fit very well with [the reserve components] if we give them good planning," Schissler noted. The program is designed to improve interoperability between Poland and the US, and NATO broadly.

One of the biggest challenges facing USAFE is major reductions in defense budgets of allies.

Every nation has to make its own decisions about what it will cut, Schissler said, but "if everyone reduces fighters, are we going to have the fighter force structure that we want in NATO … collectively?" He said all the nations think their overhead is too large and "they're going to reduce that by, notionally, about 20 percent." Staffs are set to come down the same amount, he predicted. "But we have to take a minute and measure what we have left. And when it doesn't meet our needs—not American needs, but NATO needs," he said, "then we have to adjust."

Schissler said his biggest concern about USAFE is that, in the zeal to reduce costs, the US might take what he called a "CONUS-centric" view and eventually cease to properly maintain the relationships, equipment, and forces in Europe.

"The kind of access and the kind of relationships we have with partners here require regular maintenance," he said. The United States should not assume that in six months or a year the Air Force can fly back to a base in Europe and set up an expeditionary operation "if we've been absent from there, completely." ■

Gates' Warning to Europe

NATO is flirting with irrelevancy if it doesn't properly fund and size its military forces, Defense Secretary Robert M. Gates cautioned in June, before stepping down.

Gates, in a parting shot to fellow NATO defense ministers at a meeting in Brussels, Belgium, noted the US military now accounts for more than 75 percent of NATO defense spending, up from a long-term average of 50 percent, he said.

NATO's European countries are cutting their defense budgets, and like the US, are seeing more of their defense dollars go to personnel costs rather than procurement.

For example, Germany—USAFE's host for several bases and thousands of US military personnel—plans defense cuts of 25 percent by 2015, the largest of any NATO member. Germany is also converting from a conscript force to volunteer military, meaning it will likely have to spend more to attract and retain qualified personnel.

Elsewhere, Belgium and Italy are looking at 10 percent reductions by 2012 and 2014, respectively. Denmark and Britain are reducing defense by about seven percent over the next few years. France, having cut three percent already, is looking to go deeper. Spain cut 10 percent last year.

One practical consequence of the ongoing defense spending cuts is that European NATO partners began running out of munitions just 11 weeks into the Libyan operation, Gates said, forcing the US to "make up the difference."

NATO has turned into a "two-tiered Alliance," Gates asserted, made up of those who like to do "soft" tasks such as peacekeeping and humanitarian relief missions, and those willing to do "hard" tasks like combat. Those in the first group have the benefits of NATO membership "but don't want to share the risks and the costs."

The American taxpayer has a "dwindling appetite and patience" to spend lavishly "on behalf of nations that are apparently unwilling to devote the necessary resources" to do their fair share and be "capable partners in their own defense," Gates warned.

Just five of 28 NATO countries meet the Alliance benchmark of spending two percent of GDP on their militaries, he said.

An RAF Reaper lands at Kandahar Airfield, Afghanistan.

RAF image by Cpl. Steve Follows

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The "Whirlwind" of Bomber Harris

Arthur Travers Harris, known as "Bomber" Harris, became commander of RAF Bomber Command in early 1942. Until then, Bomber Command hadn't done much, but the energetic and controversial Harris soon changed all that. He became the architect and chief proponent of nighttime "area bombing" of major German cities. He developed tactics, techniques, and training for the task.

In March, he struck Lubeck. In April, he bombed Rostock. Then, on the night of May 30-31, 1942, he launched a devastating, 1,000-bomber attack on Cologne. A few days later, Harris went before RAF film cameras and delivered a chilling, two-minute message, shown on newsreels nationwide. He was unleashing a whirlwind on Germany, he said. "They sowed the wind," he warned, "and now they are going to reap the whirlwind." They did. The film has been preserved in the Imperial War Museum.

"Strategic Offensive Against Germany"

Air Marshal Arthur T. Harris
Commander in Chief, RAF Bomber Command
Remarks for Royal Air Force Films
London
June 3, 1942

Find the text on the *Air Force* Magazine's Web site www.airforce-magazine.com "Keeper File"

The Nazis entered this war under the rather childish delusion that they were going to bomb everybody else and nobody was going to bomb them.

At Rotterdam, London, Warsaw, and half a hundred other places, they put that rather naive theory into operation.

They sowed the wind and now they are going to reap the whirlwind.

Cologne, Lubeck, Rostock—Those are only just the beginning.

We cannot send a thousand bombers a time over Germany every time, as yet.

But the time will come when we can do so.

Let the Nazis take good note of the western horizon.

There they will see a cloud as yet no bigger than a man's hand.

But behind that cloud lies the whole massive power of the United States of America.

When the storm bursts over Germany, they will look back to the days of Lubeck and Rostock and Cologne as a man caught in the blasts of a hurricane will look back to the gentle zephyrs of last summer.

It may take a year. It may take two.

But for the Nazis, the writing is on the wall.

Let them look out for themselves. The cure is in their own hands.

There are a lot of people who say that bombing can never win a war.

Well, my answer to that is that it has never been tried yet, and we shall see.

Germany, clinging more and more desperately to her widespread conquests and even seeking foolishly for more, will make a most interesting initial experiment.

Japan will provide the confirmation.

But the time is not yet. There is a great deal of work to be done first, and let us all get down to it. ■

Dresden in 1945, viewed from City Hall.

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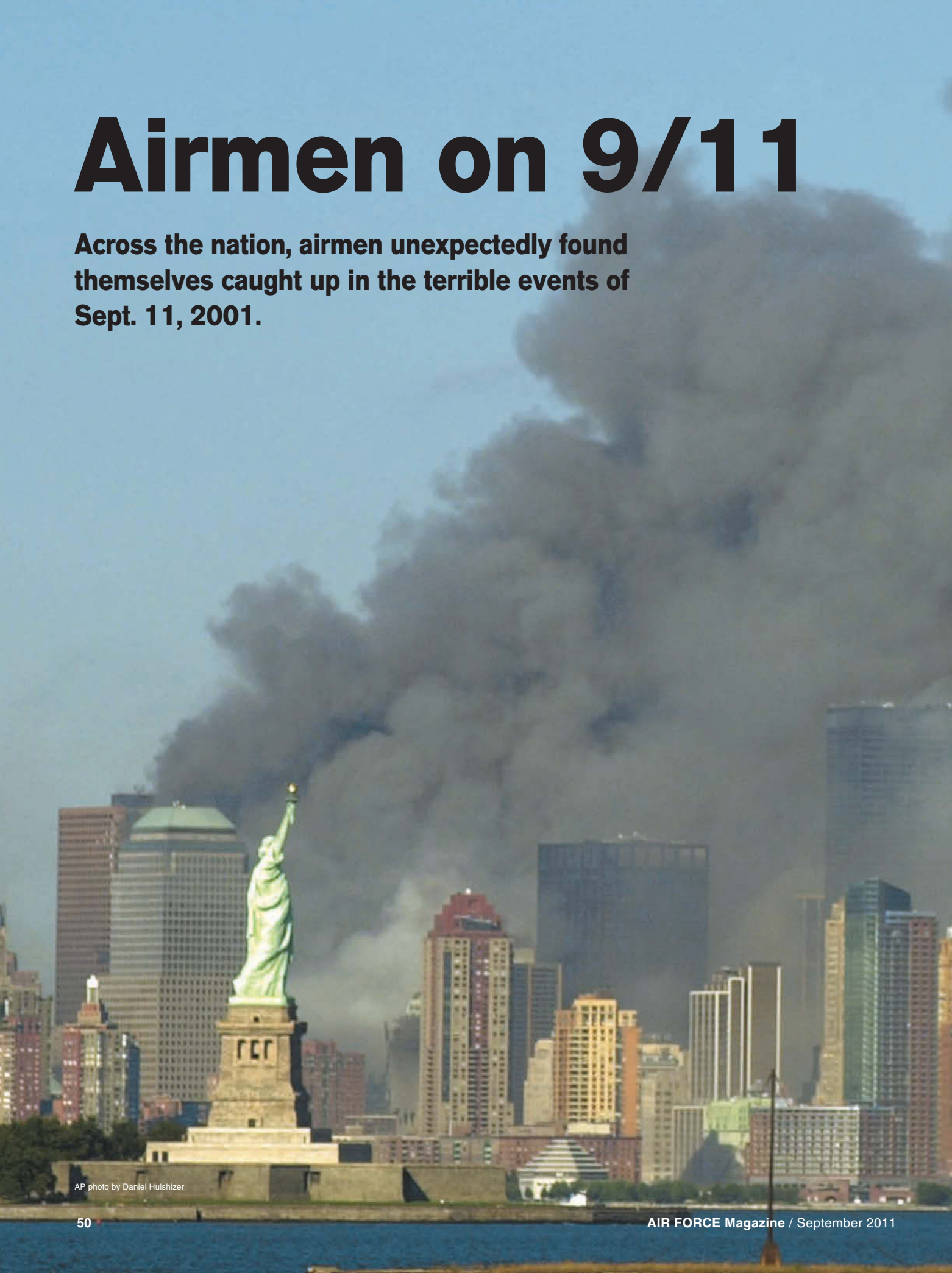
Airmen on 9/11

Across the nation, airmen unexpectedly found themselves caught up in the terrible events of Sept. 11, 2001.



AP photo by Daniel Hulshizer

On Tuesday morning, Sept. 11, 2001, al Qaeda terrorists hijacked four commercial airliners and used them as weapons against the United States. In a series of coordinated, horrific attacks, two of the aircraft destroyed the World Trade Center towers in New York City and a third was flown into the Pentagon. The fourth airliner crashed in rural Pennsylvania after passengers learned of the other attacks and revolted against the hijackers, preventing them from reaching their final target.

The attacks killed everyone aboard the aircraft, thousands on the ground, and caught a shocked and saddened nation by surprise. Many airmen unexpectedly found themselves caught up in the day's events, either in their official capacities or while off duty.

The following accounts were compiled through interviews during the summer of 2011. They are representative, firsthand accounts of the day's events. We would like to thank the participants for sharing their sometimes-difficult stories, and the various public affairs offices that helped coordinate the interviews.

There are countless stories of dedication, perseverance, and heroism from that terrible day. Here are 10 of them.

Blair Bozek

USAF photo

Blair Bozek narrowly escaped death in an SR-71 Blackbird crash. Twelve years later, he was at the Pentagon on 9/11.

DOD photo

A fire truck at the Pentagon was incinerated by the exploding 757.

For Air Force defense contractor Blair L. Bozek, the morning of Tuesday, Sept. 11, 2001, began with some fairly mundane tasks for his ground-floor D Ring office in the Pentagon.

Arriving around 8 a.m., he mulled over how he and his office mates were going to move all the boxes in 1D543 up to an Air Force Test and Evaluation directorate new office. "The room wasn't quite ready," Bozek recalled.

"Our office mates came to work prepared to move boxes. I was in ... jeans and a sport shirt, packing boxes and starting to move."

Bozek was not the first in the office that morning, and those on scene were soon aware something was not right that day. "The mother of [one of] our office mates called her up and said, 'Turn the TV on,' so we were well aware of the Trade Center being hit," he said.

Bozek had served almost 25 years in the Air Force, primarily as a navigator and weapon systems officer. He flew first in the F-4 and then as a Blackbird reconnaissance systems officer, surviving the last crash in the program's history. In 1989, he and his pilot survived a catastrophic engine failure while flying at Mach 3 at 75,000 feet on a mission out of Okinawa, eventually bailing out on approach to Clark AB, Philippines, to be picked up by fishermen in the Philippine Sea.

After his retirement in 1998, he eventually landed in USAF's Test and Evaluation directorate in the Pentagon.

His desk sat in the back, close to the C Ring, and Bozek was on the phone when there was a loud explosion and the line went dead. The lights went out, and in an instant, the office was seemingly turned inside out, with the ceiling and walls "coming down on top of us," he said. Drywall, the ceiling, office furniture—all came cascading down around him. "I had my briefcase, right at my right leg. I couldn't even get to it," Bozek said.

Despite emergency lights, the office plunged into darkness and smoke. "There was classified [material] all over the place, and there were aircraft fragments on fire in the office, small bits" of molten aluminum, Bozek said. His office, it was later determined, was 450 feet from the impact point, and no more than 75 feet from the path of destruction American Airlines Flight 77 carved through the Pentagon that morning. In an office next door, seven people were killed.

"I remember distinctly having one small bit of daylight through all that building and I literally padlocked on it. … Once I saw where there was daylight, then I kept that in my peripheral vision the rest of the time."

Events unfolded rapidly. "We couldn't see, but we could ... hear [people] saying, 'Come this way'… towards D Ring," he remembered. His branch chief, Melody Johnson, was "bounding over the wreckage like a cat," and he helped her escape to the outside. All of this transpired in not much more than a minute. He and his office mates escaped to the outside.

Confusion reigned. A few survivors gathered not far from the impact point. Bozek looked around at everyone, and the scene, trying to reassess. "Eight of us went out the same way; the ninth person went out through the courtyard; and we counted noses. As I looked around, ... I was shocked at how few people were around," he said. Moving away from the building, his office mates turned right, near one of the security gates for the distinguished visitor parking areas at the time. Bozek looked back.

His section was near the intersection of an "old" and "new" wedge—the Pentagon had been undergoing renovations section by section—and many offices were vacant or under construction. Hence there were relatively few people out and about.

But looking back at the side of the building and seeing a huge "bullet hole" in it, his thoughts immediately turned to his brother, Gregory, a retired Army lieutenant colonel who worked on the third floor in the C Ring. "So my first thought was, where are all the people? Then my second thought was, 'Holy shit.' ... My brother worked very close to the impact point."

"My initial reaction was: He's dead. His initial reaction was: I'm dead."

Bozek ran back to look for survivors. He passed by a

DOD photo

Fires raged in the E, D, and C Rings of the Pentagon. Bozek escaped, then helped lead others to safety.

burned-out DOD fire truck, on duty that day to prepare for President Bush's return from his Florida trip. A mere three minutes had elapsed from the airplane crash, and as Bozek looked at the scene near the impact point, he noted three ground-floor windows still intact next to the hole.

As he came closer to the smoldering building, one of the firemen from the team prepping for the President yelled at him. "He's going, 'Hey, get out of here. It's dangerous,'" Bozek recalled, laughing at the absurdity of it. The fireman's name was Alan Wallace, a now-retired Fort Myer, Va., DOD firefighter. They later became friends.

"He and I are kind of like havin0g a discussion. Before we get very far, I see a hand waving in the window"—the fourth one over from the impact hole, Bozek said.

Getting a boost from Wallace up to that first floor window, Bozek knelt on the windowsill, surrounded by broken glass, and saw two women trapped by debris. "I'm calming them down. … I'm reaching down to pull out material and free up their legs," when "a third woman walks out of the smoke. She apparently heard my voice," he said. Her left arm was burned.

Bozek dragged her across his lap, pushing her through to the other side of the window frame, knowing Wallace was waiting to grab survivors on the other side. She fell on top of Wallace, who was injured both by having his arms pinned against the hot metal window frame and by the fall.

"I went back to the other two women. The smoke [was] even lower, ... very, very heavy," Bozek said. The room, despite its exterior window, was dark and littered with wall studs, metal ceiling suspension, and wreckage. He pulled sheet metal and tile off the women and moved them out the window.

At this point, Bozek felt hypoxic from smoke inhalation. An office mate guided him away from the building to get oxygen at a triage area near the Washington Boulevard overpass next to the Pentagon's South Parking area.

Bozek spent the rest of the day at the triage point. Survivors volunteered to look for others, help with stretchers, and even assist the FBI with picking up pieces of the Boeing 757 littering Washington Boulevard. Bozek found "big pieces" all over the place.

Bozek borrowed a phone eventually, to call his missing brother. He later discovered Gregory had left a business card on Bozek's car windshield to let him know he had made it out of the building. They had parked next to each other that morning. Gregory survived the attack because Flight 77 had gone underneath his third floor, fourth corridor, C Ring office. He made it up to the E Ring before his damaged floor collapsed.

Late in the afternoon, the on-scene commander sent everyone home.

Getting home was problematic that day, Bozek recalled, as he had no keys. He wandered around the Pentagon City area until he found a cab to take him to Alexandria, Va. Locked out of his own house, he stayed with his neighbor for dinner until his brother showed up to take him back to the Pentagon to get his car. "The locksmiths were pretty busy that day," Bozek quipped.

"I don't recollect actually sitting down and saying, 'That was close,'" Bozek said of his feelings at the end of the day, as information about the "surreal" events finally caught up to him. "It was an attack. Luckily I survived it. I had been lucky to have survived [the 1989 SR-71] ... ejection. On that particular day, we did some good decision-making. ... Everything panned out properly."

Sept. 11, in retrospect, was far worse.

"I obviously felt glad to be alive, and running [back] to the window, ... I'm just hoping I don't screw up anything. ... I don't want to cause somebody to be hurt by what I'm trying to do," Bozek said of his actions after the attack. "That was sort of my wish for the day." ■

Retired Lt. Col. Blair L. Bozek is a senior defense analyst for the Air Force headquarters at the Pentagon. He was interviewed by Marc V. Schanz.

Col. Philip Breedlove

USAF photo by Gary Ell

Philip Breedlove arrives at McGuire AFB, N.J., on Sept. 12, 2001. He was there to support Air Force medical response to the terrorist attacks.

Air Force Secretary James G. Roche had a meeting scheduled with several congressmen early in the morning of Sept. 11, 2001. In the Secretary's Pentagon office that day was to be a discussion about Islamic Fundamentalism.

Once the meeting began, Col. Philip M. Breedlove, Roche's senior military assistant, returned to his nearby office and "settled down into sort of my normal routine of working e-mails and staff work," he said.

Behind him was a television that was always on, tuned to a news station.

One of Breedlove's staff came running in. "Sir, you've got to look at the TV," he said. The colonel looked up and saw the first World Trade Center tower burning.

"I decided I've got to go interrupt the breakfast and tell the Secretary that we've had a horrible accident." Breedlove returned to Roche's office and momentarily kneeled beside him.

"He excused himself a minute and followed me back into the office to get a glimpse of the TV, to get a feeling of what was going on," Breedlove said. As soon as he and Roche returned to the office, "we were turning up the volume to listen," as the second hijacked aircraft hit the trade center.

"We both looked at each other and I said, 'Sir, this is not an accident.' He looked at me and said, 'My God, we've got a big problem here.'"

Breedlove and Roche made arrangements so the congressmen could return to their own offices, and immediately began planning for what they and the Air Force headquarters should do.

"It was real clear to us that our nation had been attacked," he said. "It was real clear that this was deliberate. What was not clear immediately is the scope and scale. Were there other attacks under way?"

Shortly thereafter, Roche, Air Force Chief of Staff Gen. John P. Jumper, Breedlove, and Col. Jack B. Egginton were in Roche's office. "The two bosses were kind of with their backs to the window looking at us, and Egg and I were looking at them, and we saw an airplane go by really close to the building," Breedlove said. "It was kind of like, 'Whoa, that was close.'"

Anyone who worked at the Pentagon or visited it regularly was used to seeing airliners fly almost uncomfortably near the building. The approach path into Washington's Reagan National Airport took aircraft along one of the Pentagon's sprawling parking lots, so people were "a little desensitized to that," he said. "But that one seemed closer than any other."

The terrorist now piloting American Airlines Flight 77 missed the Pentagon on his first pass, looped back around, and flew the aircraft into the building a few minutes later.

"We felt a tremor in the building and then alarms start flashing." Breedlove hit the duress button and security forces were almost immediately in the room. "We said we need to get to the bunker; we need to get down to our operations area."

As the group turned toward the interior of the building, they were faced with hundreds of people going the other direction, trying to get out of the building.

It was like "swimming upstream through people. I can remember the faces," he said.

Through the crowd, someone yelled out, "We've got a fire and we've got people in trouble."

A large group of military personnel and some of the civilians immediately turned around and "headed back into where the mess was," Breedlove remembered. Among those who responded were Air Force medical officials, including the Air Force surgeon general, Lt. Gen. Paul K. Carlton Jr. "Those doctors literally ran to the sounds of the guns, and they went in there and became doctors as opposed to surgeon generals."

When USAF's leadership group reached the bunker, the airmen who had arrived first were "already starting to try to get the intel picture together; they were trying to get the air picture up on the walls. … While there was a certain amount of, I would call it, healthy tension, there was no panic," he said.

"Airmen were doing what airmen do, and ... this operation center was going from zero to crisis mode very quickly and very smoothly."

Then the communications networks went down. Breedlove said shortcomings in the comm systems at

USAF photo by TSgt. Jim Varhegyi

Breedlove saw the hijacked airliner pass by a window shortly before it struck the Pentagon.

USN photo by Journalist 1st Class Mark D Faram

Debris from Flight 77. Acrid smoke eventually forced USAF officials to relocate their command post to Bolling AFB, D.C.

the Pentagon were a hard lesson to learn in the midst of a crisis.

The problem didn't come from damage; it was system overload. People in the Pentagon and throughout the National Capital Region were attempting to call home and say, "I'm alive," while, simultaneously, military officials were on the networks attempting to get their jobs done.

"There was a short period where literally the only comm we had was the Blackberry device, because it communicates differently across the lines," said Breedlove.

This Air Force group was not the command authority at the time. Operational control resided primarily with NORAD in this situation, but officials needed to do what they could to inform and support the operational units.

"We all begin to gradually become aware that there was a fourth airplane that was not responding, and that it had turned and was headed towards the capital region," Breedlove recalled. Over Pennsylvania, United Airlines Flight 93 was not responding to the FAA, and "it doesn't take an imagination to decide that there are several lucrative targets here in this area" that could come under attack.

There was a tense time as officials looked at the last known speed and track of Flight 93 and the expected response times of the air defense aircraft on their way. "It was going to be a mathematical problem," he said, but "we all know how that resolved."

The operations center was close to the impact area. As the Pentagon burned, there were continuing problems with communications, and there was beginning to be a major problem with acrid smoke as well.

"We needed to relocate," he said, so officials decided to set up a temporary Air Force headquarters at nearby Bolling Air Force Base.

Rather than having a panicked exodus, "we sat down and laid out a plan for an orderly departure," and "when it was all good to go, we moved the senior-most leadership over there." Breedlove accompanied Roche by helicopter to Bolling.

The Pentagon amazingly represented the day's smaller disaster, so officials decided to focus on what could be done to help in New York.

On their authority, Roche and Jumper moved an emergency Air Force medical hospital north to support New York City. USAF moved the unit up to McGuire Air Force Base in New Jersey, "and they got up there and set up almost overnight."

Unfortunately, "the sad and somber truth is, New York didn't need a lot of medical help," Breedlove said. "What they needed was mortuary help." Still, "America would have expected our Air Force to be there." Although the expense would never have been a concern, the operation had almost no additional cost because "we didn't use any of the perishables."

Breedlove finally got a call through to his house that night, at about his children's bedtime. He told them and his wife that he was OK, but 36 hours would pass before he made it home.

"There was a lot of work to do," he said, and eventually he "crashed on a couch in … the public affairs office down the hall somewhere. I found a couch, crashed for a couple of hours, got up, had things going again."

Finally, midafternoon on the 12th, "I told the boss I need to go home and get a shower and change my underwear."

The attack on the Pentagon was horrific. All 59 passengers and crew aboard the airplane died in the attack, as did 125 people on the ground and the five terrorists—but the devastation could have been much worse.

If the terrorist pilot had hit the Pentagon "where he intended that day, it's my supposition that we would have lost a lot of senior leadership," Breedlove said. "When he missed and went to the south and came back," he ended up hitting a just-renovated section of the Pentagon that was not fully staffed.

Breedlove praised what he saw that day from both the Air Force's leadership and the rank-and-file at the Pentagon. Seeing ordinary people doing something extraordinary—turn around and run back into a burning section of the building—has clearly stayed with him. ■

Gen. Philip M. Breedlove is the Air Force vice chief of staff. He was interviewed by Adam J. Hebert.

Maj. Dawne Deskins

USAF photo

Dawne Deskins

USAF photo

Officials at the Northeast Air Defense Sector had not trained for what unfolded on 9/11.

The button for the hotline that connected NORAD's Rome, N.Y., "battle cab" to the FAA's Boston Air Traffic Control Center was flashing. At 8:37 a.m. on Sept. 11, 2001, Maj. Dawne Deskins pushed the button.

"Hi. Boston Center. … We have a problem here," said the controller on the other end of the line. "We have hijacked aircraft headed towards New York, and we need you guys to ... scramble some F-16s or something up there; help us out."

"Is this real-world or exercise?" asked Deskins, who had been serving as the aircraft control and warning officer during NORAD's Operation Vigilant Guardian, an ongoing, week-long air defense exercise that simulated attacks on the United States.

"No, this is not an exercise, not a test," replied the controller.

The controller gave Deskins the last known coordinates for American Airlines Flight 11, which had taken off from Boston's Logan Airport at 7:59 a.m., en route to Los Angeles. The aircraft was now believed to be heading toward New York, but Deskins couldn't find it on her scope because its transponder had been turned off.

She theoretically had the ability to pick up a search return from the aircraft even without the transponders, but Deskins said that was almost like trying to find a "needle in a haystack"—especially in a crowded airspace such as that around Manhattan.

It was the second day of Vigilant Guardian and the Northeast Air Defense Sector (NEADS) was fully manned and alert. Because of the exercise, the entire command structure was already in place inside the battle cab when Deskins hung up the phone.

She ran into the clear glass office overlooking the command floor to tell battle commander Col. Robert Marr that a commercial airliner had been hijacked and the FAA wanted "to scramble fighters to escort the plane."

Langley AFB, Va., and Otis ANGB, Mass., were the only two East Coast bases with fighters on alert that day. At 8:46 a.m., the exact time Flight 11 struck the North Tower, NEADS scrambled two F-15s from Otis, which was 153 miles from New York City. It was already too late for the 81 passengers on board Flight 11, but no one knew that yet.

The FAA was still showing the aircraft in the air and NEADS continued to search the radars for the hijacked airplane.

The Otis fighters were airborne at 8:53 a.m., three minutes after NEADS was notified that an airplane had crashed into one of the towers of the World Trade Center, according to interviews and radar data cited in the 9/11 Commission report.

"We just thought it was a weird coincidence that some plane had hit the World Trade Center at the same time while we're trying to find this hijacked aircraft," said Deskins.

Back then, NEADS protected all airspace from Virginia north to Canada and then west to the border of North and South Dakota. The most recent previous hijacking requiring coordination between air traffic controllers, the FAA, and the military had occurred in 1993. NORAD was still training to Cold War-type scenarios and the idea of turning an aircraft into a weapon had not yet infiltrated military doctrine.

NEADS' mission remained "outward focused," said Deskins. The command center didn't even have radar feeds that tracked aircraft flying in the interior US that day, she said. The focus was on identifying aircraft entering the US and ensuring they were friendly, she said.

"If you remember, the hijacked mindset back then would have been that they're going to land the plane, [and] they're going to have some sort of demands. So, it was really an escort-type role that we would be in," said Deskins.

NEADS had learned that Flight 11 had been hijacked nine minutes before the aircraft struck the North Tower; however, it did not learn that United Airlines Flight 175 also had been hijacked until seconds after it struck the trade center's South Tower. The Otis fighters were still more than 100 miles away.

"We were not aware that there was ... another hijacked aircraft. And, again, we went back to the whole, 'OK, was that American Airlines Flight 11?'" Deskins

USAF p hoto by Lt. Col. Bill Ramsey

NEADS scrambled two F-15s from Otis ANGB, Mass., but they couldn't reach New York fast enough to stop the attacks.

USAF photo by SSgt. Greg L. Davis

NEADS later coordinated combat air patrols over both New York and Washington.

said. "Now, we're seriously getting a sense that this is something very dire. We've got a hijacked aircraft out there somewhere. We have two planes that have hit the World Trade Center. Now our mindset, at that point, is shifting from defensive, of trying to find a hijacked aircraft, to we're under attack."

It wasn't until the FAA had cleared the airspace after 9 a.m. that officials at NEADS started to feel in control of the situation, she said. The identification section in New York was working with Boston Center to figure out Flight 11's most likely flight path, taking into consideration things such as the last known speed of the aircraft and its last known coordinates. That's when the focus shifted to D.C.

Around 9:30 a.m. NEADS was notified that there may be a problem with American Airlines Flight 77, but it was not immediately clear that it had been hijacked and no one knew it was heading directly toward the Pentagon.

"I saw a blip on the radar that looked like an aircraft kind of spiraling down into D.C. and I thought that that's what that was," said Deskins. But, again, the aircraft's transponder was turned off and she couldn't be 100 percent sure.

Langley's fighters also launched around 9:30 and were heading toward D.C., but they wouldn't make it in time. Flight 77 struck the Pentagon at 9:37, killing everyone on board and more than a hundred inside the building.

In the meantime, the focus in the battle cab was centered on getting as many fighters airborne as possible—not an easy task considering only two bases were on alert. The battle cab bustled as leaders reached out to bases throughout the northeastern US, trying to find pilots available to fly and aircraft that could quickly be loaded with weapons and launched into the air.

Unlike most Americans who were glued to their TVs that day, no one in the command center actually saw the footage of the airplanes hitting the towers until much later. Still the mood was somber, as NEADS methodically tracked down reports of hijacked aircraft and scrambled jet aircraft to New York and Washington, D.C.

"I think most of the frustration was just that we didn't have enough airplanes to respond. We didn't have the air picture we needed to find the airplanes," said Deskins. "The assets we had available and the system was just so limited, we just couldn't, or just didn't have, the resources to do what we felt we needed to do."

NEADS was not notified about the hijacked Flight 93 until after 10 a.m. By that time, the aircraft had already crashed into a Pennsylvania field. Still a military liaison at the Cleveland Center had given NEADS the aircraft's last known location and asked them to keep searching. Flight 93 never did show up on the radars.

The gravity of the situation really hit home in the battle cab when the nation went to Defcon 3. "I have been in the air defense system since I was a second lieutenant and I've never seen that for real," Deskins said. "We felt like we were going to war. It really did."

By the end of the day, things had started to calm down. Fighters were flying combat air patrols over New York and Washington, AWACS aircraft were on scene to identify and direct traffic, tankers were available to refuel, and a plan was in place.

At 9 p.m., 15 hours after starting her shift, Deskins was told to go home and try to get some sleep.

"The toughest thing that day was for the people who had been there from the beginning ... to leave. It was very, very hard to let it go," she said.

"Things were just written down on scope shelves, on pieces of paper, and you were just really concerned that you were going to forget to pass something along to the next person. And I think there was an emotional tie for a lot of people, too, that they just wanted to stay."

Back at home, Deskins talked with her husband for a while, "and then I said that I've got to go to bed because I've got to be back at work in four hours," she said. "I don't remember it being a very good sleep."

The command center would remain on high alert for weeks after the attacks. ■

Col. Dawne Deskins is vice commander of NORAD's Eastern Air Defense Sector in Rome, N.Y. She was interviewed by Amy McCullough.

SMSgt. Edward Metcalf

Screenshot via The History Channel

Screenshot via The History Channel

Ed Metcalf confers with fellow firefighters at the World Trade Center just before the South Tower collapsed. A long-time New York Air Guardsman, Metcalf survived the collapse of both towers.

New York City Fire Department Capt. Edward C. Metcalf's workday was set to end at 9 a.m. He and the firefighters of Marine Company 1 had nearly completed their shift along Manhattan's lower west side waterfront when he noticed a pedestrian trying to get their attention.

"I happened to be looking out the window of the firehouse and I saw a walker on one of the docks on the waterfront pointing and jumping up and down," he said.

Metcalf, who was also an HH-60G Pave Hawk maintenance supervisor with the New York Air National Guard's 106th Rescue Wing at Francis S. Gabreski Airport on Long Island, ran outside the firehouse. "I looked down south and I saw a heavy volume of smoke pushing from the North Tower of the World Trade Center. At that particular junction, I just surmised that there had been an explosion. I didn't know that there had been a plane crash."

A veteran firefighter, Metcalf was covering for the company's normal captain who was on vacation. He quickly mobilized the crew of Marine 1, a FDNY fireboat, to get under way. The fireboat's main role is to supply water from the river to help extinguish fires. It was docked at Pier 53 at West 14th Street, about 20 blocks north of the World Trade Center complex.

Within minutes, Marine 1 was steaming south on the Hudson River toward the towers. "When we were a couple of hundred of yards offshore, I made a couple of radio reports en route. Because of our unique vantage point, we had a pretty good view," he said.

As the fireboat approached the shore, "I noticed a low-flying aircraft approaching from the south. It turned out to be the second hijacked aircraft. It struck the South Tower while we were approaching the bulkhead," explained Metcalf.

It was 9:03 a.m., and "I knew then that the [North Tower explosion] must have been a plane crash, also," Metcalf said.

The crew picked out a position on the riverfront from where they would be able to stretch water hoses to the WTC complex, located about four blocks away.

Metcalf told the crew to set up the water lines while he went to a command post at the site of the burning buildings.

There were a lot of people running away from the buildings, "so I had to fight through the crowd to get there," he said.

The command post was on the west side of West Street, alongside the WTC complex. The post was less than a quarter-mile from the towers, said Metcalf. He reported in and awaited instructions.

It was at this time that some of the people trapped in the upper floors of the burning towers decided to jump to their deaths rather than suffer any longer. "I could see and hear the jumpers from the North Tower," said Metcalf. "There was a lot of that going on in front of us."

By this point, officials at the command post "knew that four planes had been hijacked," including the two that hit the towers and the one that struck the Pentagon, Metcalf said. "What they didn't know was that the [fourth] one had gone down" in Shanksville, Pa.

Absent that knowledge, the firefighters and rescue personnel were told to prepare for the potential of another airplane coming in.

It was now 9:59 a.m. Metcalf was still at the command post when the South Tower came crashing down.

"I actually thought it was the third plane because that is what it sounded like," said Metcalf. "We all kind of just turned and ran."

He and others dove for cover inside an underground parking garage opposite the WTC complex. The rumbling was over within about 11 seconds.

"There wasn't much visibility," recalled Metcalf. He gathered himself and made his way up the parking garage ramp to street level. "You were in the middle of that cloud of dust, ... so I had no idea, really, that the South Tower had come down. I just knew something bad had happened."

When he reached the top of the ramp, FDNY Chief of Department Peter J. Ganci Jr. was there. "I remember him saying, 'Calf, do me a favor,'" recounted Metcalf.

Ganci wanted the firefighters to muster up about

Screenshot via The History Channel

Screenshot via The History Channel

Smoke billows from the World Trade Center's towers. Metcalf sought cover in a parking garage when the South Tower collapsed.

four blocks north. Metcalf went back down into the garage and relayed the chief's message. When he came up the ramp again, he met up with two senior FDNY colleagues.

"The three of us started looking south, down West [Street], for survivors," he explained. They found one victim and assisted him.

"Then I heard a terrible roar again," said Metcalf. It was 10:28 a.m. and the North Tower was collapsing. At that moment, Metcalf thought he was going to die for sure.

"I was in the middle of West Street, and I realized that God had called me home," he said. "I was knocked down by the blast of air. ... I covered my head with my arms—like that was going to do something. And I prayed. I said, 'God, take care of my family, please. And if it is in your will, make this quick.'"

Ten to 15 seconds later, it was over.

"I survived," said Metcalf. (He learned later that Ganci, with whom he had spoken only minutes before the North Tower collapsed, was killed when the building came down.)

Metcalf began to reorient himself. "The debris was unreal," he said. "I remember crawling around looking for survivors and then for whatever reason, something in the back of my head said, 'Get back to the boat.'"

"I was in a state of shock," he continued. "As numb as I was, it just kicked in. ... The only thing I had in my head was, I've got to get back to the river and I've got to supply water. That was my job that day."

He made his way through the chaotic yet abandoned streets to get back to the fireboat, walking when possible, crawling when debris made walking impossible. By the time he reached the boat, the crew had begun establishing the water supply lines. He assisted.

Metcalf said Marine Company 1 provided "the first water" that day to battle the fires at street level, such as burning cars, caused by the falling tower debris. The local hydrants were largely inaccessible.

After a while, Metcalf went on the boat for a brief respite.

"The guys looked at me and said, 'You look like hell.' And they ended up sending me to the hospital," he recalled. "I had some small bumps and bruises."

After a couple of hours of treatment and getting cleaned up in a Brooklyn hospital—his eyes were essentially glued shut from the debris dust—medical personnel released him. Other than aggravating an old back injury, "there was nothing wrong."

Policemen drove Metcalf, who was wearing only a yellow hospital gown, back to Manhattan. At the fire station, he donned proper clothes. As he was preparing to walk back down to the towers, an off-duty firefighter from the marine company showed up in his private boat. The two put surplus hose on the boat and then headed south.

They pulled up alongside Marine 1 to the surprise of its crew, who hadn't expected to see their captain again that day. It was by now early evening.

"We went back to work," recounted Metcalf. "We went back to supplying water and then, obviously, the search and recovery. We still thought it was a rescue operation at that point. We were looking for our brothers."

At about 11 p.m., Metcalf realized that he hadn't been in contact with his wife, Janet. Since cell phone service was still out, he decided to drive home. He took a boat back to the fire station, got his car, and made the hour-plus drive to his home on Long Island.

Upon arriving, "I went inside. I hugged and kissed my wife," he continued. Although he didn't wake up any of his seven children, "I went into each room ... and gave them a kiss."

Then, "I said to Janet, 'I am alive. I am well. I am going back to work.' So I went back to my car and I drove back into the city," he said.

Metcalf spent the next several months at the WTC ruins, helping to recover bodies. ■

SMSgt. Edward C. Metcalf retired from FDNY in September 2003 and is now chief of the 106th RQW fire department. He was interviewed by Michael C. Sirak.

Capt. Rob Pedersen

Photo via Lt. Col. Rob Pedersen

Rob Pedersen was the flight navigator on USAF's only C-135C on 9/11, flying Chairman of the Joint Chiefs of Staff Gen. Henry Shelton.

Photo by Michael Foran

Shelton ordered the Speckled Trout back to the US when the second tower was hit.

It was a perfect day to fly. The early morning sky at Andrews AFB, Md., was crystal clear and the Speckled Trout crew was laughing and joking around with each other as they whittled down their lists of must-see sights in Budapest, Hungary. Capt. Rob Pedersen, Speckled Trout flight navigator, and the members of the 412th Flight Test Squadron at Edwards AFB, Calif., had flown distinguished visitors to hundreds of locations around the world, but this was his first trip to Hungary. Everyone was excited.

In September 2001, the white and chrome C-135C was a one-of-a-kind airplane. It was equipped with a secure communications console and its own defensive capabilities. There was a private suite in the rear of the aircraft where the DVs could relax in oversize leather airline chairs or lounge on a couch along the wall of the aircraft. For overnight trips, there were two bunk beds and a small bathroom.

Half the time Speckled Trout was used to test state-of-the-art systems the Air Force was considering entering into its inventory, and the other half of the time it was tasked by the Chief of Staff's office to fly distinguished passengers. On Sept. 11, 2001, its mission was to fly Army Gen. Henry H. Shelton, Chairman of the Joint Chiefs of Staff, to a NATO conference.

The crew had arrived at Andrews two days before the scheduled takeoff and on 9/11 was wheels up around 5 a.m.

The first three hours went smoothly. The crew listened to the BBC as they went about their regular duties, said Pedersen. Speckled Trout was flying over the North Atlantic between Greenland and Newfoundland when the BBC reported that an airplane had hit one of the World Trade Center towers in New York City.

As the aircrew stayed tuned, Shelton's assistant tapped on the private suite's door to tell him the news. When the second airplane hit the South Tower at 9:03 a.m., Shelton ordered that his airplane return to the US. Then he learned they'd been denied permission because US airspace was closed.

"Tell the pilot we'll ask for forgiveness instead of permission, so have him turn us around. We're going home," Shelton told his assistant, according to his memoir, *Without Hesitation: The Odyssey of an American Warrior.*

"I knew there was no way they were going to shoot down a 707 with United States Air Force emblazoned along the side," wrote Shelton.

The airplane did turn, but it didn't head directly back to the United States.

For the first couple of hours, the crew didn't have clearance to return—or a destination—"so we went into a holding pattern near Greenland," Pedersen said. As the navigator, it was his job to come up with a list of alternative landing sites. Thule AB, Greenland, and NAS Keflavik, Iceland, were possible divert locations.

"It was a solemn moment. We were very aware that our country had been struck, but we were also very busy trying to plan all the different options," Pedersen said. "I remember just thinking about a billion different places we could go and things we needed," such as air refueling, he added. "In the beginning, just like any military guy, you are thinking about getting the job done."

The Speckled Trout crew had made the decision to head back to the US, but it wasn't easy getting a security clearance, even for such a high-profile passenger, Pedersen said. All the bases were at Threatcon Delta, and circling combat air patrol fighters had authority to shoot down hostile or threatening aircraft.

Speckled Trout made it back to Canada, but was initially denied entry to US airspace. The crew started holding once again.

"In the beginning we had a few problems convincing [the air traffic controller] to allow us back into the country, [even though] we were ordered at a significantly high

Photo courtesy of Lt. Col. Rob Pedersen

The Speckled Trout flew past New York City on its way back to Washington. This photo was taken by Pederson with an underwater camera he happened to have with him.

level to come back," Pedersen said. "You can't say over the radio who you are carrying because they don't have secure communications at the FAA. ... We had to tell them over an open line that we had a DV Code 2, which is a ranking that a lot of DVs fall under. It took a little bit of time, and I'm sure there were a lot of phone calls made, before they let us back in," he said.

It turns out, the crew not only received permission to fly back into the US, but their flight path back to Andrews took them directly over New York City, giving everyone on board a firsthand look at the destruction below.

The two tiny windows in Shelton's suite were smaller than those on the typical commercial airliner, so he made his way up to the cockpit before the crew flew past Manhattan.

Even from five miles away, the devastation was obvious. The famous New York skyline was blocked by a billowing black cloud of smoke that hovered thousands of feet in the air. Not a single building was visible downtown. Other than the combat air patrol aircraft that had flown up to check them out and the search and rescue aircraft looking for survivors below, there was no air traffic at all.

Pedersen snapped a photo with an underwater camera he used for snorkeling and then sat in the silence as they flew by.

"There was nothing out there. It was a clear day and it was a very, very clear shot of smoke pouring out of New York City," Pedersen said. "On any given day, especially in big cities, the radio is nonstop because there is a ton of aircraft out there and everybody is talking to the tower or [an air traffic control] center or some air traffic controllers. There was nothing. We were the only aircraft there. It was the one time in your life when you are flying, and you don't hear anything, unless you are over the ocean, so it was very eerie and very quiet."

The fly-by was quick. No one wanted to get in the way and Shelton needed to get back to the Pentagon.

By early afternoon, they had made their way to Andrews. Shelton wasn't the only VIP trying to get back into the US that day. Secretary of State Colin L. Powell had also been out of the country.

Speckled Trout had better defensive capabilities, so Powell's aircraft was flying circles above Andrews, waiting for Shelton's airplane to land first.

Within minutes, the Secretary's aircraft had also landed. Shelton and Powell were whisked off in armored caravans while Pedersen and the rest of the crew remained with the aircraft.

They remained on standby for six days and though a few DV airlifts were planned, the flights never actually left Andrews, Pedersen said.

"We weren't anything special that day," Pedersen said. "The guys did a phenomenal job on a pretty stressful day," but "big picture, we were flying a great airplane, with a great mission, with the Chairman on board, and we did our job."

The experience "was definitely something that sticks with you. … A lot of us wanted to go back to operational flying as opposed to DV airlift," he said.

After 9/11, many of the crew "went back to line flying, back to the mission, everything from C-130s to Compass Calls," Pedersen said. "There was an urgency among everyone to get back to the nuts and bolts of being in the military."

None of the Speckled Trout's crew from that day ever separated from the military, Pedersen noted. "Everyone is either retired or still in." ■

Lt. Col. Rob Pedersen is executive officer for the Air Force Strategic Deterrence and Nuclear Integration Division at the Pentagon. He was interviewed by Amy McCullough.

1st Lt. Heather Penney

A security camera captures Flight 77's impact at the Pentagon.

USAF photo by SSgt. Gary Coppage

Penney did not know if hijacked airliners were still inbound.

The first day back at work wasn't supposed to go like this. The 121st Fighter Squadron had returned on Saturday from a Red Flag deployment in Nevada; Monday was a day off. Now, on Tuesday, District of Columbia Air National Guard squadron leaders were meeting at Andrews AFB, Md., to set training priorities.

Heather Penney, a green first lieutenant, was in the meeting because her secondary duty was squadron training officer.

The session was interrupted when someone opened the door a crack to let the assembled officers know an airplane had flown into the World Trade Center.

"And we all looked outside, and it was a crystal-clear, blue September Tuesday morning," Penney recalled. The weather was likely the same in New York, and the pilots speculated that either "someone totally pooched [fouled up] their instrument approach," or some small aircraft sightseeing on the Hudson had made a really bad turn. The group returned to its meeting.

A short while later, the door was opened again, this time wide, and an NCO said a second aircraft had flown into the WTC, "and it was on purpose."

With urgency but professionalism, the group looked at each other and asked, "What do we do now?"

Over the following hour, unit leaders tried to get orders to act. While state Air Guard units get instructions from their governors, D.C. has no governor, so the Guard takes orders directly from the President. Further, the base was not an alert facility, so it was not tied in with NORAD. The Secret Service has a heavy presence at Andrews, however, because it is the operating base for Air Force One.

Brig. Gen. David F. Wherley Jr., 113th Wing commander, ordered his airmen to begin preparing for a possible launch. He called his Secret Service contacts, seeking authorization for an improvised combat air patrol mission.

As they hurried to pull on their flight gear in the life support shop, Penney and her flight lead, Maj. Marc Sasseville, had a perfunctory conversation about what they would do if they found the inbound airliner they had been told was on its way toward Washington.

They would be launching with nothing on board but about 100 rounds of training ammunition—simple bullets with lead tips, not the usual 20 mm high-explosive incendiary rounds used in combat. AIM-9 Sidewinder air-to-air missiles were being unpacked and built up at Andrews' weapons area, but it took time to assemble the missiles, and the cart that transported them from the far side of the base moved at a top speed of just nine miles per hour.

The Sidewinders would have to wait for a second flight.

Penney, remembering an accident investigation that her father had participated in, recalled that 737s simply dropped from the sky if they lost their tails, leaving "a very tight debris field."

The mission here would be to bring the airliner down causing as few casualties as possible on the ground, but primarily to make sure that it did, indeed, crash without reaching its target. The training ammunition wasn't going to be enough to do the job, Penney explained, "even if you're a perfect shot."

There was really only one way to take down a large airplane under these circumstances.

"Fly into it," Penney said.

Sasseville said he would ram the cockpit; Penney intended to take out the tail. "I know for sure that if I take off the tail, that it will just go straight down," so she intended to "aim the body of my airplane" at the empennage.

Penney was hoping to have enough time to eject after the impact, but was keenly aware that she'd have to stay with the F-16 until it struck the airliner.

"It was very clear that, yeah, this was"—Penney declined to finish the thought—probably going to be a one-way mission.

Wherley soon received orders from the Secret Service to intercept any approaching aircraft and keep them away from an eight-mile circle around downtown. "That allowed an ROE-build," said Wherley in a 2004 interview, referring to rules of engagement.

Penney and Sasseville powered up immediately.

Normally, an F-16 preflight took 10 to 20 minutes. Now, she and Sasseville were rolling within seconds; the crew chiefs were "still under the jet, pulling pins" even as the fighters surged forward, she said. In two minutes, at full afterburner, they were airborne.

It was about 10:40 a.m., just an hour after American Flight 77 had struck the Pentagon, and Sasseville and Penney knew they had a grim mission. At least one airliner was still believed inbound toward Washington, D.C. Their job was to get over the city as soon as they could and act

USAF photo by SSgt. Greg L. Davis

North Dakota and D.C. Air National Guard F-16s set up a high-low CAP.

Heather Penney in the cockpit of an F-16.

as the "goalie" CAP: to bring down any aircraft ignoring orders to turn away.

As Sasseville and Penney screamed skyward, banking toward the Potomac River and Washington, Penney said the whole scene was dream-like.

In the center of an extremely congested triangle of commercial airports—Reagan National and Dulles in Virginia, and Baltimore-Washington in Maryland—D.C. was typically abuzz with airliners, business jets, and general aviation airplanes. Sometimes, it could take two minutes to get departure clearance from Potomac Control—an eternity in a gas-guzzling F-16.

By midmorning on 9/11, however, nothing else was up.

"It was eerily silent," Penney recalled. "That part was very surreal."

Sasseville and Penney flew over the Pentagon, then proceeded west-northwest, as instructed, looking for the inbound airliner. In the confusion of the morning, they were looking for United Airlines Flight 93, which, unknown to them, had already crashed in Shanksville, Pa.

F-16s from the North Dakota ANG soon arrived and also took up station, having flown up from Langley AFB, Va. The D.C. and North Dakota F-16s set up a high-low CAP, with the Fargo jets staying above 18,000 feet, looking for inbound threats from over the ocean, while Penney's flight stayed low, on the lookout for threats trying to sneak in at low altitude, as the previous attacks had done.

Because they had been dispatched by NORAD, the Fargo Vipers were joined by a tanker, and all the F-16s over Washington took turns refueling.

They remained up for four hours, and when Penney and Sasseville landed back at Andrews they left plenty of other interceptors over the city. Upon landing, they were whisked to a room "with more generals than I'd ever seen in my lifetime," Penney said.

"We stood at the head of an oval table in front of the entire group, and it was standing room only, and they asked us all sorts of questions about the morning and the sorties, and what we had seen," she said. It was heady stuff for a first lieutenant who had only been assigned to the base for nine months.

Almost immediately, the two F-16s relaunched—now fully armed—to fly another four-hour mission over the capital.

During this second sortie, they received instructions over the encrypted radio to escort Air Force One, which was inbound on its way to Andrews. "I then flew point, leading the package back," Penney said.

"The first sortie, we were far more focused on doing the task at hand," she said. Hours later, it was still "hard to believe" what had happened. Penney spent some of the time on the second sortie above the Pentagon, looking down at it with her jet aircraft's infrared targeting pod, trying to get the events of the day to seem more real.

The D.C. Air Guard served as Washington's CAP resource for the following two weeks, but of the 32 pilots assigned to the unit, only about eight were full-timers. Many of the traditional Guard pilots were airline pilots "stuck in different parts of the country" when air travel was abruptly halted on 9/11. For the D.C. Guard, the air defense mission represented "24-hour operations with decreased manpower," Penney said, "very work intensive."

The situation didn't leave much time for reflection. While it was a "dramatic experience," she became turned off by "the melodramatic media attention," and postponed much personal reflection.

"I really didn't process or think through all of that until a couple of years ago," Penney said.

However, as to the notion of having to take down an airliner with innocents aboard, "it was so abundantly clear in the moment that, while it would have been tragic and unfortunate, the moral choice was obvious." She said that at no point "did I feel conflicted, like, 'Could I really do this?'"

The "total heroes" of the air action, she said, were the passengers on Flight 93 who ultimately made the goalie CAP unnecessary.

"What they did was courageous," Penney said. "And I think for them it was also obvious, once they realized what was going on." ■

Maj. Heather Penney flies DV aircraft for the D.C. Air National Guard and is an air superiority requirements analyst for Lockheed Martin. She was interviewed by John A. Tirpak. Additional information came from Maj. Gen. David F. Wherley Jr., interviewed by Adam J. Hebert in 2004. Wherley and his wife, Ann, died in a 2009 Washington, D.C., Metrorail crash.

MSgt. Jeff Rosenthal

USN photo by JO1 Mark D. Faram

Smoke pours from the center of impact. Jeff Rosenthal's C-130 crew saw Flight 77 hit the building.

The Minnesota Air National Guard C-130H, designated Gofer 06, took off from Andrews AFB, Md., shortly after 9:30 a.m. Sept. 11, 2001. In the flight engineer's seat was MSgt. Jeff Rosenthal. The next 35 minutes would soon be seared into his memory—and the memories of all the airmen aboard.

Andrews had been a stopover. The day before, the crew of Gofer 06 had returned from a mission to the Caribbean, transporting soldiers in St. Thomas and St. Croix in the US Virgin Islands.

"We'd been at Andrews for the evening," Rosenthal said. Waiting on the runway for clearance, "it was a morning like any other morning." Once airborne "we flew over the Woodrow Wilson Bridge" and up the Potomac River. As flight engineer, Rosenthal's crew station was in the cockpit of the C-130H sitting behind the pilot and copilot in a seat about six inches higher, giving him excellent visibility.

Then the routine of the morning flight snapped. Air traffic control asked Gofer 06 to turn a little to the east. "It's rare if ever that air traffic control asks you to deviate," said Rosenthal. "It was very peculiar."

Controllers at Dulles Arpt., Va., had spotted an erratic aircraft about 38 miles out from Washington, D.C., but could not identify it. They asked Gofer 06 to look for an airplane coming toward them, saying it was "fast-moving, type and altitude unknown."

The eight airmen aboard Gofer 06 were a standard mix. They had not been monitoring civilian communications and were unaware of the events that had already taken place in New York.

The crew was led by Lt. Col. Steve O'Brien, pilot and aircraft commander. Maj. Robert Schumacher was the copilot. Lt. Col. Joe Divito was navigator. Also on board were Rosenthal the flight engineer; TSgt. Corey Berg, crew chief; MSgt. Steve Stafford, loadmaster; TSgt. Tony Pacheco, maintenance specialist; and maintainer SrA. Robben Todd.

"A little over Reagan National Airport, we noticed the other aircraft," said Rosenthal. "We thought we'd just do an identification."

It was American Airlines Flight 77, hijacked after takeoff from Dulles that morning. The 757 moved from left to right across the windows of the C-130 cockpit, too quickly for the crew to react, or even to fully process what they were seeing. "We saw it crash into the Pentagon," Rosenthal said. He thought it was "just an outright accident." It did not occur to the crew that this was an attack, a planned event.

"Washington, this is Gofer 06. That aircraft is down; he's in our 12 o'clock position. ... It looks like that aircraft crashed into the Pentagon, sir," the crew told Reagan National controllers.

"We circled. We loitered briefly," said Rosenthal. Gofer 06 was turning in a circle over the Pentagon at about 2,000 feet when air traffic controllers "released us to the northwest."

Said Rosenthal, "When you fly and see another aircraft crash, it takes you to a state of mind you aren't normally in." The flight crew was stunned, but coping with the shock. Rosenthal described it as a "huge distraction that takes a lot to overcome."

"Being trained to do our job under the most difficult situation, the habits are: Do your job, pay attention to the checklist, and be safe," he explained.

On board, the crew quickly talked over what they'd just seen. "We did a crew assessment. Processing that type of incident manifests itself in conversation," Rosenthal said. They were asking themselves, 'What was that all about?'"

Rosenthal said pilot O'Brien "did a good job of staying focused on flying."

Gofer 06 was monitoring the standard VHF and UHF radios. Now they tuned in the backup radios to try to find out what was happening. The AM airwaves reported the crashes into the World Trade Center

DOD photo

An engine from Flight 93 is pulled from the ground near Shanksville, Pa.

USAF photo by TSgt. Erik Gudmundson

The C-130H that was first over the D.C. and Pennsylvania crash sites is still in use.

towers in New York. "It didn't take long to put things together," Rosenthal recalled.

Gofer 06 began a climb to 3,000 feet as assigned by air traffic control. Originally the crew of Gofer 06 planned to return to their home station in Minnesota. Now after a quick crew assessment, they decided "the prudent thing to do was to get to a safe haven and take a time out."

By 10 a.m. the C-130 was well on its way, flying over western Maryland and on into Pennsylvania. At 10:02, Gofer 06 gave air controllers at Cleveland Center, Imperial radar, the routine report that they were leveling off at their assigned altitude of 24,000 feet.

Their second shock was moments ahead.

Air traffic controllers had been tracking errant United Airlines Flight 93 as it turned off course and seesawed east at various altitudes. Frantically, the controllers worked to figure out the status, altitude, and heading of what they feared was the day's fourth hijacked airliner.

As controllers feared, UA 93 was already in the hands of hijackers. The struggle by passengers to take back the cockpit had been under way for several minutes. Hijackers rocked the airplane's wings and pitched it up and down in the battle. As Gofer 06 was leveling off, the hijackers realized the passengers were about to overtake the cockpit and were going to keep them from reaching their target in Washington.

The terrorists deliberately dove the airplane into the ground at 10:03.

Gofer 06 had just been vectored north as UA 93 plummeted. Air traffic control talked with the C-130 and a civilian business jet at lower altitude hoping to pick up a sighting of UA 93 as it approached the margins of the sector's radar coverage.

O'Brien and crew scanned outside the windows of their C-130.

As Rosenthal remembered it, Todd "came over the interphone and said he'd seen something." Gofer 06 banked slightly to get a better look.

They had spotted the remains of UA 93. "Black smoke in sight at nine o'clock," they relayed to air traffic control just two minutes after the airliner went down.

"Once again we were at the wrong place at the wrong time," Rosenthal said. "No one would ever wish that on anyone, to see the demise of so many people."

In the span of a half-hour that morning, Gofer 06 had been—by sheer chance—on an unbelievable eyewitness route. They were the first to confirm the third and fourth crashes to air traffic controllers, and these eight airmen were the only Americans to see both crash sites in real time.

Gofer 06 landed at Youngstown Air Reserve Base in Ohio. The FBI met the crew and debriefed them. After crew rest, they went back on alert in case they were needed for missions in support of the extraordinary air defense efforts over the US. Two days later, they were cleared to complete the flight home.

Ultimately, the crew had to draw on their training and resist dwelling on what they had seen. "They tend to compartmentalize, close down, and move on," Rosenthal said of professional military aircrew. "Life demands that."

Aircraft tail No. 006 "is still alive and well," he said. Rosenthal has flown in it many times since Sept. 11.

Remembering the events 10 years later, it was the sudden change that stood out. Nothing like 9/11 could have been further from their minds a day earlier. "One day we are in the Caribbean and life is good, then the next day it's 180 degrees out," Rosenthal recalled. "Life can change so quickly." ■

SMSgt. Jeff Rosenthal is standardization and evaluation flight engineer for the 133rd Operations Group, Minnesota Air National Guard. He was interviewed by Rebecca Grant.

MSgt. William Scarfuto

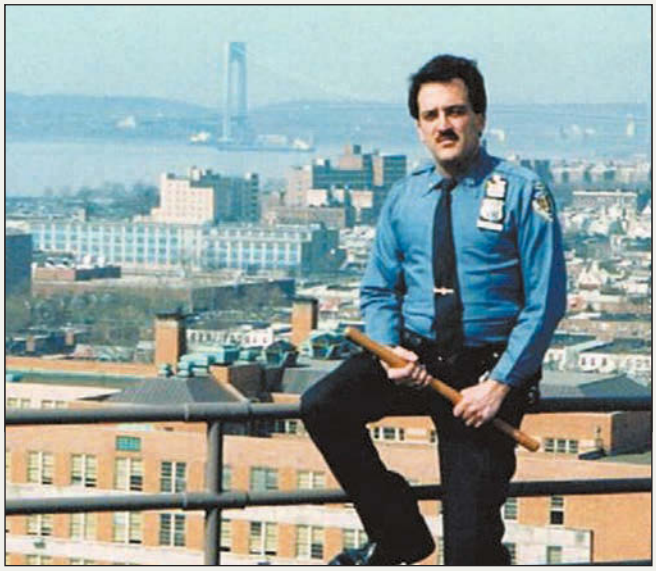


Photo courtesy William Scarfuto

William Scarfuto in New York City. He and other police officers hailed a merchant marine vessel to get from Brooklyn to the WTC site.

Photo via Flickr user TheMachineStops

The moment of impact for the South Tower. From his home, Scarfuto could see the towers burning.

Air Force Reserve master sergeant and New York City policeman William Scarfuto took his children to school that Tuesday morning. At home in Brooklyn before work, he did a few chores, enjoying the day's more relaxed pace.

"I remember it being an extremely beautiful morning—September 11th," he said. "I hadn't been at work yet. I remember it was just an exceptionally beautiful day." A few minutes later the telephone rang. Scarfuto's wife, also an NYPD officer, called him from work.

"She instructed me to turn on the television, that a plane had hit the World Trade Center." After staring disbelievingly at the television Scarfuto stepped outside his home.

With an unobstructed view of the Manhattan skyline, he could see the top half of the World Trade Center clearly. "I said, 'It can't be.' Of course I can see the flames and everything coming out the sides and all the smoke. ... Right in my mind, I knew something happened. I knew it was no accident."

When a second aircraft hit the South Tower of the World Trade Center, Scarfuto called his parents. "I told them, 'You get the kids out of school, pack a bag, and I'll let you know if I need you to leave the city.'"

Just over the Brooklyn Bridge from Manhattan is the New York Police Department's 88th Precinct headquarters in Brooklyn. Four miles from work, Scarfuto pressed through commuters and residents already beginning to stream out of the city.

Arriving at work, he found the station in a frenzy, bracing for another attack from any direction. "By now we all know it's some type of a terrorist attack" and NYPD was mobilizing officers, but as yet, no one was allowed into Manhattan.

With fires burning in both towers and firefighters in Manhattan already on the scene, there was little officers could do but watch helplessly.

"Watching those people suffer, hoping they would get out of there, … in my mind, I was like, 'Geez, how do you fight the fire?' From one building to the other, you could probably fight it, but now both buildings were ablaze." An NYPD helicopter hovered nearby, but crews were unable to reach the trapped survivors.

"The worst ... was the people jumping. ...You have nowhere to go, and it's either, I guess, you burn or you die," Scarfuto recalled. "The people chose to jump as opposed to melt—that was the worst thing."

Shortly before 10 a.m., with an unexpected rush, the World Trade Center's South Tower structure succumbed to the strain, telescoping in on itself.

"I'm watching the buildings and before you know it, they start collapsing," Scarfuto remembered. "Death. That was what you were looking at—death." The people who had been trapped in the upper portions of the building, "they just disappeared. They disintegrated. They're gone—forever," he said. "The things just collapsed with everybody on it."

Driven with tremendous force from the far side of Manhattan Island, a wall of smoke and debris surged over the East River into Brooklyn. "Everything got covered in the soot and the grime and the asbestos, whatever else was disintegrated," he said.

Ordered to establish a mass-triage and emergency morgue at the Brooklyn Navy Yard, located a few blocks from precinct headquarters and on the river separating the city from Manhattan, Scarfuto set to work. "I shot right into the Navy Yard. They gave us a brand-new building, and it was perfect for everything we needed."

Scarfuto said that by this time, a thousand New York City police officers had assembled at the Navy Yard awaiting orders. "Everybody was lined up there and waiting, and I'm like, 'We've got to get over there.'"

Eager to establish contact with police cut off from communications in the city, Scarfuto and two NYPD detectives convinced a merchant marine crew to take them over to Manhattan. Stepping off the boat, it "was like being in a war zone," he said. "You couldn't tell where a street was. You didn't know if you were on West Street, if you were on Chambers Street."

FEMA photo

Pieces of the airliners lay mingled with human remains.

USN photo by Chief Photographer's Mate Eric J. Tilford

An aerial view of the damage in NYC. Scarfuto spent weeks aiding the cleanup and recovery effort.

Stepping through the rubble with dazed New Yorkers stumbling past, Scarfuto was thinking, "This just couldn't have happened. This is New York City. This is my home."

"It was just total devastation," Scarfuto said. "There were body parts all over. ... Arms, legs, fingers, clothing—everything was just all over."

"I'm glad I'm alive. I'm glad I didn't get killed there," he said. "I'm glad I wasn't working in the morning that day because ... I definitely would have gone up in the building trying to help, and that would have been it. I wouldn't have left."

Searching for a way to assist victims or other police, the three came upon a fellow NYPD officer. "He had a leg in his arms. ...He's like, 'What should I do with this?'" At the time, Scarfuto had 17 years in the police department and 21 years in the Air Force. "I've been around a lot of tragedy," Scarfuto explained, "but this was just like—I'm trying to focus; I don't even know what to tell the guy."

The situation was worse than the slaughter and devastation left behind by the Iraqis that he had witnessed when reopening Kuwait Airport with the 49th Aerial Port Squadron, after the Persian Gulf War in 1991.

Scarfuto collected himself. "You know what," he told the police officer holding the leg, "just lay it down and mark it that you found it. Maybe you can find a survivor."

Blocks away from the towers, pieces of the airliners lay mingled with human remains. "I've seen aircraft accidents before, but they were accidents; they weren't intentional," Scarfuto said remorsefully, with a tinge of anger in his voice.

After he had been in the city for an hour-and-a-half, police in Brooklyn established backup communications, recalling Scarfuto to the Navy Yard. Divided into groups of 50 to 100, Scarfuto returned again with a police team to search for survivors.

"The area down there was so large" that with the smoke and debris filling the air, he saw only his own team. Scarfuto never returned home that day. "I just stayed at work. ... We had a report time and you went there in brigades, … maybe 20, 30 people on a pile." Filling five-gallon buckets with debris by hand, Scarfuto joined officers and volunteers working around the clock.

"There were a few people who got rescued. Unfortunately I didn't get to rescue anybody. I wish I did. That sort of thing keeps you going," Scarfuto said. "I was just hoping there was a pocket under something. There were maybe 500 people stuck, but most of them died."

Recalling one of the most heart-rending moments, he said, "We hit a car, started clearing it away, and under the car was a guy." Scarfuto's voice trembled. "He was dead. He got crushed. I guess he was looking at his family: … He had his wallet out with a family picture. That was probably one of the worst things I saw."

In the days and weeks that followed, "it was automatic 12-hour shifts" digging at Ground Zero or working at the command. "There were no days off." For Scarfuto, the work was intensely personal. As a five-year-old in Manhattan, his tooth fell out and his parents told him, "Throw the tooth in there." Scarfuto said, "I threw my tooth in that hole" where the World Trade Center was under construction.

Like many rescuers who stayed at Ground Zero for weeks, Scarfuto later suffered severe respiratory problems linked to toxic exposure at the site. "My esophagus fell apart," he said.

Today, "if I drive by, ... I get sick to my stomach," said Scarfuto. "I see the planes hitting. I see the explosions. I see those people jumping. … That's just a vision that's locked in me forever." ■

CMSgt. William Scarfuto is a 27-year NYPD veteran and an Air Force Reservist assigned to the 35th Aerial Port Squadron at JB McGuire-Dix-Lakehurst, N.J. He was interviewed by Aaron Church.

Lt. Gen. Norton Schwartz

DOD photo by R.D. Ward

Norton Schwartz commanded Alaska's NORAD region.

USAF photo by MSgt. Scott Wagers

At Elmendorf, a pilot sprints to an F-15 on air defense alert.

Alaska Time is four hours behind Eastern Time, so the deadly events of Sept. 11, 2001, began to unfold rapidly around 5 a.m. local time at Elmendorf Air Force Base, headquarters for NORAD's Alaska region.

Lt. Gen. Norton A. Schwartz, a self-described "morning person," typically goes for an early morning run. On 9/11 the commander of 11th Air Force and the NORAD region did just that.

Schwartz headed out at about 5 a.m. and ran his normal route, which took him past his headquarters building about 45 minutes later. At that point, he found Col. Bob Otto, his operations group commander, directing traffic in the parking lot. "It's before 6 o'clock in the morning," Schwartz noted, so he asked what was going on.

"Haven't you heard?" Otto replied.

"No, I've been out running," Schwartz responded.

Otto told his boss about the developing situation in New York City.

"I'll be right back," Schwartz said. He ran home, quickly changed into uniform, and was soon back at the office.

By this point, al Qaeda terrorists had already seized and crashed each of the four aircraft they commandeered that day. The attacks had just happened however, and quickly. The full scale of the day's events were not yet known, and Schwartz felt "it was plausible that if something of this nature happened on the East Coast," there could be a similar situation in the West.

A potentially serious problem soon came to light. NORAD's FAA counterparts at the Anchorage air control center passed word that Korean Air Flight 85, inbound from Seoul to Anchorage, might have been hijacked. The Boeing 747's crew had transmitted an "HJK" code, indicating a hijacking.

Air traffic controllers asked Flight 85 to "confirm squawk 7500," another hijack code. The Korean crew repeated the squawk: 7500.

"This was serious business," Schwartz said. "We thought we had a problem."

In 2001, Elmendorf was one of the few remaining NORAD alert bases, and a pair of F-15s were ready to go, armed with both missiles and guns. Two Eagle pilots quickly scrambled and "understood what they were doing, understood that this was a potential hijack," and knew they could be facing a threat similar to what had already been seen on the East Coast.

As a precaution, civil authorities ordered some of the buildings in downtown Anchorage evacuated.

Schwartz informed the F-15 pilots that an order to shoot down the 747 would come from him. "It was clear, explicitly clear, that there was only one person who could declare that target hostile. In other words, authorize our aircrews to engage the target with lethal force—That was me," the general said.

"I did believe that this was a real possibility and I had begun to try to steel myself on the possibility that I would have to authorize the shootdown of a passenger-carrying aircraft."

"We had trained for Russian bombers," Schwartz continued. "That was the NORAD staple." Intercepting an airplane was "not unusual, and certainly was a well-refined procedure." Intercepting a commercial airliner, however, "that was not normal."

The fighters located Flight 85 and were ordered to trail it from a location where people in the cockpit of the 747 would not see the F-15s. "I wasn't prepared to make it known to the crew, visually, that he had missile-carrying fighter aircraft on his left and right wing," Schwartz said.

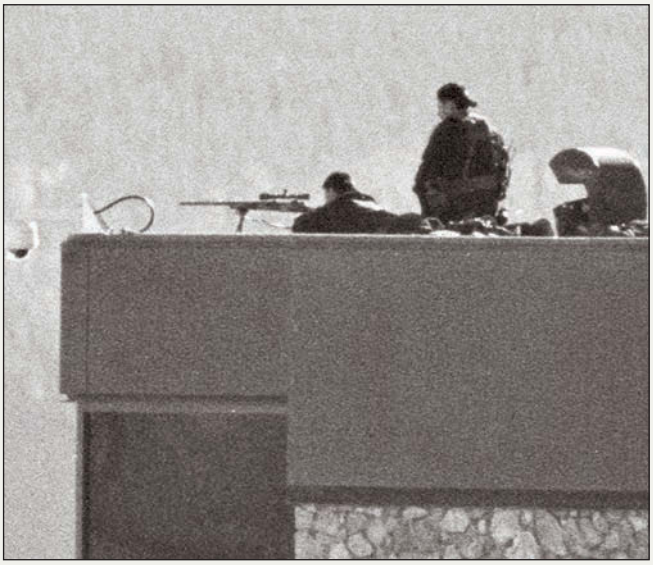
NORAD worked with the civilian air traffic controllers to figure out exactly what was going on. With the air defense fighters in place, officials suggested a way to "see what's happening on this machine," he said. Through the FAA, Flight 85 was instructed to perform a series of maneuvers, such as left and right turns, to see what sort of response came from the airliner.

The mystery deepened: The aircraft executed its directed maneuvers flawlessly. As Schwartz recalled, "You

Yukon News photo by Mike Thomas

Korean Air Flight 85 (background), thought to be hijacked, arrives at Whitehorse Airport, in Canada's Yukon Territory.

Yukon News photo by Mike Thomas



Members of the Royal Canadian Mounted Police prepare to shoot, if necessary, as Flight 85 is investigated.

have a suspicion [of a hijacking], confirmed by a second indication of a hijack, and yet the crew is responding promptly, precisely, professionally, to ATC instructions."

Still, military officials did not want to take the airplane into Anchorage, its destination, or on to Fairbanks, the other major metropolitan area in Alaska. "So we decided that we would take the airplane down to an airfield called Yakutat, which is in the southeastern part of the state, a 747-capable airfield."

Officials checked the weather, which seemed acceptable, then asked Anchorage ATC to move Flight 85 down toward Yakutat via a route that first took it midway between Anchorage and Fairbanks, well clear of both urban areas. "We were able to get the [Anchorage] mayor to discontinue the evacuation, based on our assurance that the city was not threatened," he said.

At that point, "I had a young captain in the cab [command and control center] who said, 'Why don't we call the airfield manager at Yakutat?' because sometimes weather reports in Alaska aren't quite accurate," Schwartz explained. Calling ahead proved to be a wise decision. Conditions were not clear at Yakutat, and the Korean crew would have been forced to arrive, low on fuel, at an unfamiliar, remote airport in bad weather.

"We came to the conclusion that Yakutat wasn't such a good idea," he said. "It became clear at about that same time that this airplane didn't have enough gas to make it back to Anchorage."

KAL Flight 85 needed a new destination, and fast. Officials quickly settled on Whitehorse, in Canada's Yukon Territory, an airport that would receive several other 9/11 diverts, including a KAL 747 freighter. Whitehorse wasn't really large enough for jumbo jets—their wings and engines hung over the gravel and grass on the sides of the runway—but it would have to do.

The next call went to Angus Watt, Schwartz's Canadian counterpart.

"I said 'Angus, I've got an airplane I need to take to Whitehorse,'" Schwartz recalled. "Angus said something along the lines of, 'You are trailing this airplane. It's a potential hijack right? … And you want to bring that to Whitehorse?'"

Watt, who later became the Canadian Air Force Chief of Staff, went off-line, checked with his superiors, then returned to say, "Bring them on."

Elmendorf's F-15s trailed Flight 85 into Whitehorse, hooked up with their tanker, and began their return to Alaska. On the ground, the Royal Canadian Mounted Police took over, checked out the crew and the aircraft, and verified that the day's tension had been because of a mistake and not an actual hijacking.

While the origin of the flight's first HJK warning squawk is unknown, the crew may have misinterpreted the later request to *confirm* the 7500 hijack code as an *instruction.*

All air traffic in Alaska was grounded for a day-and-a-half or so. This proved to be "very problematic because in Alaska, aviation is really essential," Schwartz said. People were out in the field, near the end of hunting season, with limited communications and provisions—and they were expecting aircraft to come and pick them up.

At one point before the ground-stop was lifted, NORAD fighters intercepted a light aircraft equipped with pontoons. "He'd come out of the field. He didn't know," Schwartz recalled. "Got intercepted by an F-15. It kind of made his morning, I'm sure."

The Alaska NORAD Region stepped into 24/7 alert operations, but after the abrupt start to the day, Schwartz made it home for dinner on 9/11. The commander and his Canadian deputy "went on 12s" for the next several weeks.

"I never again ran in the morning without my cell phone," Schwartz said. ■

Gen. Norton A. Schwartz is the Air Force Chief of Staff. He was interviewed by Adam J. Hebert.

MSgt. Noel Sepulveda

USAF photo by TSgt. Jim Varhegyi

Noel Sepulveda, with bullhorn, receives instructions from Paul Carlton (r), USAF surgeon general.

The most evil of days began in banal fashion for MSgt. Noel Sepulveda—with a staff meeting. He was a Reserve program manager in an Arlington, Va., Air Force office, but at 7:30 a.m. on Sept. 11, 2001, he was at nearby Bolling AFB, D.C., attending a routine meeting of first sergeants.

He left the meeting early because he had to be at the Pentagon for a 9:30 promotion exam. At about 9 a.m. the Vietnam and Gulf War medic jumped on his Honda 1500 Goldwing motorcycle and sped away.

Sepulveda reached the Pentagon late, at 9:25. He cajoled a cop into letting him park near the building rather than in a faraway motorcycle lot. "It was right by a light pole" near US Route 27, he said.

As he ran toward the Pentagon, police cars turned on their lights and sped off. This puzzled Sepulveda. To him, the police cars seemed to be forming "some kind of secure area."

Sepulveda entered the building via Corridor 2 on the Pentagon's south side. There, however, he was immediately stopped and pushed out by a policeman, who warned "they were going into lockdown; the building was going into Threatcon Delta."

He was ordered to leave the building, and Threatcon Delta indicated to him an attack was under way.

"I'm thinking, 'What in the world is going on?'" said the airman. "And then somebody said, 'Haven't you heard? Two aircraft have struck, you know, the Twin Towers, and it seems like some sort of an attack.'"

Sepulveda returned to his motorcycle, not far from the building. It was about 9:37 a.m.

Then he saw the airplane.

A Boeing 757 was coming in from the west, flying over a Sheraton Hotel on a nearby rise, beyond where the Air Force Memorial stands today. "That's what caught my attention—the fact that there was a plane coming from that area," said Sepulveda. "Their flight paths are supposed to be down the Potomac, and they're not supposed to overfly the Pentagon. And this guy ... was going to overfly the Pentagon."

His anxiety grew with each second. "It just didn't seem right," said Sepulveda. The airplane dropped lower and lower, flying faster and faster. The pilot lowered his landing gear. The right gear struck a light pole, broke off, and fell onto a taxi. The left wing struck another pole. American Airlines Flight 77 passed overhead.

"I think that, if I had jumped, ... I probably would have been able to touch the plane," he said. "That's how close he came to me."

Sepulveda could tell that the pilot "full throttled" the engine, but instead of bringing the nose upward, he pitched it down. In a flash, the giant aircraft sailed right into the side of the Pentagon.

"You know how everything kind of goes into slow motion?" asked the airman. "That's what it seemed like."

Sepulveda was gripped by utter shock. "At that moment, I said, 'My God, he just did that purposely.'"

Time seemed frozen. The jetliner's wings disintegrated, but for a moment, Sepulveda saw the fuselage sticking out of the side of the Pentagon. He noted, "It was like the building was just starting to suck it in, you know? Then, all of a sudden, you see the ball of fire."

It boiled out from the innards of the Pentagon. In its first milliseconds, the fireball was an ugly yellowish orange. And then it went completely red as it mushroomed into full view.

The blast flung Sepulveda backward like a rag doll. He recalls feeling "like somebody has just punched me, twice, in the chest." He was thrown against the light pole, with the back of his head and his lower back taking the impact. Sepulveda said he had "a wicked, wicked pain" in the back of his head.

Though injured, Sepulveda picked himself up, shook off the dust, and took the kind of action one expects of a medic. "All I could think of was, 'Run to the impact site and see how I [can] help,'" he said. "As soon as I got there I heard people screaming and yelling. I just started pulling people out."

He went in through the hole in the building, "and you could not see two inches in front of you. … The smoke and the fire were so thick. I was just kind of feeling my way, feeling for people," he said. "I started pulling them out and bringing them back out."

USAF photo by TSgt. Wayne Clark

On Sept. 10, 2006, 184 beams of light rose from the Pentagon, honoring those who died there on 9/11.

USN photo by Petty Officer 1st Class Brandan W. Schulze

In 2007, a memorial flag hangs near the point of impact at the Pentagon.

In Corridor 4, adjacent to the impact point, Sepulveda saw a woman's body. "She started screaming," he said. "Her whole back was burned, completely burned. She handed me what I thought was a coat. I thought, 'Why was she handing me a coat?' I was ready to toss it ... when she screamed to tell me her baby was inside it."

Evidently, the woman had come to enroll her infant in day care and gotten caught in the attack. The baby was not breathing when Sepulveda took him.

The airman performed baby CPR—mouth-to-mouth and compressions. He reached the hole in the wall and handed over the baby to another volunteer. "When I handed him off was when I heard him gasping and start crying," said Sepulveda.

He went back to get the mother. She came out just before the Pentagon wall collapsed at 9:57 a.m. All told, he probably rescued eight persons.

Sepulveda ran to another section of the damaged area where he'd heard that people were coughing and screaming. He and others from police agencies and military services formed a human chain to help trapped persons find their way out of the Pentagon.

The scene was "chaotic," Sepulveda recalled. Not long after the attack, a helipad fuel bladder exploded. Adding to the terror and disorder were repeated announcements that another hijacked airliner was inbound, due to arrive in minutes.

"They actually started counting it out: We have 30 minutes, we have 20 minutes, we have 15 minutes," said Sepulveda.

Nearby was an overpass for US Route 27 on the Pentagon's western rampart. Sepulveda rushed there to create a triage area for victims.

He obtained a bullhorn from a firefighter and began trying to bring order from chaos. "I'm Sergeant Sepulveda," he shouted. "I'm a medic. We need to get organized." He rounded up those with medical training and put them to work.

One of the last victims brought out was an older woman, burned over 90 percent of her body. Sepulveda, though lacking in normal burn treatments such as silvadene, had some success in keeping her stable with saline solution.

"She looked at me, and said, 'Why did they do this to us? Who is doing this to us?'" said Sepulveda. "How do you answer a person like that?" She died two days later.

While he was busy trying to organize the effort, Sepulveda heard this question: "Sergeant, what the hell do you think you're doing?" The speaker was the Air Force surgeon general, Lt. Gen. Paul K. Carlton Jr., standing behind him.

"I said, 'We need to get things better organized. So, I'm getting things organized.'" Carlton replied, "You're in charge. You're the on-scene commander from now on." Sepulveda coordinated all the medical assets after that.

Sepulveda worked straight through that day and late into Wednesday, without stopping to eat or sleep. It was after 4 p.m. on Wednesday when a colonel finally ordered him to leave.

It had not occurred to him that he had not slept. "What they told me was that the adrenaline was what kept me going," he said.

Nor did he realize the extent of his injuries. Sepulveda carried out the grim duty of retrieving the dead for many days afterward. Not until a month later did doctors discover that the head blow had caused a subdural hematoma, which required surgery and a 10-day stay in Walter Reed hospital.

On April 15, 2002, Gen. John P. Jumper, the Air Force Chief of Staff, awarded him the Airman's Medal, the highest decoration for valor outside of actual combat, and the Purple Heart.

Sepulveda says he is "still struggling" with 9/11 memories. "If I get a little too stressed out, I'll come down here," to a ranch he owns in rural Florida, he said. "[I'm] trying to be out here as much as I can. It's therapeutic." ■

SMSgt. Noel Sepulveda was medically retired in 2006, and now divides his time between his home in Bethesda, Md., and his Florida ranch. He was interviewed by Robert S. Dudney.

An F-22 from Holloman AFB, N.M.

Moving Time

Lockheed Martin photo

Tyndall and other bases will gain F-22s as the force adjusts its Raptor basing plan to reflect a smaller fleet.

By Marc V. Schanz, Senior Editor

An F-22 heads to its new home at Tyndall AFB, Fla. Tyndall is experiencing a Raptor windfall.

DOD photo

Despite a recent lack of movement on the flight line, the Raptor fleet is set to undergo a significant shift, just as the production line is coming to a close—and as soon as a lengthy, fleetwide grounding is lifted. The number of Raptor units across the Air Force will soon contract, consolidating aircraft at fewer locations. This is being done to improve availability, maintenance, and sustainment, and better align the F-22 force structure with other combat aircraft assets as the Air Force extends the life of a portion of its older fighter fleet.

Some bases will gain; others will lose entire squadrons of F-22s. A big driver behind the move, unsurprisingly, is money and the need to utilize the force as efficiently as possible, in an environment where funding toplines are flattening, according to Air Combat Command officials.

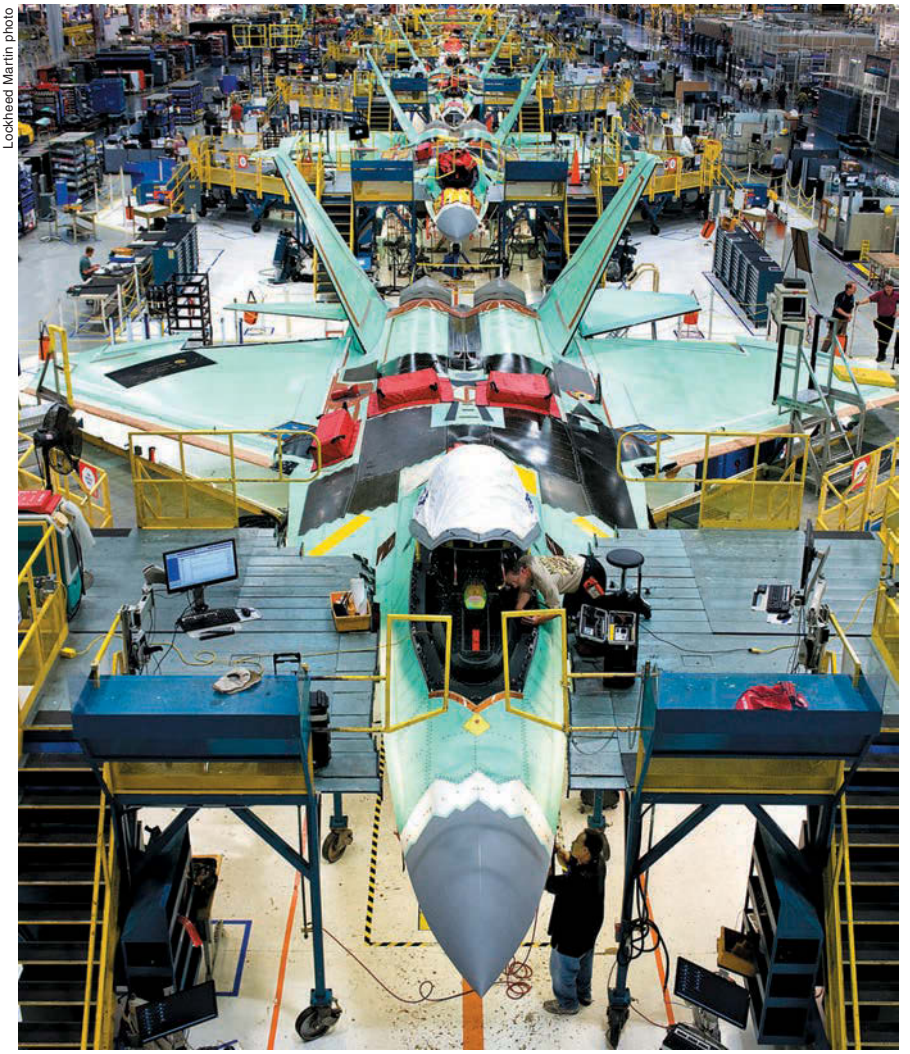
"If you are thinly spaced with your assets, it's much harder to sustain them," said Maj. James Akers, chief of the F-22 branch at ACC's requirements division and the command's F-22 program element monitor. If assets are widely dispersed, the support and sustainment costs steadily rise over the years—something USAF can ill afford.

"At another time, the Air Force [was] looking at more F-22s [in the inventory], and more bases made more sense. Now that we know where that end state is going to be, it makes sense to consolidate," he said in a June interview at ACC headquarters.

As in all realignments, there are winners and losers. Currently, the Air Force houses its F-22s at JB Langley-Eustis, Va., Tyndall AFB, Fla., and Holloman AFB, N.M., as CONUS bases. JB Elmendorf-Richardson, Alaska, and JB Pearl Harbor-Hickam, Hawaii, also host Raptors, with Hickam just beginning to receive its complement as of last July. Edwards AFB, Calif., and Nellis AFB, Nev., each host a small contingent of Raptors for operational test and evaluation activities as well as training at Nellis' weapons school.

Under the restructure plan, Holloman is on track to lose both of its squadrons of Raptors by Fiscal 2013, moving its aircraft to other squadrons. This is due to force structure, said Akers, an F-22 pilot who flew with the initial Raptor cadre in 2005. "There's zero attrition reserve built into our fleet plan" as is, he noted.

Lockheed Martin photo



Technicians put together F-22 Raptors at the Lockheed Martin facility in Marietta, Ga. A smaller fleet made old basing plans obsolete.

Deraptorization

The realignment will address some of the inherent difficulties in managing such a small fleet. In short, the extra airframes from Holloman will increase fleet size and reserves at USAF's other F-22 bases.

On the other side of the ledger, Tyndall will experience a Raptor windfall. The home of the F-22 formal training unit will gain 24 aircraft after the Holloman moves shake out, nearly doubling the base's current fleet of 32. Tyndall is set to receive the bulk of the realignment, with fighters for use in the base's training mission—significantly expanding its role in Raptor operations.

"Those 24 jets will stagger to Tyndall; [they] won't all fly there [in] one day," Akers added. Tyndall will host both combat-coded and training aircraft, as the FTU's existing Raptors are Increment 2 configured aircraft—meaning they can shoot air-to-air weapons and drop bombs. The new aircraft soon arriving at Tyndall will be Increment 3.1, more capable combat-coded aircraft.

The reorganization came in the aftermath of Congress' termination of the F-22 line in 2009, rendering inefficient the old plans for a broader force structure.

Last July, the Air Force first announced its plan to form the most "effective" basing alignment—essentially requiring the redistribution of aircraft from one F-22 unit to four different Raptor bases. Holloman—then-home of the 8th Fighter Squadron, and near some of the largest training ranges in the country at White Sands Missile Range and the Nellis Complex—was singled out for deraptorization.

The 8th FS, barely reactivated in September 2009, was recently inactivated on July 15 and its 24 aircraft slated to be spread out to Raptor squadrons at Nellis, Langley, and Elmendorf and to the base's other squadron, the 7th FS. The 7th will shut down in Fis-

cal 2013, Akers said, when its aircraft move to Tyndall.

Both Elmendorf and Langley are to receive six additional aircraft. The bases are already home to two combat-coded F-22 squadrons each, with 24 aircraft apiece.

Two of Holloman's aircraft will be sent to Nellis.

Senior Air Force leadership said they settled on the arrangement after a survey of four Raptor bases, looking at feasibility, timing, cost, and planning factors, which would influence whether or not more F-22s could be supported. Site survey results and "military judgment" were factors in the decisions, the Air Force said in its July 2010 plan announcement. The plan "maximizes combat aircraft and squadrons available for contingencies," said Kathleen I. Ferguson, the Air Force's deputy assistant secretary for installations, when rolling out the effort. Through the consolidation, Raptor "operational flexibility" will be enhanced, she said.

Pilots and ACC officials contend this is an attempt to make the best out of a less than perfect situation—a smaller fleet of elite fifth generation fighters, backing up an old and also reduced fleet of fourth generation aircraft now being asked to extend their service lives further into the future. Of course, bridging the capability gap between older F-15 Eagles and F-16s and fifth generation fighters is not easy, and this weighs daily on Col. Timothy Forsythe.

The Raptor's Long Summer

JB Langley-Eustis, Va.

These are trying times for the pilots and airmen who work on the F-22, the world's only operational fifth generation fighter. Since May, the thousands of airmen who live and work at JB Langley-Eustis, Va., have witnessed a sound almost completely alien to them: relative quiet.

The base's tenant, the Raptor, has been grounded from flight operations since May 3 until further notice, as the Air Force investigates potential malfunctions in the aircraft's oxygen system. Save for an occasional flight of a 1st Fighter Wing T-38 "aggressor" aircraft, normally used to train Raptor pilots in tactics, it has been rare to hear the sound of engines spinning up.

Without flight operations, F-22 pilots are training exclusively on simulators. To stay as proficient as possible in the Raptor's operation, they and the ground crews are performing a range of ground-based tasks, according to Air Combat Command officials.

The Fleet Management Plan

"With the F-22 and F-15, there is a synergistic effect with those two aircraft working together," said Forsythe, a veteran F-16 pilot and chief of ACC's Combat Aircraft Division in the command's requirements division. The Air Force is in no way seeking to bring older Eagles and Vipers up to F-22 and F-35 standards, he said. "We are trying to bridge the gap as much as we can with the technology that's available to get to the fifth generation force we are trying to get to."

In the years ahead, USAF plans to move toward a common configuration for the Raptor fleet—as opposed to the four separate increments currently laid out in the F-22 force structure, ACC planners say. The Air Force will move to two configurations—one for training purposes, one for combat-ready aircraft. With only 149 of the planned 187 airframes combat coded (including backup aircraft inventory airframes), the distinction is important. Once the fleet is delivered and configured properly, it will allow more efficient upgrades and modernization of software, avionics, and other improvements.

As currently constructed, the F-22A modernization plan will bear out a final fleet composition of 34 Block 20 aircraft used for test and training (the ones which will reside at the

USAF photo by SSgt. Verlin Levi Collins

Two F-22s on the ramp at JB Langley-Eustis, Va. Langley is slated to receive six additional Raptors.

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Tyndall schoolhouse), 63 Block 30s, 86 Block 35s, and two test-coded aircraft assigned to Edwards, according to Lt. Gen. Herbert J. Carlisle, the Air Staff's head of operations, plans, and requirements.

Both Block 30 and Block 35 Raptors will accept Increment 3.1 upgrades—which include modernized advanced synthetic aperture radar modifications (AESA), self-targeting Joint Direct Attack Munitions capability with onboard sensors, and the ability to carry eight Small Diameter Bombs—and further advancements. Carlisle noted the Increment 3.1 upgrades would be fielded this year.

The fleet is not monolithic, and another factor involved in moving around F-22s is to consolidate more-capable Block 30s and 35s at certain locations to make sure they can be utilized to their full extent. "A lot of the new aircraft coming off the line come to Langley," Akers noted.

Newer aircraft arrive and older aircraft, some delivered five years ago, go to Hickam or Holloman. This is part of the fleet management plan. It "also deals with newer versus older jets," Akers said, noting there is a broader effort to put most of the Block 30 and 35 aircraft at Langley and Elmendorf, to make sure the capability is evenly bedded down.

The factory is up to aircraft No. 181 as of June 30, Akers said, and Lockheed Martin is preparing to deliver that bird to the Air Force. The last four aircraft are Lot 10, and will be delivered by 2012.

The consolidation occurs at a sensitive time for USAF's fighter fleet, just coming off the 2010 Combat Air Forces reduction program, known as "CAF redux," which saw some 250 older F-15s and F-16s plucked from the force structure and retired to save money. During the Fiscal 2012 review, USAF delivered the service's "moderate" risk fighter force structure requirement to the Office of the Secretary of Defense—1,200 primary mission aircraft and 2,000 total aircraft, according to Carlisle.

A total aircraft shortfall of about three to five percent through the Future Years Defense Program is expected to persist. The capability shortfall will be alleviated through "aggressive management of F-35 production," legacy fighter fleet reviews and sustainment, selected service life extension programs, and modernization efforts, Carlisle said before the Senate's airland subcommittee on May 24.

USAF photo by A1C Brett Clashman

A1C Justin Horne salutes the pilot of an F-22 during a 2010 Red Flag exercise at Nellis AFB, Nev. Consolidating Raptors at fewer locations could improve availability, maintenance, and sustainment.

Enhancements either under way or under consideration for legacy fighters such as the F-15 and F-16 will ensure those aircraft remain "very viable into the future," especially when paired with fifth generation fighters, Carlisle said. "If you pair F-15s with F-22s and F-35s, you now have the ability to open an anti-access area and allow those airplanes to get in and do work and then come back out."

Making the Best of It

"What we've all discovered is with the F-22 and F-35 coming on, those airplanes give added capability to the fourth generation airplanes as well," Carlisle added.

The realignment of the Raptor force is one piece of USAF's plan to leverage as much capability as possible out of a force accepting "moderate" risk for future operations. In addition to looking at the Raptor, other assets and their basing have undergone scrutiny.

"If numbers aren't where you think they were going, if capability isn't going to be what you thought it was, you are always examining what you thought you need … and where they would go," Forsythe said.

It's about "chess pieces. It's not just where they are stationed; it's capacity overall in numbers and it's the capability they bring overall to the fight," Forsythe said. Most of the combat air force has operated in semipermissive environments in Iraq and Afghanistan over the last decade, but there are two other threat scenarios that would pose very different risks: the anti-access, area denial environment, where only fifth generation assets could effectively operate, and the "contested" environment, where advanced, networked air defenses are employed.

The differences between those scenarios "drive capabilities and necessities," he said. Simply put, F-22s will be flying with Eagles and Vipers for years to come—and the stealth fighters will have to be used judiciously. "Because of the limited numbers of F-22s, we need to keep as many assets as we can, depending on the air superiority mission they are in," Akers said.

Will all of this movement and modernization get USAF the capability it needs to address the range of scenarios presented? Maybe. One of the tougher problems to solve deals with an anti-access threat, because a force of life-extended fourth generation aircraft with a limited number of F-22s will have difficulty operating in that environment. This makes future management of the F-35 strike fighter acutely important.

"Remember the three battlespaces. [With] anti-access, we will not get there from here," Forsythe said, referring to the 2011 force structure. "Not with old iron. Aluminum jets aren't going to cut it."

There are other scenarios, however, and the Air Force is committed to supporting the national military strategy, "so we still have to have enough iron to do that work," Forsythe said. "You will never replace an F-22 with an F-15C. … It won't happen. But it is what we have and we are absolutely making the best of what we can." ■

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Too Much of a Good Thing

By Amy McCullough, Senior Editor

The Air Force is struggling to keep its personnel numbers in balance.

It seems the threat of yet another combat deployment is less daunting than the weak job market.

The majority of today's airmen have spent their entire careers at war—many can't count their combat tours on one hand—yet Air Force retention is at a 16-year high and active duty end strength remains bloated above congressionally mandated levels.

At the end of Fiscal 2010, there were 334,196 active duty personnel, but officials say they expect to whittle the number down to the authorized 332,800 by the end of Fiscal 2012. In addition, the Air National Guard is projecting it will be at or near its authorized end strength of 106,700 by the end of Fiscal 2011.

To remedy things, Air Force leaders have implemented a series of voluntary and involuntary force-shaping measures, such as convening reduction-in-force boards and encouraging early separations through waivers for active duty service commitments.

"Without these actions in FY10, our overall retention would have exceeded the goal by more than four percent," CMSAF James A. Roy told the Senate Armed Services personnel subcommittee in April.

Above: USAF Lt. Col. Andy Veres (l), Provincial Reconstruction Team Zabul commander, re-enlists MSgt. James Sandifer at Forward Operating Base Smart, on top of Alexander's castle in Qalat City, Afghanistan. Active duty retention is at a 16-year high.

Of the more than 172,000 airmen who filled out the 2010 Air Force Climate Survey, 80 percent said they liked their jobs and 95 percent said they believed their unit was accomplishing its mission. Although many acknowledged stress levels have increased at home as a result of heavier workloads and longer work hours due to deployments, the number of airmen who intend to remain on active duty increased slightly over the results of the previous survey conducted in 2008.

Retention is highest among midcareer airmen (six to 10 years of service) but down for more-senior airmen. In Fiscal 2010, the Air Force reached 100 percent of its retention goal for airmen with 17 months through six years of service, but it exceeded its goal for airmen with six to 10 years of service by nine percent, Roy said. The third retention category, airmen with 10 to 14 years, is struggling, coming in at 93 percent in Fiscal 2010, he said.

Yet, more than 18 percent of the active duty force serves in stressed career fields, with a high rate of deployments and manning shortages in those Air Force specialty codes, according to the service's Fiscal 2012 budget.

The majority of the 16 enlisted stressed career fields are those in high demand, such as explosive ordnance disposal, crypto linguists, airborne intelligence-surveillance-reconnaissance, or geographical intelligence analyst, said Lt. Gen. Darrell D. Jones, deputy chief of staff for manpower, personnel, and services. The Global War on Terror has blurred the lines between traditional operational career fields and support roles, so airmen in stressed fields such as contracting and civil engineering also are likely to find themselves on the front lines at some point in their career.

The Air Force ended its voluntary enlisted force-shaping programs this spring, announcing it had reached its Fiscal 2011 end strength goal for enlisted airmen. Last year, the Air Force announced it was cutting 6,000 active duty enlisted and officer personnel, but officials announced in April that USAF will forgo the last two remaining date-of-separation rollback phases for enlisted personnel. Special provisions in the Palace Chase program, which allowed active duty airmen to transition to the ANG or the Air Force Reserve, and other early out waiver programs also were canceled.

The big challenge remains in the officer corps where retention is especially high. At the end of Fiscal 2010, the Air Force was 2,300 officers over its mandated levels. Control and recovery (in combat rescue and special tactics), airfield ops, intelligence, civil engineering, public affairs, and contracting were the most stressed fields for commissioned airmen.

As of June, efforts to slim the active duty force appeared to be on track, and Jones said he was confident the 2012 timeline could be met. But more work remains, as the high retention rates are expected to continue into Fiscal 2013.

"Whenever you have a spike in retention, you have two options. You have to carry the overstrength and pay for it, which is hugely expensive and in fiscally constrained times, not the easiest thing to do, or you have to cut assessions," Jones said in a June interview. "When you cut accessions, you end up living with the effect … for 20 to 30 years in different career fields, so these are not easy decisions to make."

Case in point: Despite the high retention rates, Roy said the Air Force is still working to overcome several skill imbalances resulting from "deliberately under-accessing" end strength in 2005.

Force-Shaping Challenges

Then-Air Force Chief of Staff Gen. T. Michael Moseley and Secretary Michael W. Wynne decided to cut end strength starting in Fiscal 2006 in an effort to mitigate modernization costs.

But officials didn't have to contend with a tanking economy the last time the Air Force undertook such large-scale force-shaping measures. In 2005, the unemployment rate hovered at five percent, a significant departure from today's stubbornly high unemployment rate, which has gone higher than 10 percent.

"As people choose to stay in longer, we have to actively manage that end strength as best we can," Jones said. "We've opened up voluntary programs significantly to encourage people to leave the Air Force, waiving active duty service commitments, [and] encouraging the blue to green program, where airmen go in to the Army. ... But ... the Air Force is just on the leading edge of our force-shaping challenges."

The Fiscal 2011 National Defense Authorization Act enabled eligible officers with prior enlisted service to apply for retirement after eight years of active commissioned service, rather than 10, if they have completed 20 years of total active federal military service.

As of mid-April, about 300 officers in non-high-demand specialties chose to take advantage of the service's voluntary separation program. They must now leave active duty service by Oct. 1.

That means several officer year groups and competitive categories no longer have to face the September reduction-in-force board, said Maj. Gen. Sharon K. G. Dunbar, force management policy director, adding that USAF wants to leverage voluntary separation and retirement programs to the maximum extent possible.

Formal cross-flow boards for midgrade officers were held for the first time this year, Jones said. Modeled after the noncommissioned officer retraining program, the idea was to maintain highly skilled airmen and push them, involuntarily if necessary, into in-demand fields where their skills may be useful.

The number of airmen USAF took was very small because a lot of people saw opportunities and volunteered, Jones said. Though he would like to see the Air Force "get in the habit" of convening such boards, he said it's not yet clear if it will be necessary next year.

Last year, officials also brought back the limited initial skills training board for airmen who failed to pass their initial skills training. The board was tasked with retaining or separating airmen based on the needs of the Air Force, according to Roy's testimony to the SASC personnel panel. "[When] you are over in end strength, if you have someone that fails their initial skills training [and] if you can't reclassify them into a shortage career field, why would you keep them?" Jones asked.

The boards face tough decisions, vital to the health and longevity of the force.

The Air Force is hoping Congress will put a few more tools in its force-shaping tool box. The service has requested that Congress reinstate its authority to specifically target overmanned career fields, enabling it to fill much-needed shortages, Jones said.

As of June, the Office of the Secretary of Defense was reviewing the request and seeking input from other services. Jones said military officials have been talking with staff on Capitol Hill, but it's not clear when the provision will be introduced.

If approved, the selective early retirement boards will be one place where change will be evident. Current SERB rules say USAF can only consider lieutenant colonels two times deferred and colonels with four years' time in grade.

"You can only have them meet a SERB board once every five years, but you have to address an entire competitive category,

Guardsmen with the Illinois Air National Guard board a KC-135 at Scott AFB, Ill., in March on the first step of their deployment for Operation Odyssey Dawn. The ANG predicts it will be at or near its authorized end strength by the end of this year, but it will take the active duty force a year longer.

USAF photo by SSgt. Brian J. Valencia

meaning all line officers, all biomedical service corps officers, [etc.]," Jones said. Each category is made up of many different career fields, and shortages and overages vary significantly.

Under the current rules, the board does not have power to specifically target shortages, and good officers in high-demand fields can end up getting pushed out. "What we would like to do in the future is get enhanced SERB authority that would allow us to go in and say we need people in this AFSC and these year groups to leave and not everyone," Jones said. Without the additional authorities, it won't be as clean, he added.

Bonuses are another vital force-shaping tool, and though likely to shrink as the Pentagon enters an age of budget austerity, bonuses probably won't go away. The Air Force's Fiscal 2012 budget request contained $30.5 billion in military personnel funding, including a 1.6 percent pay raise and $630 million for bonuses.

These funds are critical to carrying out a range of missions expected of the Air Force. "Selective re-enlistment bonuses are our most effective, responsive, and measurable tool for targeted retention," Roy said. "The FY12 budget for new SRB contracts does change from FY11's budget of $145.9 million, as we expect to offer SRBs to fewer than 90 enlisted specialties in FY12."

SRB payments have dropped from $156 million in Fiscal 2009 for new bonuses to $129.9 million this year, Roy said. Right now the Air Force is offering retention bonuses ranging from $6,000 a year to $25,000 a year to maintain some of the most highly trained airmen with skills such as cyber warfare and nuclear weapons. Enlistment bonuses range from $1,000 to $17,000 depending on the skill.

Human Capital Strategy

Despite retention levels and fiscal constraints, the Air Force still needs enlisted bonuses, retention bonuses, and SRBs to encourage airmen in stressed career fields such as EOD to re-enlist. The nuclear field remains one of the most difficult to manage with the small number of nuclear bases and a growing number of dual-use career fields (those with both conventional and nuclear capabilities). The human capital strategy is one way to vector the right airmen, with the right skills, into the right career field, Roy stated.

Under the strategy, the service created its first-ever enlisted development team to guide the careers of senior enlisted airmen in the same manner traditional development teams have focused on officers and civilians. The team will look at senior NCOs' training, education, and experience to see if they are qualified to fill critical nuclear positions. Both the nuclear weapons maintenance and the munitions and missile maintenance fields have developed prioritization lists to ensure USAF assigns the most qualified airmen to positions by order of importance within the nuclear enterprise, Roy said.

As force shaping continues, leaders also are focused on improving the deployment-to-dwell time ratio, the time airmen spend at home versus deployed.

As of March 1, more than 38,000 airmen were deployed, about 5,000 of them supporting joint taskings. As a result of demands from combatant commanders, the Air Force has seen its 179-day tours increase from 12 percent of all deployments in 2004 to 60 percent today. By October 2012, the 179-day tour length should essentially be the norm.

Some 1,800 USAF deployment requirements (seven percent of all deployments) call for airmen to be deployed for 365 days, Roy said, and filling both deployed and home-station missions continues to take a toll on units.

The new 179-day deployment standard will keep airmen on typical deployments for an additional 60 days but will also provide them and their families more time at home, Roy noted.

The deployment-to-dwell time will range from one-to-one to one-to-four, depending on the career field, but with the revised rotational baseline, most airmen will now spend six months on call for deployments followed by 24 months at home. Under the previous 120-day standard, during which most airmen deployed for 179 days anyway, airmen spent four months on call and 16 months at home.

"Obviously, 179s have increased tremendously, but so has the demand," Jones said. "Even though we've seen an increase in both areas, the [179-day standard deployment length] has been successful." ■

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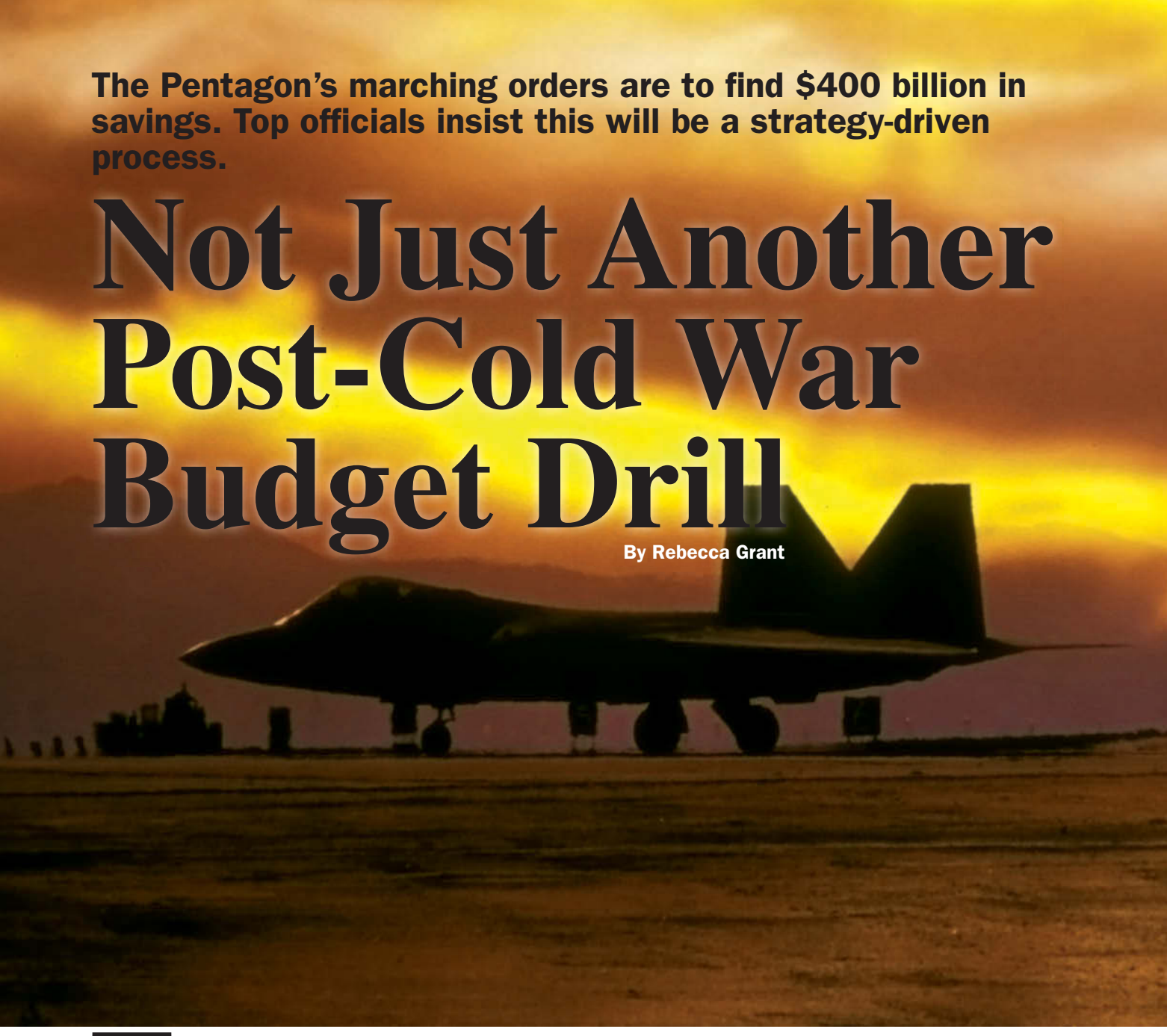
The Pentagon's marching orders are to find $400 billion in savings. Top officials insist this will be a strategy-driven process.

Not Just Another Post-Cold War Budget Drill

By Rebecca Grant



In future conflicts, the most important attribute of the F-22, such as the one illustrated above, may be its penetrating, survivable surveillance.

The hunt is on for at least $400 billion in savings from the defense budget and for a new strategy to go with it.

In April, the Department of Defense dove into the biggest out-of-cycle review of defense strategy in almost 20 years. The review sprang from President Obama's initiative to cut *another* $400 billion from the defense budget by 2023. During a major deficit reduction speech delivered at George Washington University on April 13, Obama applauded the Pentagon for "saving $400 billion in current and future spending. I believe we can do that again."

Not only did Obama throw down the gauntlet for cuts, he opened the door for restructuring. "We need to not only eliminate waste and improve efficiency and effectiveness, ... but conduct a fundamental review of America's missions, capabilities, and our role in a changing world," Obama continued. He will wait to "make specific decisions about spending" until after the review was complete.

Few doubt money is the main motive. "It's pretty darn serious when the answer is $400 billion," said Thomas Donnelly of the American Enterprise Institute. But dollars alone won't hack it. Defense Secretary Robert M. Gates' successor, Leon E. Panetta, "will have to announce strategy-driven changes," said Clark A. Murdock of the Center for Strategic and International Studies (CSIS).

For his part, Panetta said the review would not lead to the kind of hollow force he remembered from the 1970s. "I am determined notto repeat the mistakes of the past," he said in early August. "We are asking ourselves: What are the essential missions our military must do to protect America and our way of life? What are the risks of the strategic choices we make? And what are the financial costs?"

The review marks an important moment for airpower writ large, and for the future direction of the Air Force.

All services are likely to shed capability. The question is, what essential missions will USAF keep?

The US is coming off a decade of building up land forces and equipment

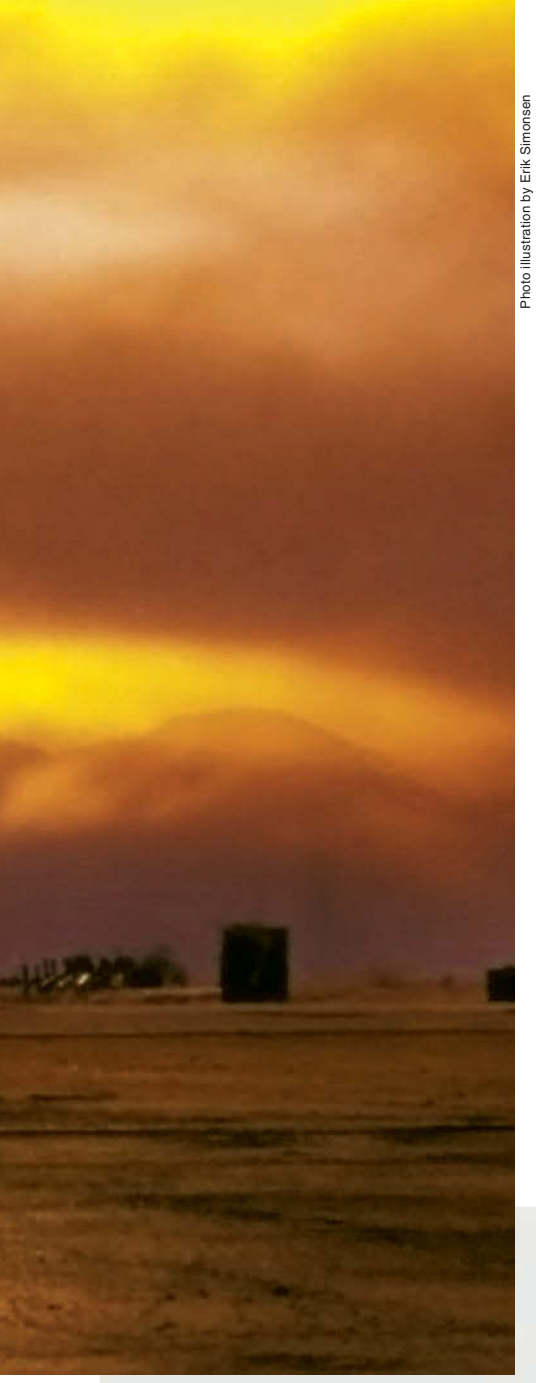


Photo illustration by Erik Simonsen

for counterinsurgency wars with uncontested airspace. Recent Pentagon reviews have danced around future security threats such as competition with China in the Pacific. Just two years ago DOD deliberately took on medium risk moves in major combat capabilities in order to focus on Iraq and Afghanistan.

Now the wind is shifting. The consensus from Washington's top strategists is that the Pentagon must make tough choices about missions and not only programs. "We need to avoid just making the relatively easy decision, 'Let's just cut force structure,'" said Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff.

With the 2011 review, the first hurdle will be contending with the lengthy list of missions for the military.

Hard Power

In the early 1990s, big force structure cuts were justified by reduced threats after the Cold War. Force planning centered on agile forces for two major theater wars. Since then, overseas taskings have grown and diversified. Military forces are deployed to counter terrorism, shape relationships with key countries and regions, and to defend the US homeland. "It's not like the '90s," said Mullen. "The level of national security challenge is, from my perspective, near an all-time high."

Officially, the Obama Administration has given no signs of backing off the broad global security commitments it has put forward. In fact, the 2010 National Security Strategy added requirements such as protecting cyberspace. It also explicitly emphasized the use of US military forces to prevent humanitarian disasters such as genocide—a policy that led directly to US airpower-led intervention with NATO in Libya.

Add humanitarian relief and the result is peak demand on force elements such as airlift. For example, on March 26, air mobility taskings soared with 123 C-17s flying missions for Iraq, Afghanistan, Libya, and relief to earthquake- and tsunami-devastated Japan.

Predictions on future strategy call for more airpower not less. The congressional panel chartered to critique the 2010 QDR did not reduce the mission list either. Global trends were "likely to place an increased demand on American 'hard power' to preserve regional balances; while diplomacy and development have important roles to play, the world's first-order concerns will continue to be security concerns," the panel wrote.

Scholars note the long-range outlook is crowded with dangers. "The last 10 years have really clarified future conflict," said Donnelly. "We'll have a persistent level of nasty, brutish, and long conflict, plus increasing technical challenges from China," he said.

Center for Strategic and Budgetary Assessments President Andrew F. Krepinevich wrote in April that "the spread of guided weapons, the proliferation of nuclear weapons to unstable states in the developing world, and the rapidly growing menace of cyber warfare suggest a future in which the US military's current ways of projecting power and defending the American homeland are likely to be severely challenged."

With the broad policy mandate, cutting missions won't come naturally as it did in the early 1990s. "The Administration has not changed its national security strategy," observed Daniel Goure, vice president of the Lexington Institute. "There's not a lot of maneuver room for Panetta."

Panetta is the first Democrat appointed as Secretary of Defense in 14 years. While he brings fresh experience from his CIA job, he also has legacy experience with drawing down defense budgets during his time in Congress.

AF-11, an Air Force version of the F-35, takes off on its first flight July 1. The Pentagon is keeping a careful eye on the F-35 program, which has been plagued by cost overruns and technical difficulties.

Lockheed Martin photo

ITAR-TASS photo by Maksim Shemetov

A Russian fifth generation fighter, the T-50, at Zhukovskiy airfield in Russia. Defeating future adversaries will require high-end capabilities.

USAF photo by James M. Bowman

Adm. Michael Mullen answers questions from airmen at JB Charleston, S.C. He insists the upcoming review will be based on strategy and risks, not simply budgetary math.

Panetta was chairman of the House Budget Committee when House Armed Service's Committee Chairman Les Aspin (D-Wis.) introduced a new defense strategy following victory in the 1991 Gulf War. Work began when Defense Secretary Richard B. Cheney proposed a $50 billion off-the-top cut. Aspin's team drafted four strategy options for defense cuts and tailored each to a distinct strategy.

CSIS' Murdock was then a lead staffer for Aspin. Panetta initially supported Option D—the deepest cuts—and "wanted a bigger cut than Aspin," Murdock said.

Principal Deputy Undersecretary of Defense for Acquisition, Technology, and Logistics Frank Kendall summed up the problem. "The difference between then and now is that the national security environment is not changing," Kendall said at a recent symposium.

"The real challenge for Panetta is the FY 14 to FY 19 POM," said David Berteau of CSIS. Most likely Panetta will at some point issue strong guidance. "If he doesn't, then he's abdicating his responsibility," added Berteau.

And few expect that to happen. "Panetta is his own man," said Murdock. "These are things Panetta has done for a long time."

Still, officials involved in the comprehensive review insist they are putting together options for missions to cut. On his way out, Defense Secretary Gates said the review would look for "missions that our elected officials decide we should not have to perform or can't perform anymore because we don't have the resources."

Two Options

"We think we've gotten most of the big rocks," from efficiency and previous program cuts, explained Kendall. That means turning to "force structure, missions, and the capabilities the department has."

This leaves the Pentagon with two options for downsizing its commitments. One is to reduce missions for the military across the board. A reduction of this type would have to be framed in a new force sizing metric. The review "will have to formally reduce the military's force sizing construct if it is going to justify any additional defense budget cuts," commented Mackenzie Eaglen of the Heritage Foundation.

Over the last 20 years, the main force sizing construct centered on preparing to fight two major conventional wars in different regions either at the same time or close together. The two-war strategy set the number of Army units, ships, and aircraft wings. Recent budget changes did not so much replace the two-war strategy as move it aside and add other tasks to it.

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The Pentagon never quite renounced the policy, but formal documents ceased to champion it. "On paper, the US has generally maintained a two-war construct for decades. The 2010 Quadrennial Defense Review muddied the military's long-standing force sizing metric and added additional missions for all of the services to boot," said Eaglen.

The current force sizing construct in the 2010 QDR is driven by a set of six to eight classified scenarios. Analysts used a mix and match approach to set force levels for each service. "We're looking for the broadest range of capabilities to deal with the broadest range of scenarios," was the way a senior defense official described it at a National Defense University symposium.

The force sizing construct essentially determines how the US will structure its global military role. Goure suggests a one-and-a-half war metric might be the closest match with the new Obama Administration strategy. Experts agree that a new force sizing construct is overdue, but wonder whether there is time to draft one from the ground up before delivering guidance for the next budget. Work on the Fiscal 2013 budget must be solidified to show progress toward the $400 billion marker.

There are other ways to get to $400 billion and drive new policy. A new twist would be to split the force structure concept so the Army, Navy, Air Force, and Marine Corps aren't all preparing for the same two wars, plus add-on missions.

The unspoken assumption of the past two decades has been that all services will prepare for the same two-war mission set. Each would provide its distinctive capabilities, but the central tasking would be shared.

This may change. "I wouldn't be surprised if the review identifies how DOD could better align roles and missions across the services," said Mark Gunzinger, senior fellow at CSBA.

One take on this is to allow the Air Force and Navy to focus on high-end threats, while the Army and Marine Corps concentrate on stability missions. Andrew R. Hoehn and David A. Ochmanek suggested just that in an April 2008 *Washington Times* editorial, based on a 2007 RAND study.

"The Army and Marine Corps should be directed to play leading roles in the fight against terrorism and be prepared to combat a single-state threat elsewhere. The Navy and the Air Force should be sized and outfitted primarily to defeat state threats in two distinct areas of the world," they offered.

DOD photo by TSgt. Jacob N. Bailey

In his Pentagon office, Defense Secretary Leon Panetta meets with the senior enlisted advisor from each service. At right is CMSAF James Roy.

The AirSea Battle concept would be a natural fit for a division of labor. "It would be a step in the right direction to capture how each service could best apply its core competencies across a range of scenarios," suggested Gunzinger. "For example, it is clear that the Air Force and Navy would be the predominant force providers for an AirSea Battle operational concept designed to establish a more stable posture in the Pacific."

Hypothetical Scenarios

Doing so would emphasize preparing for threats from technologically sophisticated adversaries. Mullen, for one, made it plain that modeling the force on today's fight is not the right answer. "I'm not satisfied with the idea of, OK, let's just be the best counterinsurgency force we can be in the future and that's it," Mullen said. "We still have high-end warfighting requirements that we're going to have to resource."

The balance of taskings for the air and land components could also shift. A tactical examination of battlefield responsibilities could open up many options. Donnelly of AEI suggested a future operating concept try to find other ways to do low-end conflict and minimize the role of tactical aviation in those types of conflicts. "It's cool that we can fly on-call to remote outposts," he said. But in the past, "that's what we had artillery for."

There has been reluctance in some quarters to discuss openly the types of scenarios DOD could face in the future. China, Iran, and North Korea are most often the focus of these hypothetical scenarios used to test future US forces. In all of them, airpower is vital.

The Iran scenario is never far from the headlines and raises a real possibility of unprecedented reliance on fast-acting air and naval forces. In 2010 while still CIA director, Panetta said that Iran had enough fissile uranium to build two atomic bombs within a year.

With peer threats looming, the force overall needs to be able to do things only high-end airpower can do. This includes penetrating "People's Republic of China-like air defenses," said Donnelly. For land wars, "we may find the big capability of F-22 is in its penetrating, survivable surveillance. It may be a scout that identifies targets for off-board weapons."

Of course, the way ahead for airpower in defense strategy depends on how top recapitalization programs fare.

Gates, at his farewell press conference, said that after efficiencies and cutting marginal capabilities, "you're left with force structure."

Many strategists interviewed were optimistic about the Air Force's ability to move through the late 2011 review with less risk of cuts to core programs. Gates looked at AirSea Battle as the place to draw the line on force structure cuts, noted Berteau. "I think that's good news for the Air Force."

For now, there's a sense that most of the big Air Force programs have already been through intense scrutiny and won't be targets. "The KC-46 tanker is not on the table," said Goure. "You have to

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USAF photo by SSgt. Michael B. Keller

An F-15E refuels from a KC-10 over Afghanistan. Predictions on future strategy call for more airpower, not less.

have the tanker," confirmed Murdock. He was also sanguine about continued investment in tactical air mobility.

Another area of agreement is on the new bomber. Air Force leadership won a big victory with Joint Requirements Oversight Council approval and initial funding for the effort. Gunzinger believes it will be the "centerpiece" in any future strike family of systems.

Eaglen suggested the review should "direct an after-action item to develop a long-range technology roadmap, including a science and technology plan and a research and development plan for the Air Force."

Looming over the debate, of course, is the sheer size of the F-35 program. Berteau pointed out the F-35 cost to completion (not including lifecycle maintenance) is more than the next 25 programs combined.

However, Berteau and others see deep cuts to the Air Force portion of the program as unlikely. The F-35 was raked over the coals after its 2010 Nunn-McCurdy breach, and the Pentagon is keeping a careful eye on the program. "We're buying a whole bunch of F/A-18s we hadn't planned to buy," remarked Kendall. "That puts pressure on Lockheed to do better on F-35."

Goure added it is hard to construct a scenario permitting deep cuts to tactical aviation.

For the Air Force, aircraft recapitalization isn't the only possible target in the hunt for $400 billion. The Air Force budget funds most of the nation's national security space force, too. While spending on space recapitalization programs has been very high over the past decade, this is not a prime arena for major cuts. "They're only halfway through the change," noted Goure. "We need space for all the places airborne ISR can't touch."

No Hollow Force

Land forces may come under scrutiny and that would take some of the pressure off airpower. "The potential run on major programs is in the Marine Corps," Goure believes. "We're not doing Inchon."

Marine air wings might not feel the pinch, because amphibious ships with their helicopters, Harriers, and future F-35s can do a range of operations, such as in Libya, Goure noted.

Still, $400 billion spread over 10 years leaves no service immune. Much will depend on how the Air Force makes the case for its requirements. Murdock pointed out that Army helicopters, Navy aircraft, and both services' unmanned aircraft present a big challenge to the Air Force's claim as custodian of airpower.

"The Air Force claim to be an air, space, and cyber force is accepted by no one outside the Air Force," Murdock said. "There're lots of other competitors poaching on the air domain."

Programs that need steady dollars from now until 2023 will come under pressure even if purely fiscal. "There are big programs such as the Air Force's new bomber" that aren't in the Future Years Defense Program, said Berteau. "The Air Force has as much unfunded in the out-years as any other service."

Mullen summarized the best hopes for the review in his June Senate testimony. "Our review will be based on strategy and risks, not simply budgetary math, and our goal will be to ensure that we do not repeat the mistakes of the past, nor at the end of this endeavor find ourselves with a hollow force," Mullen said. ■

Rebecca Grant is president of IRIS Independent Research. She has written extensively on airpower and serves as director, Mitchell Institute, for AFA. Her most recent article for Air Force *Magazine was "The Perils of Chrome Dome," in the August issue.*

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At Checkpoint Charlie, US and Soviet tanks faced each other at point-blank range.

AP Photo/Kreusch

Showdown in Berlin

By John T. Correll

If any place was ground zero for the Cold War, it was Berlin.

Awash in intrigue, the former capital of the Third Reich lay 110 miles inside the Iron Curtain but was not part of East Germany. Each of the four victorious powers in Europe in World War II—the United States, Britain, France, and the Soviet Union—held control of a sector of the city, which would be preserved as the future capital of a reunified Germany.

Soviet Premier Nikita Khrushchev called it "the most dangerous place in the world." Nowhere else did the superpowers confront each other so closely and constantly. West Berlin was a source of embarrassment and aggravation to the Communist East German regime, which suffered by comparison. Large numbers of East Germans, especially skilled workers, fled to the West through Berlin.

Three times in the decades following World War II, the Soviet Union provoked crisis in Berlin. The third and last of these crises was set in motion June 4, 1961, when Khrushchev gave Western armed forces six months to get out of Berlin. The Russians had made similar demands before, but this time, they held the hard line and the situation escalated rapidly.

The Berlin Wall, constructed by the East Germans beginning Aug. 13 that year, cut off access to West Berlin. For those attempting to escape, the East German border guards had shoot-to-kill orders.

As the crisis escalated, the US Air Force and the Air National Guard reinforced NATO with the largest overseas movement of aircraft since World War II. Before it was over, US and Soviet tanks faced each other at point-blank range at Checkpoint Charlie, raising the fear the superpowers would go to war. Ramifications from the Berlin Crisis of 1961 persisted in Cold War relations for the next 30 years.

The roots of the confrontation went back to September 1944, when Allied occupation protocol divided postwar Germany into three zones, and Berlin into three sectors (Soviet, American, and British). The protocol was amended in July 1945 to provide France a role in the occupation.

The First Crisis

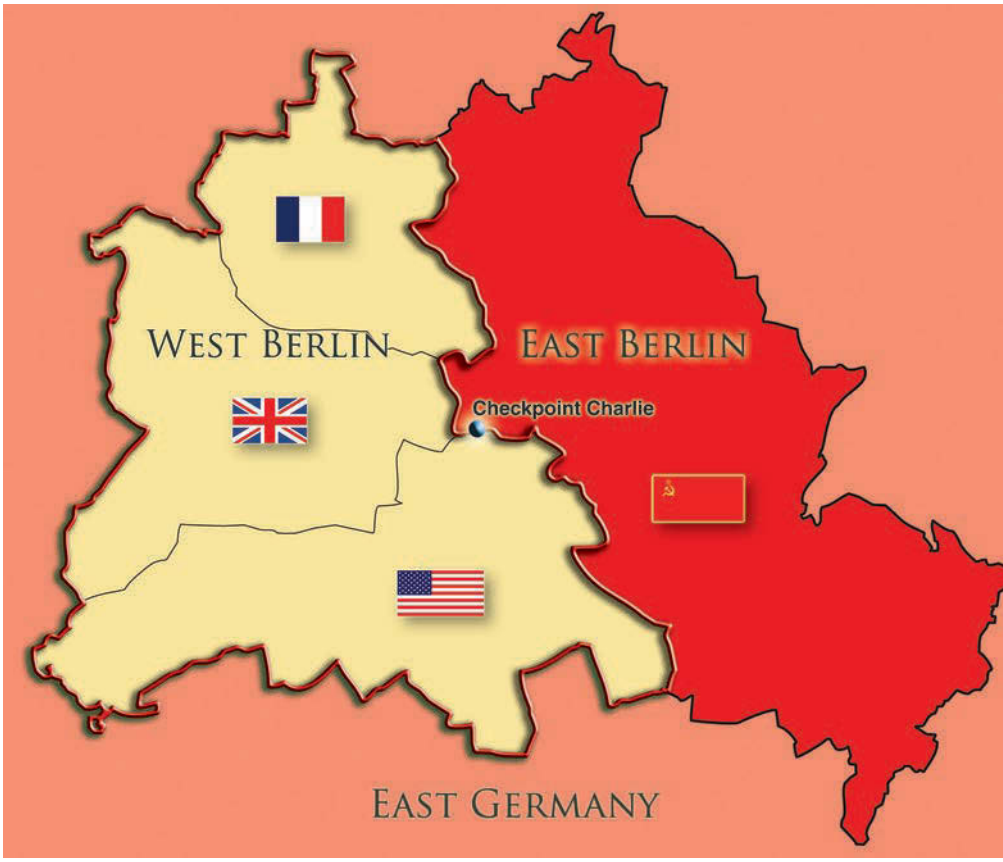
The first Berlin crisis was in 1948, when the Soviets and East Germans attempted to cut the city off from the outside world. However, three air corridors into Berlin, each 20 miles wide, remained open. The Americans and British responded with the Berlin Airlift, which sustained West Berlin with food, fuel, and other supplies from June 1948 to September 1949.

Some senior officials in the US Department of State had favored abandoning Berlin. They opposed the position of Gen. Lucius D. Clay, commander of US forces in Europe and military governor of the US zone in Germany, who was unswerving in his determination to break the blockade. President Harry Truman backed Clay and the airlift succeeded. Clay would return to play a leading role in the 1961 Berlin Crisis, as would another principal from the 1948 confrontation—Walter Ulbricht, the Communist Party boss in East Germany.

Ulbricht, handpicked for the job by the Soviet Premier, Joseph Stalin, was charmless, intense, and dogmatic, but a good administrator and a reliable enforcer of Soviet hegemony. Stalin had visions of a unified Germany as part of the Soviet sphere of influence, but Ulbricht had so antagonized the populace the Communists had no chance of winning free elections.

The Federal Republic of Germany, consisting of the consolidated Western zones, was established in May 1949 with its capital at Bonn. In anticipation of eventual reunification, West Germany offered citizenship to all Germans, wherever they lived. Ulbricht's regime, the German Democratic Republic, began in October 1949 and claimed East Berlin as its capital, which ignored the

Staff map by Zaur Eylanbekov



AP photo by Kreusch

Left: US tanks (foreground) and Soviet tanks face off at Checkpoint Charlie in Berlin in October 1961. For 16 tense hours, the world watched as the two superpowers stared one another down. Above: A map of Berlin, divided into four zones by the Allies after World War II, shows how West Berlin was completely surrounded by communist East Germany. Smack in the center is Checkpoint Charlie.

ANG photo

An F-104 from the 151st Fighter-Interceptor Group, McGhee-Tyson AFB, Tenn., is loaded onto a C-124 for transport. The 151st FIS set a record for flying hours per jet fighter in 1962.

city's four-power status. In 1952, East Germany closed and fortified the border with West Germany, although no barriers were erected in Berlin.

Stalin died in 1953 and was succeeded by Khrushchev, who became First Secretary of the Communist Party in 1953 and Premier in 1958. He inherited the Berlin problem—and Ulbricht.

East Germany was the keystone of the USSR's client empire in Europe and could not be allowed to fail. In 1953, Soviet tanks were called in to suppress a revolt by East German workers reacting to harsh living conditions, higher taxes, and increased work quotas.

The Second Crisis

The Berlin problem had not been solved in 1948, only put into remission. From the East German and Soviet perspective, the Allied enclave was a foreign body in their territory. Berlin forced a side-by-side comparison of West German success and East German bumbling. It was also a magnet for emigrants. By 1958, four million East Germans had fled with Berlin as the favorite escape route.

Khrushchev believed the "correlation of forces" was moving in his direction. Soviet power and prestige had grown since 1948. The United States no longer had a monopoly on nuclear weapons and the USSR was first to launch an ICBM and first in space with the Sputnik satellite in 1957.

Ulbricht stepped up his pleas for the "neutralization" of West Berlin, and Khrushchev set off the second Berlin crisis with a demand on Nov. 27, 1958, that the Western powers renounce their rights in Berlin and "make it possible to create a normal situation in the capital of the German Democratic Republic." If the Allies did not do so within six months, the Soviet Union would transfer to Ulbricht's GDR full control of East Berlin and the access routes to West Berlin. That would end four-power control of the city and force the West to deal directly with Ulbricht.

British Prime Minister Harold Macmillan, fearful of the risk of war, wanted to make concessions right away but President Eisenhower would not be stampeded. Negotiations led to a visit by Khrushchev to Eisenhower's presidential retreat at Camp David in Maryland where the two leaders made plans for a summit meeting in Paris the following May to continue the discussion.

Khrushchev withdrew his six-month deadline, but in a drunken New Year's Eve party in Moscow, threatened the US ambassador with nuclear war if his demands, including the withdrawal of Allied troops from Berlin, were not met. The Paris summit fell apart when the Soviets shot down an American U-2 spyplane over their territory in May 1960 and captured the pilot.

Khrushchev calculated his chances of success on Berlin might improve with the younger, less-experienced John F. Kennedy, who won the presidential election in November 1960.

The third Berlin crisis was about to begin.

Threats at the Summit

The Kennedy Administration took office in January 1961 intent on a new approach. "Truman and Eisenhower believed that Hitler had started World War II because he had thought that his enemies were weak and not ready to act," said Cold War historian W. R. Smyser. "They strengthened and united the West to avoid having Moscow repeat Hitler's mistake. But Kennedy and his advisors looked more closely at the events that had led to World War I. They believed that a sequence of mutually threatening mobilization plans and actions had gotten out of hand and escalated into war in 1914. They thought that US policy should strive to avoid such misunderstandings."

Most of the White House staff and much of the State Department favored a

Picture Alliance/DPA photo by Otto Noecker

Soviet Premier Nikita Khrushchev shakes his fist during a 1960 press conference in Paris. Khrushchev believed his chances of success in Berlin were greater with the election of US President John Kennedy.

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softer line on Berlin. Their counsel was balanced somewhat by Dean Acheson, the flinty former Secretary of State for Truman, brought out of retirement as a special advisor and who was withering in his contempt for the soft liners. In the first six months of 1961 alone, 100,000 East Germans crossed over to the West. Ulbricht complained that West Berlin was "sucking out" the East German workforce.

A summit meeting between Kennedy and Khrushchev was arranged for June 1961, but before then, Khrushchev's impression of the US President was reinforced by the Bay of Pigs fiasco in April—and Kennedy's mishandling of it.

At the summit, Khrushchev was in full bombastic form. He renewed his ultimatum and threatened to sign a unilateral treaty ceding Berlin to East Germany and terminating the four-power occupation. He repeated his theme that the US was risking nuclear war for small stakes. "The USSR wants to perform an operation on this sore spot—to eliminate this thorn, this ulcer—without prejudicing the interests of any side," he said.

Leaving Vienna, Kennedy said Khrushchev "just beat hell out of me," but was through backing up. In a televised speech July 25, Kennedy declared, "Berlin is not part of East Germany, but a separate territory under the control of the Allied powers," adding the US "cannot and will not permit the Communists to drive us out of Berlin, either gradually or by force." He asked Congress for authority to call up the National Guard and Reserves, requested an increase of 217,000 men for the armed forces, and doubled the draft call.

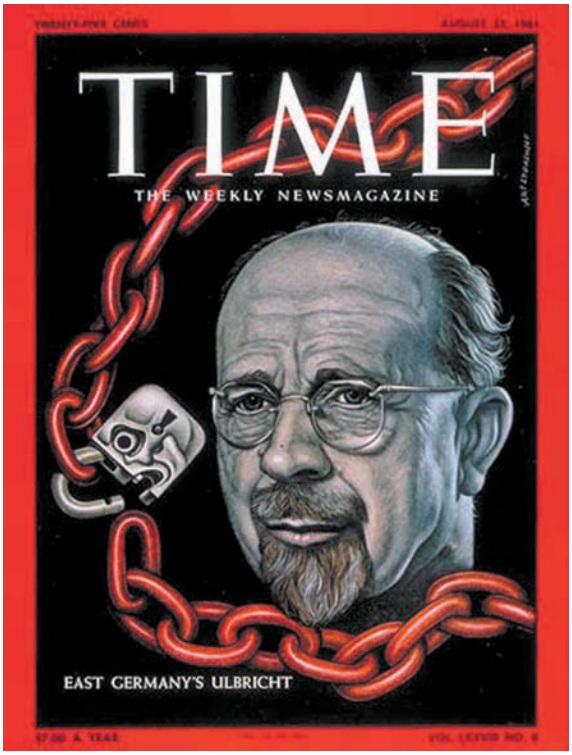
However, the signals were mixed. The speech had 17 mentions of West Berlin, suggesting the United States would not interfere with Soviet actions in East Berlin. On July 30, Sen. William Fulbright, chairman of the Senate Foreign Relations Committee, said, "If [the East Germans] chose to close their borders, they could, without violating any treaty." In a secret speech to party officials in Moscow Aug. 4, Khrushchev said, "We think that the adversary proved to be less staunch than we had estimated."

The Berlin Wall

Khrushchev gave Ulbricht tentative approval for his long-standing request to close off West Berlin from the East. He had already stockpiled enough barbed wire to seal the 27-mile dividing line between sectors and strengthen the 69-mile outer perimeter separating West Berlin from the East German countryside.

Berlin awoke Aug. 13 to find the barricades in place. After waiting for three days to see if the West reacted, Khrushchev allowed Ulbricht to begin building the brick and concrete barrier that would be known as the Berlin Wall.

Kennedy and his advisors were slow to recognize the significance of the wall. Secretary of State Dean Rusk thought no action should be taken and squelched a protest note drafted by the allied missions in Berlin. Kennedy himself said, "A wall is a hell of a lot better than a war."



The Aug. 25, 1961, cover of* Time *magazine featured Walter Ulbricht, who antagonized his own people—and the West.

The Allies did not act when Ulbricht's border police killed persons attempting to escape. Exultant, Ulbricht wrote to Khrushchev Sept. 16 that "the enemy took fewer countermeasures than were to be expected."

Kennedy realized he had to defend the Allied presence and access to Berlin. Otherwise, demands would just keep coming.

A conventional defense of Berlin was not possible. The main military option short of nuclear weapons was to send reinforcements to Europe as a show of commitment. In August, Kennedy called up 148,000 National Guardsmen and Reservists. The Air Force share of the mobilization was the equivalent of 36 fighter, reconnaissance, and airlift units, mostly from the ANG.

The first deployment was a Composite Air Strike Force from Tactical Air Command, primarily F-100 fighters from the active duty force, in Operation Tack Hammer in September. Additional active duty and Guard fighters followed in Operation Stair Step in November and December. Bases in Germany, France, and Spain made room for hundreds of airplanes. Many of them were from the 22 ANG squadrons which deployed to Europe within 30 days of mobilization.

It would be revealed years later that in September and October 1961, Kennedy considered a plan, drafted by an assistant to National Security Advisor McGeorge Bundy, for a nuclear first strike to preemptively destroy the Soviet nuclear strike capability. At that time, the Soviets had no more than eight ICBMs and their bombers were parked in the open. Nothing came of the plan.

Khrushchev had gained much of what he wanted. The internal border through the city was closed without serious repercussions. However, Ulbricht was not satisfied so long as Berlin was under four-power occupation and kept jacking up the tension, including harassment of traffic on the autobahn and impeding of diplomatic vehicles.

Clay Again

Meanwhile, Clay, the hero of the Berlin Airlift, arrived in Berlin as Kennedy's personal representative. Kennedy had called him out of retirement for political reasons, hoping to neutralize criticism from conservatives and hardliners. Germans lined the streets to welcome Clay, but the State Department and US military officials in Europe were less enthusiastic—thinking Clay was a loose cannon.

Clay was certain Khrushchev was bluffing, no more willing to fight a war over Berlin than the United States was. Khrushchev's tactic was to have East Germans take all of the provocative

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actions and force the Americans–who did not recognize the GDR—to deal with Ulbricht. The Soviets claimed they had no responsibility for the situation in Berlin. Clay wanted to smoke them out. His charter was to "report, recommend, and advise," but he would not let that hold him back.

Clay had the US Army build a mock-up of a section of the wall in a wooded area of Berlin and practice demolishing it. Higher headquarters in Heidelberg ordered the exercise stopped, but the Soviets had seen it already, which was what Clay had intended.

The main drama unfolded at Checkpoint Charlie on the Friedrichstrasse, the dividing line between American and Soviet sectors and the only designated border crossing point through the wall for the western military. In violation of the postwar agreement stipulating free passage for occupation authorities between sectors, Ulbricht had his border guards stop Allied vehicles and demand ID. The British, on orders from Macmillan, complied. The Soviets had not authorized Ulbricht to stop Allied vehicles but they had little choice except to back him up after he had done it.

On Oct. 22, Allan Lightner, chief of the US mission in Berlin—in cooperation with Clay—pulled up at Checkpoint Charlie and refused to show the East Germans his papers. They would not let him pass. Clay sent nine US military policemen with rifles to escort Lightner's car through the checkpoint.

Kennedy's advisors recoiled and urged the President to clamp down on Clay, but Kennedy had another problem. Clay proposed to resign unless he had freedom to maneuver and Kennedy could not afford politically to have Clay quit.

Tank to Tank

Ulbricht upped the ante again. No foreigners could pass the checkpoint without ID unless they were in Allied military uniforms. On Oct. 26, the guards stopped a car with US official plates. Clay sent five jeeps of armed troops to escort the vehicle into East Berlin and back. He also had 10 M-48 tanks, some of them with bulldozer blades, brought up close to Checkpoint Charlie. The next day, Soviet tanks, the first seen in Berlin since the 1953 uprising, rolled into position on the other side of the border.

The confrontation lasted for 16 hours—from 5 p.m. on Oct. 27 to 11

White House photo via the John F. Kennedy Presidential Library

Top: Berlin's historic Brandenburg Gate was carefully kept on the East Berlin side of the Berlin Wall. Above: President Kennedy addresses the massive crowd gathered in West Berlin in June 1963 for his "Ich bin ein Berliner" speech.

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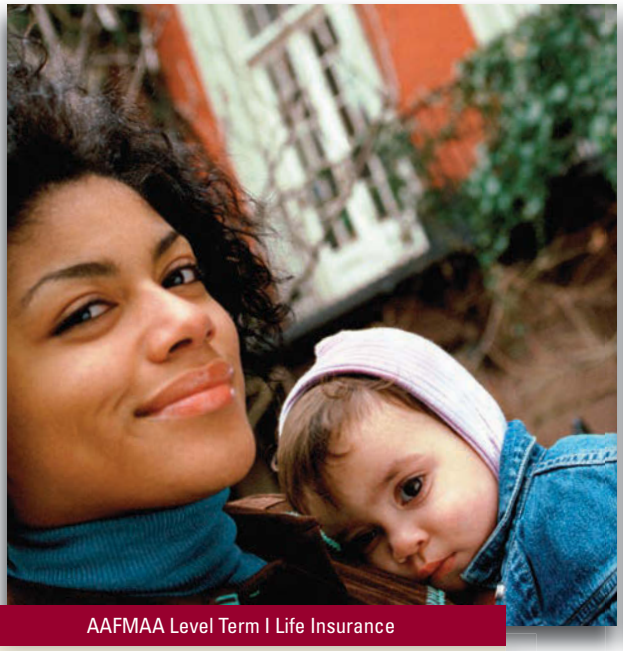

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a.m. on Oct. 28—with the tanks some 100 yards apart, guns trained on each other. Around midnight (6 p.m. in Washington) Kennedy talked to Clay on a secure line. Overriding the objections of his advisors, Kennedy told Clay, "Don't lose your nerve."

Kennedy's show of strength was diminished somewhat by the later revelation that his brother, Attorney General Robert F. Kennedy, had struck a backchannel deal with the Soviets that both sides would withdraw their tanks the next day. At 10:30 a.m., the Soviet tanks began leaving and half an hour later, the US tanks departed as well.

Macmillan rushed to assure the Soviets that Clay would be removed, but that did not happen. Rusk belittled "the silly tank confrontation at Checkpoint Charlie brought on by the macho inclinations of General Clay," but Clay had exposed the Soviet charade in Berlin.

The confrontation "destroyed the image of the GDR as a sovereign force," said historian Smyser. "Having seen what Ulbricht would do on his own, Khrushchev subsequently kept him under stricter control. ... Clay regarded the confrontation as a success because it showed that the Allies would not desert West Berlin."

The Berlin crisis persisted for a while longer. Khrushchev figured he got the better of the exchange and at the end of 1961, told a group of Soviet officials that "Kennedy doesn't have a strong background, nor generally speaking, does he have the courage to stand up to a serious challenge." Harassment continued, and the Soviets occasionally buzzed Allied airplanes in the air corridors. US Air Force reinforcements remained in Europe through the next summer.

Frederick Kempe, president of the Atlantic Council, believes the Cuban Missile Crisis in October 1962 was an aftershock of Berlin and that "Khrushchev would not have risked putting nuclear weapons into Cuba at all if he had not concluded from Berlin in 1961 that Kennedy was weak and indecisive." But by the Cuban crisis, Kennedy had learned his lesson about showing irresolution. Khrushchev blinked first.

In June 1963, Kennedy went to Berlin, walked along the wall, and delivered his historic "Ich bin ein Berliner" speech to a cheering throng of 300,000. Clay was there with him.

"I am proud to come here in the company of my fellow American, General Clay, who has been in this city during its great moments of crisis and will come again if ever needed," Kennedy said.

Construction and strengthening of the wall continued with the addition of a "death strip" and 116 watchtowers. The "fourth generation wall" completed around 1980 was built of separate sections of reinforced concrete, each 12 feet high and four feet wide. Several of these sections reside at the National Museum of the US Air Force at Wright-Patterson AFB, Ohio, where they have been on display since January 2000.

Between 1961 and 1989, at least 136 East Germans died trying to escape over the Berlin Wall. Still more were killed attempting to cross the inner-German border elsewhere. Even in those grim times, the wall was a major tourist attraction for visitors to West Berlin until it was torn down in 1989.

With the passage of time, fewer people remember the Berlin Crisis of 1961 and the Berlin Wall is a fading memory. In 2010, McDonald's opened a 120-seat fast food restaurant at the intersection where Checkpoint Charlie once stood.

Tourists call it "Snackpoint Charlie." ■

The Modular Deployment

Among those whose lives were disrupted by the Berlin Crisis of 1961 were the Air Guardsmen of the 151st Fighter-Interceptor Squadron at McGheeTyson Air Force Base in Knoxville, Tenn. Alerted in August for possible recall to active duty, members wound up their private affairs and prepared to go, but for a while, activation looked unlikely. Then orders came on Oct. 9 to report for deployment Nov. 1.

For the past year, the squadron—which was part of the 134th Fighter-Interceptor Group—had flown the stubby-winged F-104A Starfighter, called "the Zipper" for its blazing Mach 2 speed. The active duty force had F-104Cs and had passed the F-104A, which had been operational only since 1958, to selected Guard units.

The commander, Maj. Robert W. Aiken, led an augmented squadron with the group's 18 F-104A fighters, its two F-104B two-seat proficiency trainers, and about half of the unit's personnel in the deployment to Ramstein AB, West Germany. Most of the others activated went elsewhere, including to bases in France to fill in understrength Guard units.

The F-104A did not deploy for long distances in the conventional manner. It needed frequent fueling because of its short operating range, and unlike the F-104C, it could not be fitted with a refueling probe to gas up from a KB-50 tanker. The standard procedure was to take the airplane apart and airlift it to the new location.

Fortunately, the F-104 was easy to disassemble. The entire tail assembly, including the aft fuselage behind the wing, came off as a unit to allow removal of the engine. The forward fuselage was winched aboard a C-124 through the big cargo door in front and stowed according to the predetermined loading plan, surrounded by the tail, wings, and nose.

By Nov. 20, the squadron was at Ramstein, ready to operate. Performance was excellent from the beginning, as the veteran Guardsmen were highly qualified. Charles F. Brakebill, on the deployment as executive officer, remembers that one of the squadron's pay clerks was a certified public accountant back home in Knoxville.

In May 1962, the squadron set a record, both for US Air Forces in Europe and for the Air Force as a whole, for the highest flying time per jet fighter aircraft assigned for any one month. The average of 46 hours, 27 minutes was built by 17 fighters flying the entire month with the 18th aircraft joining in on the last day.

As the deployment rolled on, dozens of the airmen and all except eight of the officers brought their families to Ramstein. Since their dependents were not officially sponsored, they lived on the local economy and the Guardsmen did not receive quarters or subsistence allowances to help with the expense. There was no problem, though, in enrolling their children in the US Army schools at Ramstein and Vogelweh elementary schools.

The 151st FIS returned to McGhee Tyson in July 1962 and was released from active duty Aug. 15.

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributing editor. His most recent article, "Near Failure at Nagasaki," appeared in the July issue.*

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NSAS photo by Bill Ingalls

Shuttle Era Ends

Thirty years of US space shuttle operations came to an end when *Atlantis* touched down for the final time July 21.

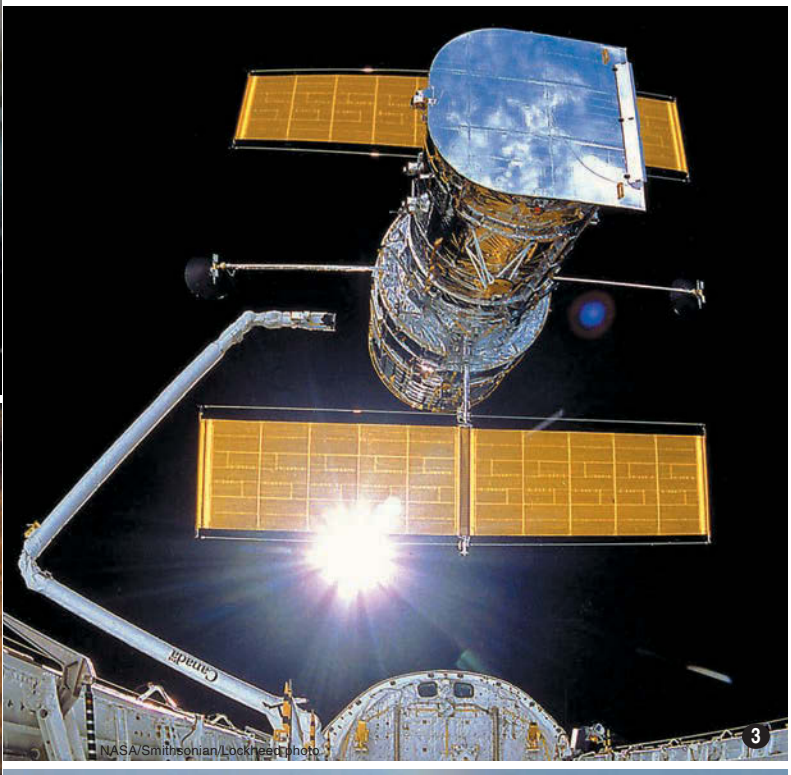
Photography by NASA photographers

The gantry rolls back from space shuttle* Discovery *in the hours before its final flight. It waits on Pad 39A, also used for the Apollo missions to the moon. Inset: NASA's patch commemorating 30 years of the shuttle program includes five five-pointed stars representing the five orbiters, and 14 other stars memorializing the astronauts who lost their lives during shuttle operations.

1

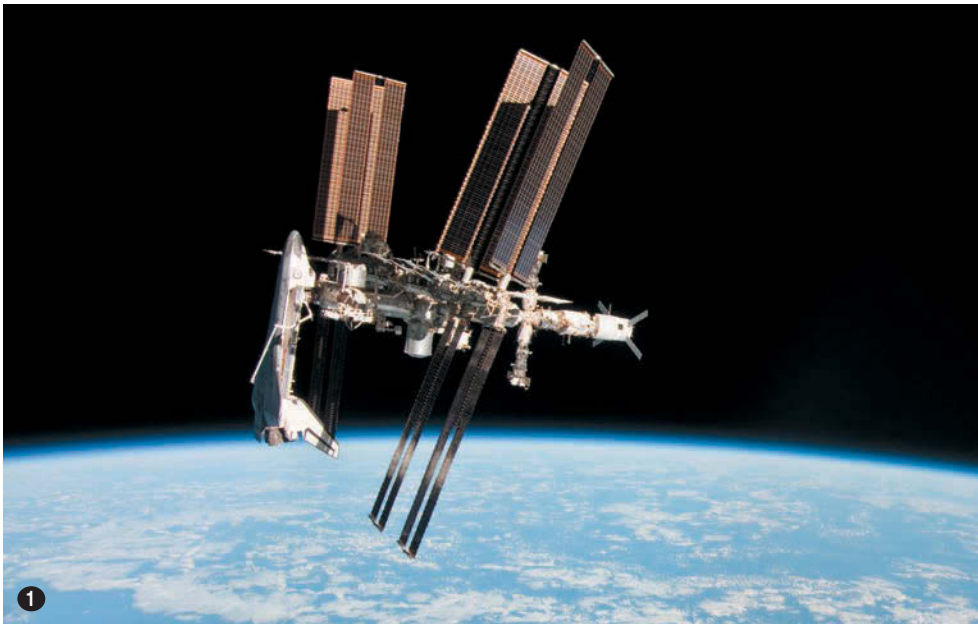
The shuttle program was meant to make access to space cheap and routine. While that goal was never fully achieved, the program proved it could launch payloads, service them in orbit, and bring them back if necessary. ***I1I*** Columbia *on its maiden flight in April 1981. NASA quit painting the large fuel tank on later missions, saving great weight.* ***I2I*** Enterprise*—yes, President Ford assented to fan requests to name it after the "Star Trek" ship—rode up to its glide tests aboard a specially configured 747. The jumbo jet later carried shuttles from landings in California back to the Kennedy Space Center in Florida.*

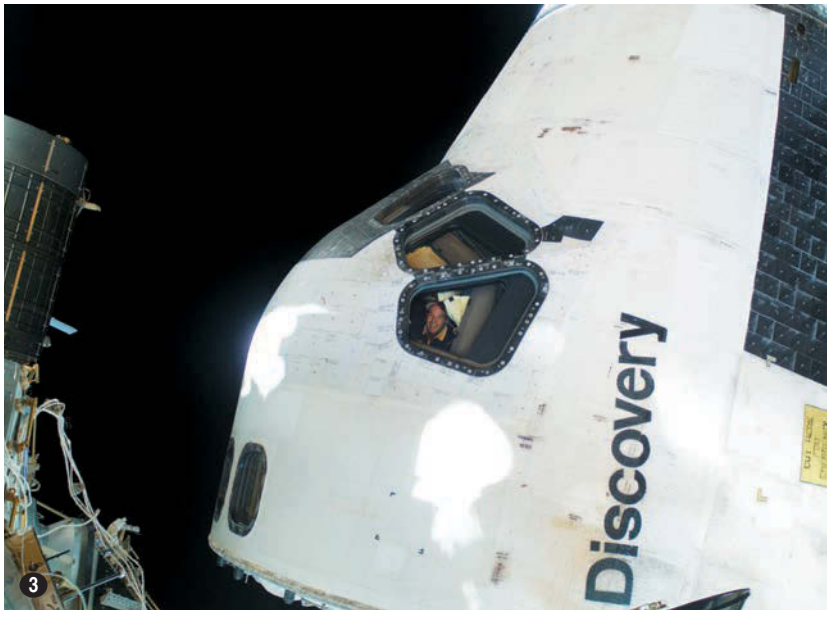
2

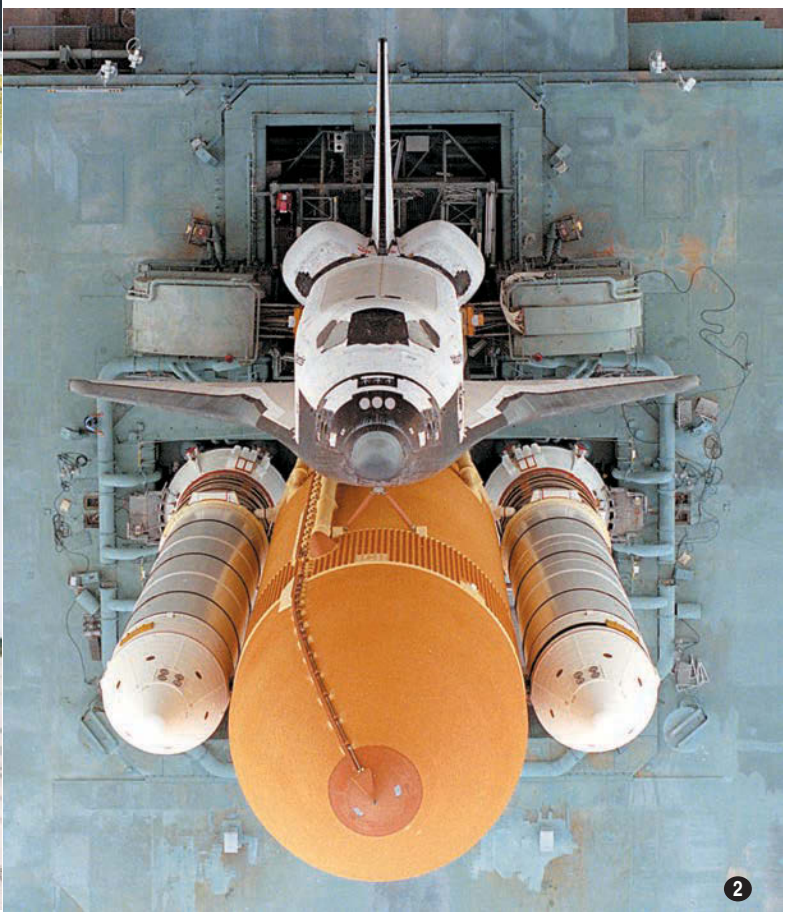


I1I Enterprise *was a full-size, full-weight test vehicle built only to prove glide handling after re-entry. It never flew in space. Here, in 1977, it makes its first descent without an aerodynamic tailcone over the engines.* ***I2I*** Columbia *as imaged from a USAF telescope in Hawaii in 2003, 22 years after it flew the first shuttle mission. Days later, it would be lost during re-entry.* ***I3I*** *Perhaps the most famous shuttle payload was the Hubble Space Telescope, here being released from* Discovery *in 1990. Serviced by shuttles five times, Hubble is operating well past its planned 15-year life.* ***I4I*** Atlantis *and* Endeavour *on Pads 39A and B, respectively, await missions in 2008.* ***I5I*** *Gary Payton flew aboard STS-51C, the first all-military-payload shuttle mission in 1985. He later served as deputy undersecretary of the Air Force for space programs.*

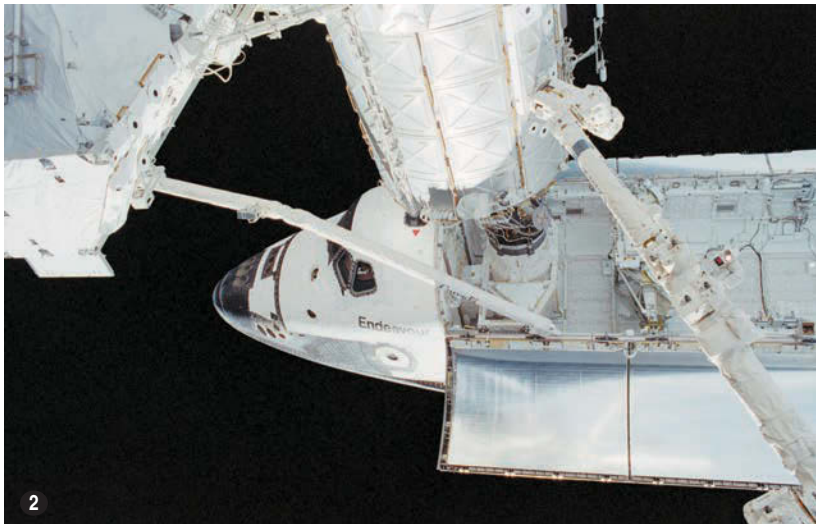
I1I *The only images of a shuttle docked with the International Space Station, in which both are seen in their entirety, were taken by a cosmonaut, Paolo Nespoli, in a Soyuz craft.* Endeavour *was making its last visit to the ISS, in May. The angle belies the true size of the ISS, which is more than 300 feet wide.* ***I2I*** Discovery, *in a rare view from the top of the gantry, departs on a mission to deploy a Tracking and Data Relay Satellite in 1995.* ***I3I*** Discovery's *cockpit area imaged by space walkers maintaining the ISS in 2009.* ***I4I*** *The STS-70 crew inspects* Discovery's *nose gear after landing. Shuttles typically landed right on the centerline of KSC's long runway, despite a dead-stick, unpowered flight from orbit.*



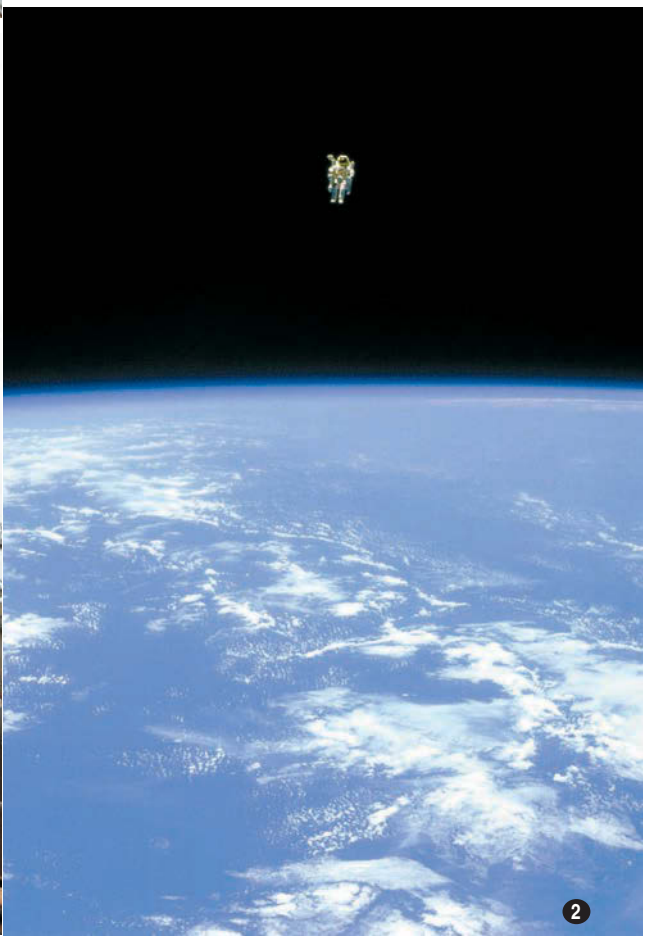




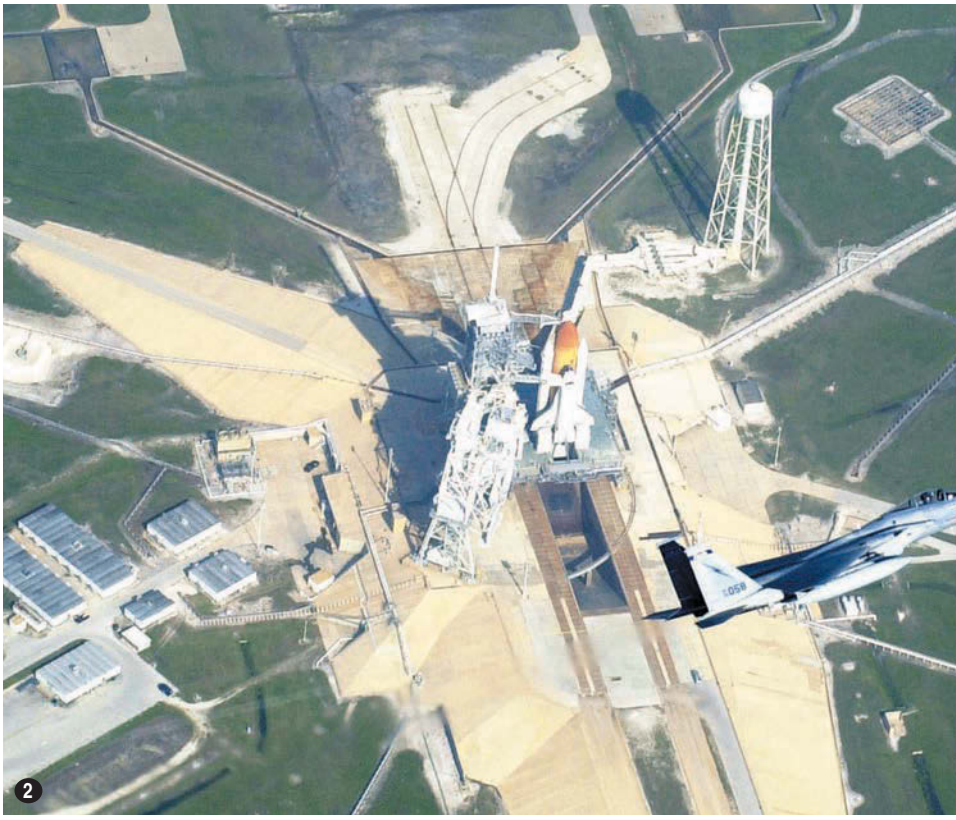
I1I Endeavour *returns from an Edwards AFB, Calif., landing to KSC in 2008, piggyback aboard NASA's 747 shuttle transporter, over the Mojave Desert.* ***I2I*** Atlantis *emerges from the Vehicle Assembly Building in this 1996 photo. Huge cranes in the VAB assembled the side-mounted solid rocket motors, shuttle, and huge external fuel tank to create what was called, for short, the "stack."* ***I3I*** Challenger, *moments before its external tank exploded. Flames can be seen as propellant burns through the solid rocket casing.* ***I4I*** *The crew of* Challenger *STS-51-L, shown here, was lost in 1986, in an accident chalked up to NASA's pursuit of schedule at the cost of safety. It would take years to return to flight, and the tragedy shifted the Air Force—a prominent shuttle user—back to expendable launch vehicles. Left to right they are Ellison Onizuka, Michael Smith, Christa McAuliffe, Dick Scobee, Greg Jarvis, Ron McNair, and Judy Resnik. USAF named a Space Command facility for test pilot Onizuka in 1986.*

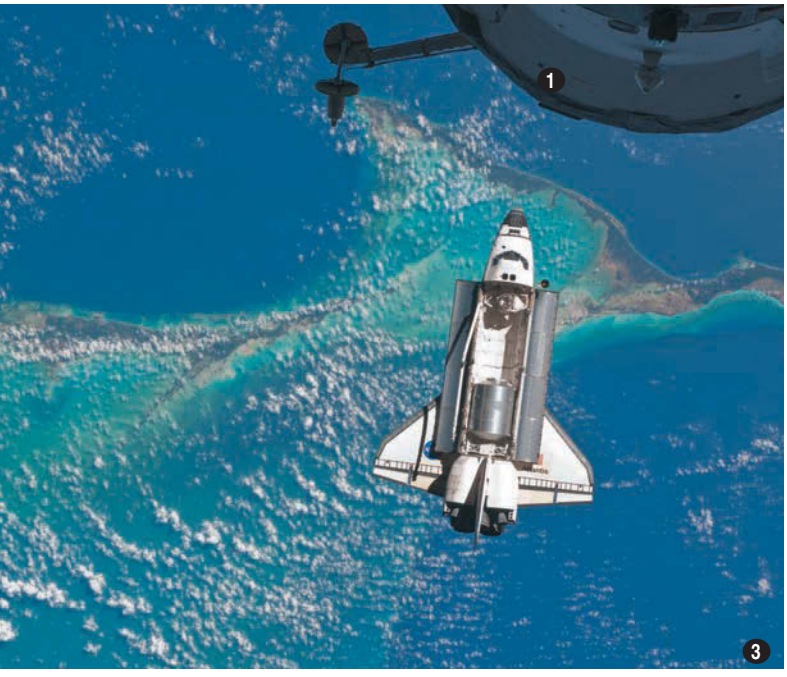


I1I *USAF Col. Eileen Collins led shuttle mission STS-93 in 1999, and, following the* Columbia *accident, commanded the STS-114 "return to flight" mission in 2005. She is the only woman to have both piloted and commanded shuttles.* ***I2I*** Endeavour, *docked to the ISS Destiny laboratory in 2002, early in construction of the space station. Both the shuttle's own manipulator arm and that of the ISS—called the "Canadarm," because it was built by Canada, are in use in this image.* ***I3I*** *Kevin Chilton,* Challenger *commander, greets cosmonaut Yury Onufrienko after docking with the Russian Mir space station in 1996. Chilton became a four-star USAF general and head of US Strategic Command.* ***I4I*** *The last shuttle crew, of mission STS-135, before boarding* Atlantis *in July 2011. Though shuttles routinely carried up to seven people, the last mission was limited to four in case of a problem preventing the shuttle from landing. The crew would have had to return on cramped Russian Soyuz craft, limited to three people each.*

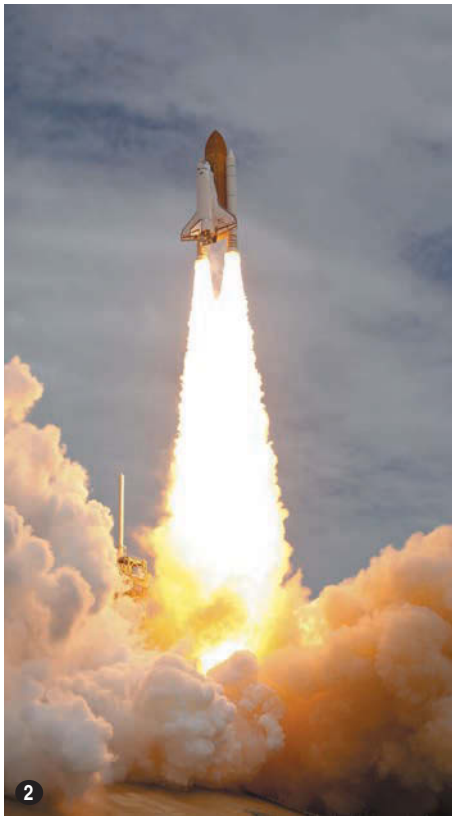


I1I Endeavour *makes the arduous 3.5-mile crawl from the giant Vehicle Assembly Building to Pad 39A for launch of STS-89 in 1998.* ***I2I*** *Bruce McCandless tests the Manned Maneuvering Unit, a backpack allowing astronauts to venture away from the shuttle without a tether. The four-hour, 1984 space walk set many records, taking McCandless farther than 300 feet from the shuttle.* ***I3I*** *The last crew of* Columbia, *in their official NASA photo. Incredibly, videotapes made by the crew survived the orbiter's breakup intact. Recovered, they provide a chronicle of an otherwise textbook mission. Crew members are, left to right: David Brown, Rick Husband, Laurel Clark, Kalpana Chawla, Michael Anderson, William McCool, and Ilan Ramon.* ***I4I*** *Wreckage of* Columbia *was strewn across several states. Pieces are still being found. Collected and reconstructed at KSC, the wreckage helped prove the cause of the 2003 accident, which killed the seven astronauts: Insulating foam damaged a wing edge.*





I1I *Susan Helms, first US military woman in space, made five shuttle flights. Now a three-star general and head of 14th Air Force, she holds the record for longest space walk, at nearly nine hours. She is shown aboard the ISS in 2001.* ***I2I*** *A Florida Air National Guard F-15C overflies* Endeavour *just prior to a mission. Such combat air patrols have been flown in support of shuttle missions since 9/11.* ***I3I*** Atlantis *moves in to dock with ISS over the Bahamas.* ***I4I*** *An F-15E from Seymour Johnson AFB, N.C., helps assure an uneventful liftoff for* Atlantis *in 2010.*



NASA photo by Kim Shiflett

I1I *Franklin Chang-Diaz spacewalks outside the ISS in 2002.* ***I2I*** Atlantis *streaks skyward 30 years and three months after* Columbia's *first flight. The space shuttle's legacy will truly end when ISS, having reached its planned life expectancy, will be de-orbited sometime after 2020.* ***I3I*** Atlantis *makes the last shuttle landing on July 21, 2011, after a perfect mission that left many convinced the fleet could have carried on a few more years. Until 2015 at the soonest, US astronauts will have to rely on Russian Soyuz craft to get to the space station. After that, NASA will rely on commercial rocket companies to provide "space taxi" service to the ISS.* ■

AP photo by Hussein Malla

It was flawed strategy, not failed airpower, that led to the IDF's inconclusive performance in Lebanon.

For 34 tense days in the summer of 2006, the Israeli Defense Forces conducted a campaign against the Hezbollah organization in response to a surprise cross-border incursion from southern Lebanon into Israel. Hezbollah terrorists targeted and kidnapped two Israeli soldiers for use later as hostages.

The Israeli counteroffensive, codenamed Operation Change of Direction, included the most complex and

Behind Israel's 2006 War With Hezbollah

By Benjamin S. Lambeth

sophisticated air operation in Israel's history. It also ended up being the most inconclusive performance by the IDF since the founding of the Jewish state in 1948.

As Israel's counteroffensive progressed, Prime Minister Ehud Olmert declared his government's main goals as an unconditional return of the two kidnapped soldiers and a permanent removal of Hezbollah as a fighting force in southern Lebanon. Those extravagant goals remained elusive throughout the nearly five weeks of fighting.

Left: Dahiyeh, a southern suburb of Beirut, Lebanon, and Hezbollah stronghold, after Israeli air strikes in August 2006. Below: Two JDAMs are on the ramp as an Israeli F-16 advances in preparation for a mission against Hezbollah.

AP photo by Baz Ratner

The frustration felt among Israelis as the conflict unfolded intensified because their forces were unable to stem the relentless daily barrage of short-range Katyusha rockets Hezbollah fired into civilian population centers in northern Israel. A cease-fire finally brought an end to the lethal harassment.

The IDF's Chief of Staff Lt. Gen. Dan Halutz largely determined the campaign's conduct. He had previously commanded the Israeli Air Force (IAF) and was at the time the crisis erupted the first airman ever to occupy the country's top military position.

His chosen response was to rely at first almost entirely on precision standoff attacks instead of a joint offensive that included an early commitment of ground troops. The campaign's halting progress and indecisive results led many to conclude that the IDF chief, as an airman, had succumbed to a parochial belief that airpower alone could bring about the campaign's goals.

Furthermore, a predominant and persistent early impression was that Halutz's initial choice of strategy and the IDF's disappointing performance attested to a "failure of airpower"—even though the IDF's counteroffensive included not only around-the-clock strikes by IAF fighters and attack helicopters, but also an early insertion of special operations forces on the ground and thousands of daily rounds of artillery and battlefield rockets fired against targets in southern Lebanon.

What ultimately "failed" in the campaign's planning and conduct was not Israeli airpower or any other instrument of warfare per se. Rather, the problem was a blend of ill-advised high-level leadership judgments on the nature of the adversary; initial goals unattainable by any mix of military force that the Israeli people and the international community would likely accept; a poor choice of alternatives for pursuing the campaign's goals; and government mismanagement of public expectations.

As the first day of combat ended, it became clear that Israel's strategy, for the time being, was to rely solely on precision standoff attacks to coerce Hezbollah's fiery leader, Hassan Nasrallah, to do its bidding.

The IDF had a refined contingency plan ready for an air-land counteroffensive intended for just such a scenario to expel Hezbollah's forces from southern Lebanon, but its leadership was not eager to implement it. During the cabinet's initial deliberations about a serious ground option as an early move, the IDF's deputy chief of staff, Maj. Gen. Moshe Kaplinsky, warned that a major land invasion could cost the IDF as many as 400 soldiers killed in action.

The near-certainty of a high number of friendly casualties was a major inhibiting factor affecting everyone in the Olmert government. In 18 years of occupation in Lebanon from 1982 to 2000, the IDF sustained more than 600 troop fatalities, nearly as many as during the Six Day War of 1967. No one

Hezbollah continuously attacked Israel even after the Israeli withdrawal from Lebanon in 2000. Pictured is an Israeli civilian dwelling, destroyed by Hezbollah rockets.

wanted a replay of the experience. For Israelis, the Lebanon occupation was and remains their country's Vietnam-like experience. Halutz rejected any idea of the IDF going back into southern Lebanon to recapture and occupy Lebanese territory immediately north of the Israeli border.

The IDF's ground commanders also opposed a major land counter-offensive because their troops were totally unprepared for combat against a robust opponent such as Hezbollah. Since the start of its preoccupation with the Palestinian intifada in 2000, the IDF had conducted virtually no periodic large-scale training for major land combat. As a result, operational integration between Israel's ground forces and the IAF had all but ceased to exist, and ground force readiness for any contingency other than containing the Palestinian uprising had been allowed to lapse.

Yet, Halutz wanted to teach Hezbollah a lesson its leaders would not soon forget. Ever since the IDF had withdrawn from Lebanon, Hezbollah had continuously tested Israel's patience through recurrent border provocations and random rocket firings into northern Israel. With the final outrage of the troop abduction, Halutz decided to seek a sea change in the situation.

The Campaign Unfolds

From the first day onward in this second Lebanon war, some 173,000 artillery and rocket rounds were expended. This was more than were used during the much higher-intensity Yom Kippur War of 1973.

During the campaign's first week, the IAF flew some 2,000 fighter and attack helicopter sorties day and night against a wide variety of Hezbollah targets. Despite tactical and operational-level successes that week, it became increasingly clear that standoff attacks alone would never bring about the Olmert government's overarching campaign goals.

Not long after, the government's principals found themselves in an acrimonious debate on the IDF's inability to stop the relentless Katyusha rockets and the offsetting concern that escalation to major ground fighting would produce an unacceptable number of Israeli casualties. Eventually, calls for a massive IDF ground incursion to drive Hezbollah's forces out of southern Lebanon became more vocal.

The IDF mobilized three reserve divisions on July 20, in its largest troop call-up in four years. The government's issuance of the invasion order came only on Aug. 11, however. This left the IDF with three days to make the most of its long-delayed ground push before a cease-fire went into effect.

During the final 72 hours of combat, the IDF tripled its troop numbers in southern Lebanon to a peak of around 30,000. It suffered its heaviest casualties during those last three days of fighting.

Coordination among force elements was uniformly poor throughout this final phase of the conflict. In some cases, embattled tank crews requested immediate close air support but were denied by the IDF's Northern Command out of concern that CAS would result in a friendly fire incident.

The performance of IDF ground forces throughout this escalated endgame further revealed shortcomings in combat tradecraft. Infantry units were often unable to coordinate with armor, and tank crews proved repeatedly nonproficient in night operations.

From start to finish, IDF ground activity lacked a clearly identifiable pattern. Troops returning from battle reported that Hezbollah's dug-in defenses and the hardened fighters who

AP photo by Mohammed Zaatari

Female members of Hezbollah shoulder Katyusha rocket models at a rally in southern Lebanon in 2007. The rocket attacks against Israeli towns did not stop until a cease-fire halted the 2006 war.

manned them proved far more resilient than anticipated. In the end, the IAF provided abundant on-call CAS as required, and many wounded IDF troops were promptly evacuated by UH-60 helicopters under heavy fire.

Strategic Errors

The second Lebanon war's less than resounding outcome for Israel in no way reflects a failure of the IAF to perform to the fullest extent of its abilities. Rather, it stemmed from a broader deficiency in the strategy of Olmert's most senior leaders.

There was nothing wrong in principle with the government's decision to respond to Hezbollah's cross-border provocation with escalated force. Yet the ramifications of the response were not adequately explored before proceeding.

There was more than one option available to the IDF in the immediate aftermath of the provocation. However, the options were not systematically assessed and rank-ordered by Israel's civilian leaders and by Halutz. As a result, the IDF initiated its counteroffensive without giving sufficient thought to the campaign's best and most attainable outcome.

One key deficiency in the government's chosen response was that it offered no way of negating Hezbollah's rocket attacks in case Halutz's attempt at coercion by standoff fire failed. Critics blamed Israeli airpower for not dealing satisfactorily with the rocket conundrum, but the IAF's leaders never once claimed that the task lay within their technical and operational competence.

On the contrary, during a joint training exercise conducted by the IDF just a month before the crisis broke, the IAF's commander, Maj. Gen. Eliezer Shkedy, warned that no one should expect Israel's air arm to be able to prevent a continuing barrage of short-range Hezbollah rockets from southern Lebanon. "Expect a success of no more than one to three percent in [our] hitting the Katyushas," Shkedy said.

A related deficiency in the Olmert government's chosen strategy was that until the campaign's last days, stemming the short-range rocket fire—by whatever means—was never high on the IDF's list of priorities. The government's most senior leaders, civilian and military, entered the campaign having dismissed the rockets as a mere nuisance factor. The fact that continuing rocket fire represented a core strategic threat to northern Israel's civilian population and economy only became clear once the counteroffensive was well under way.

AP photo by Kevin Frayer

An Israeli soldier protects his ears as a heavy artillery piece fires into southern Lebanon in July 2006. That same day, Hezbollah fired a barrage of rockets into the Israeli city of Haifa, killing eight and wounding seven.

The decision to start the campaign with a standoff-only counteroffensive was not Halutz's alone. It had a consensus among Israel's ground commanders and civilian leaders alike, because it offered the least unacceptable option for an initial response. The IDF's top planners, Halutz included, knew full well standoff attacks alone would not end Hezbollah's rocket fire into northern Israel—let alone achieve Olmert's most extreme goals of getting the two kidnapped soldiers back and putting Hezbollah out of the military business. The government deferred the transition to a major ground assault as long as possible because no one among Israel's senior leadership wanted a ground war. As a former IDF Chief of Staff (1998-2002) and then-serving cabinet minister, Lt. Gen. (Res.) Shaul Mofaz, later declared: "If you can do it from the air, it is better."

Another former Chief of Staff (1995-1998) and land combatant, retired Lt. Gen. Amnon Lipkin-Shahak, remarked while the campaign was under way that he did not see any particular connection between Halutz's upbringing as an airman and his choice of strategy for conducting the war.

"Any other chief of staff would have made a similar use of force. Aerial capabilities have developed greatly over the past decade, and it would be a mistake not to make the most of them," he said.

Olmert himself voiced the sentiment to IAF personnel at Hatzor Air Base during the campaign's second week. "In every combat situation, the preference is to act from the air and not on the ground," he said.

Another source of trouble for the campaign plan as it unfolded was the IDF's ground forces' lack of preparation for serious combat against Hezbollah's well-trained and disciplined fighters; all they had done for the preceding six years had been lower-intensity operations against the Palestinian intifada. Years of focusing on immediate preoccupations gutted the IDF's ability to conduct a large-scale ground operation against a capable foe.

The greatest failure for Israel, however, was the imbalance both Olmert and Halutz allowed to develop between the extravagant goals initially declared by the prime minister and the incapacity of his government's response to achieve them. Not only were those initially outsized goals progressively ramped downward as the campaign progressed, they also created early expectations in Israel's rank and file that had no chance of being fulfilled.

Still, having bought wrongly into a baseless view of what airpower alone could accomplish was not the Olmert government's main failing in the planning and conduct of Operation Change of Direction. Retired Air Commodore Jasjit Singh of the Indian Air Force later wrote, "The end result

Maj. Gen. Eliezer Shkedy (r), IAF's commander during the 2006 war, briefs Prime Minister Ehud Olmert and Lt. Gen. Dan Halutz, IAD Chief of Staff, in a Tel Aviv air operations center. Nearby monitors show radar imagery from a G550 airborne early warning aircraft and full-motion video from UAVs in the theater.

was that the two sides were fighting a war at different planes, with different strategies, seeking to exploit asymmetric vulnerabilities in targeting different centers of gravity. Israel targeted Hezbollah's military assets and infrastructure, while Hezbollah targeted Israel's civilian community."

Singh pointed out that Israel's use of force was inconsistent with the campaign's aims and "was not tailored to a correct assessment of how the enemy would fight, in spite of excellent intelligence about the specific capabilities of the enemy." He added that this "makes the traditional debate about airpower versus 'boots on the ground' irrelevant to the real issues."

Fundamentally, the IDF unleashed its counteroffensive without giving adequate thought to the campaign's likely endgame. Consequently, the government lacked an appropriate plan for ending the war on a high note.

Assessing the Results

Worse yet, both IDF leaders and their civilian masters took an overly unreflective view of what military power of any kind, unaided by an effective strategy, could accomplish in a situation where the government's initially declared goals were so unrealistic. Neither of these consequential missteps in strategy choice had anything to do with any strengths or limitations of Israel's air posture.

In combat mission areas, the IAF performed to its usual high standards throughout the 34-day engagement. Indeed, the final report of the Winograd Commission, which had been tasked by Olmert to investigate and assess the IDF's and government's performance after the campaign ended, concluded that the IAF had registered "impressive achievements." The Israeli Air Force was deemed the most effective participant by far in all aspects of Operation Change of Direction.

Those achievements included the IAF's largely successful pre-emptive attack against Hezbollah's known and targetable medium-range rockets during the campaign's opening night. They also included its subsequent highly effective time-sensitive targeting attacks against short-range rocket launchers, and against some medium-range launchers as well, often within minutes after Hezbollah squads had fired their weapons.

The only major disappointment in the IAF's combat performance was in timely and effective CAS delivery, owing to an absence of joint rehearsals during peacetime training exercises over the preceding six years.

In all, the IAF flew 18,900 combat and combat support sorties and struck some 7,000 approved targets throughout Lebanon at an average rate of 340 sorties a day. Roughly 12,000 of those were fighter sorties in all mission categories, with attack helicopters racking up another 2,500 sorties. More than half of the strikes were flown at night.

In addition, more than 1,500 surveillance sorties and roughly 1,300 air mobility sorties were flown during the campaign. IAF rotary wing aircrews conducted roughly 120 combat search and rescue missions, nearly half of them inside Hezbollah-infested territory and almost always under heavy fire. Furthermore, 110 combat medical evacuation sorties were flown, 94 entailing emergency rescue operations under fire.

Viewed with the benefit of five years' hindsight, the IDF's inconclusive campaign against Hezbollah does not appear now to be the unqualified setback many had initially presumed. Although the second Lebanon war ended in a less than decisive outcome for Israel, Hezbollah's military infrastructure and combat capability were dealt a severe blow by the IDF's massive retaliatory attacks.

Israel also gained a much-improved security situation in southern Lebanon, with the formerly volatile border region now more quiescent than it has been in a generation. With the singular exception of three short-range rockets fired into northern Israel from southern Lebanon during the IDF's subsequent 23-day campaign against Hamas in the Gaza Strip more than two years later (which Hezbollah quickly denied responsibility for), not a single rocket has been fired from Lebanon into Israel since Operation Change of Direction ended.

This trend is in spite of Hezbollah harboring far more short-range rockets (as many as 50,000) in its since-reconstituted arsenal than ever before. This suggests Hezbollah's postcampaign motivations and behavior have, at least for the time being, been affected for the better by the significant bloodying the IDF inflicted on it. ■

Benjamin S. Lambeth is a senior fellow with the Center for Strategic and Budgetary Assessments, a position he assumed in July 2011 following a 36-year career at the RAND Corp. This article is derived from his 2011 RAND Project Air Force study, "Air Operations in Israel's War Against Hezbollah: Learning From Lebanon and Getting It Right in Gaza." An electronic copy of the full report can be downloaded at http://www.rand.org/content/dam/rand/pubs/monographs/2011/RAND_MG835.pdf. Lambeth's most recent article for Air Force Magazine was "A Short History of Military Space," in December 2004.

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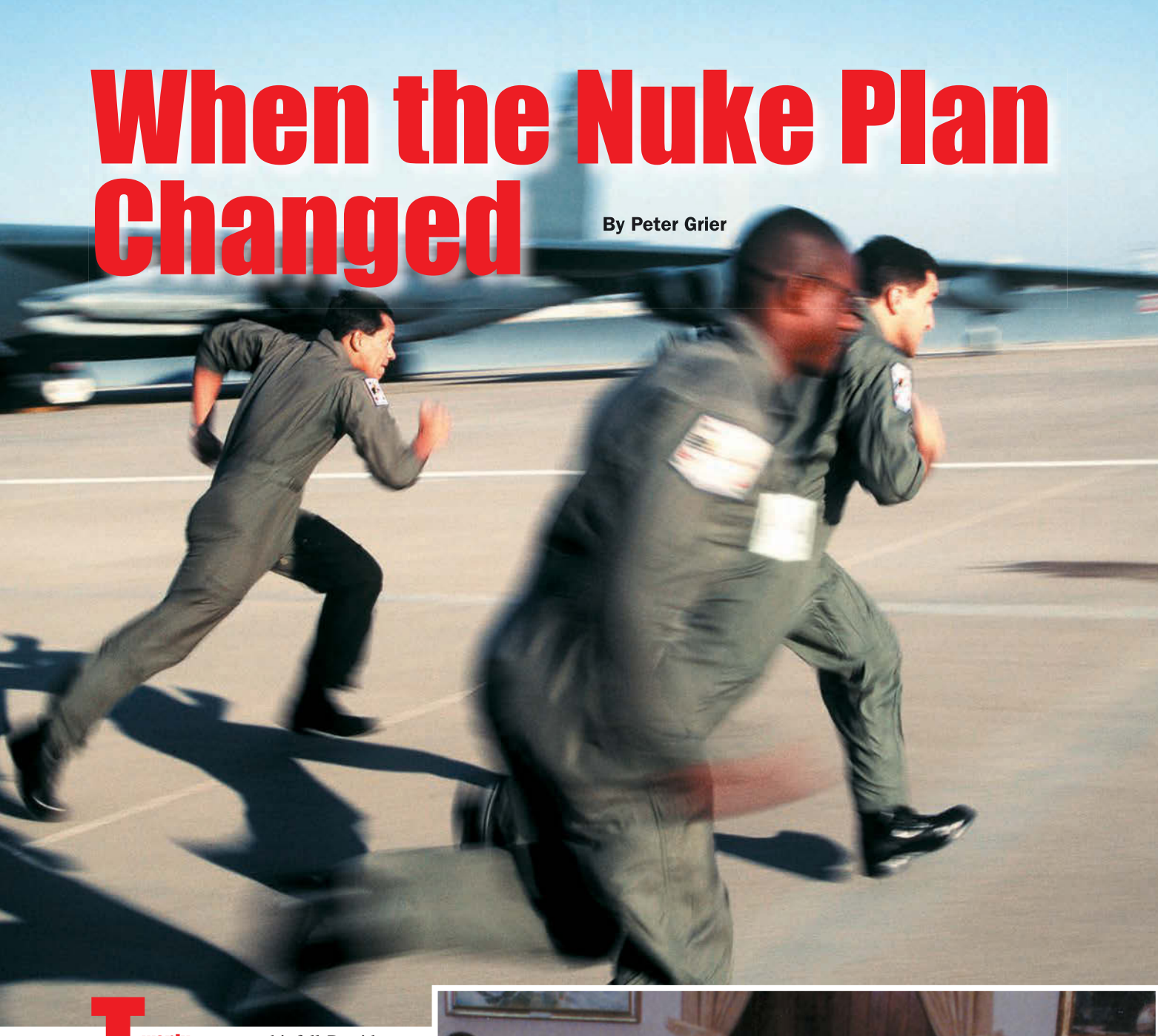
When the Nuke Plan Changed

By Peter Grier



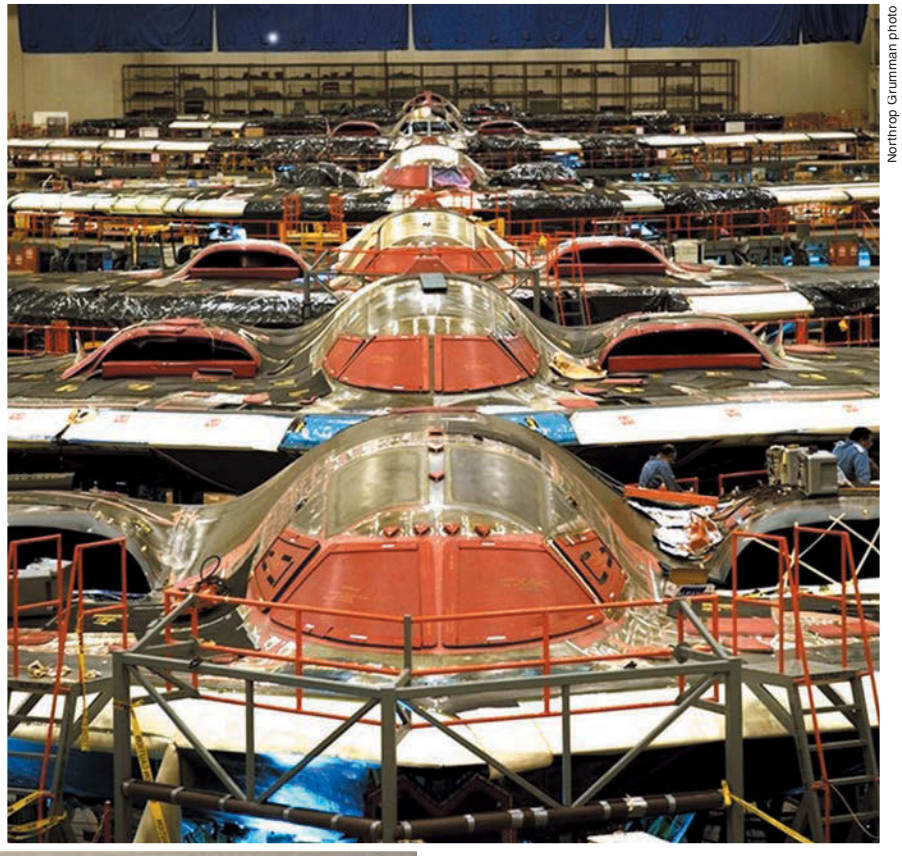
DoD photo

Twenty years ago this fall, President George H. W. Bush announced sweeping changes to the US nuclear force structure.

In a speech to the nation on Sept. 27, 1991, Bush said he ordered the destruction of all American ground-based tactical nuclear weapons. Sea-based tactical nukes would be withdrawn from deployment as well.

All Air Force strategic bombers and 450 Minuteman II missiles were taken off alert status. Mobile US ICBM programs were halted—as was the AGM-131 nuclear short-range attack missile.

Bush made these moves unilaterally, with a few strokes of his pen. He indicated the US would carry them out regardless of Soviet reaction. But he invited Soviet President Mikhail S. Gorbachev to take



Northrop Grumman photo

DOD photo

Left: Members of a SAC alert crew race for their B-52 during a base alert exercise in the Cold War. Bottom left: President George H. W. Bush (c), flanked by then-Secretary of Defense Richard Cheney (l) and Chairman of the Joint Chiefs of Staff Colin Powell (r), meet at the Pentagon in 1991. Above: B-2 bombers on the production line. President Bush's nuclear initiatives essentially ended B-2 production.

In 1991, with a stroke of his pen, President George H. W. Bush forever changed America's nuclear force structure.

similar actions. "If we and the Soviet leaders take the right steps—some on our own, some on their own, some together—we can dramatically shrink the arsenal of the world's nuclear weapons," said Bush in his address.

Days later, Gorbachev responded with his own reductions. He said the USSR would match the US on removal and dismantlement of tactical nuclear weapons, while taking 500 missiles off alert and canceling some strategic modernization programs. After the Soviet Union collapsed at the end of 1991, new Russian President Boris Yeltsin vowed to live up to Gorbachev's nuclear commitments, and even to expand upon them. He said Russia would end further development of nuclear sea-launched cruise missiles, for example, and destroy its existing SLCM stocks.

Taken together, all these moves did not usher in a nuclear nirvana. The US and the successor states to the USSR still had thousands of strategic weapons both deployed and in reserve. Nor did Bush's reductions push the teetering Soviet Union over the edge. It was unraveling anyway due to the pressure of larger geopolitical and economic forces.

Racing Downhill

But Bush's Presidential Nuclear Initiatives (PNIs) still mark an extraordinary moment in history, the point at which it might be said that the US truly won the Cold War. For decades, the superpowers had been piling warhead upon warhead. As historian Raymond L. Garthoff has noted, Bush's September speech and Gorbachev's response were a time when the arms race ran in reverse—downhill. Furthermore, the PNIs showed that ponderous negotiations aiming at a treaty were not the only way to cut nuclear arsenals. Unilateral arms control turned out not to be an oxymoron. And it was perhaps a good example of the deftness with which Bush handled the US response to the USSR's collapse and Russia's rebirth as a separate state.

"George H. W. Bush ... presided with great skill over the [Soviet] transition," wrote former Air Force nuclear negotiations expert Michael O. Wheeler in a 2004 report co-authored for the USAF Institute for National Security Studies.

When Bush assumed office as the 41st President in 1989, the nation's nuclear policy was still focused on traditional deterrence, meaning the prevention of war and nuclear use by a superpower adversary. "Arms control" meant the Strategic Arms Reduction Talks, which the US and the USSR had engaged in, off and on, since 1982.

The talks hit another hiatus at the beginning of the Bush presidency, as the new Administration paused for a review of where arms control strategy was going. Afterward, the Strategic Arms Reduction Treaty was wrapped up fairly quickly, by the standards of bilateral nuclear efforts. The US and the USSR signed what became known as START I on July 31, 1991. The treaty cut the number of Soviet deployable nuclear warheads by approximately one-third from its highest levels just before the end of the Cold War, to 6,000 warheads on 1,600 strategic offensive delivery vehicles.

Against this background, several other issues were contributing to the development of what would become the PNIs. One was that some top officials in the Bush team were dismissive of tactical nuclear weapons. National Security Advisor Brent Scowcroft had argued for a ban on ship-launched cruise missiles since the middle of the 1980s, for instance.

Chairman of the Joint Chiefs of Staff Gen. Colin L. Powell thought that maintaining nuclear artillery shells was a waste of money, though the Army and Secretary of Defense Richard B. Cheney opposed his efforts to get rid of them. "I was becoming more and more convinced that tactical nuclear weapons had no place on a battlefield," writes Powell of that period in his memoir, *My American Journey.*

The threat these weapons were designed for—a Soviet invasion of Western Europe—had diminished considerably since the dissolution of the Warsaw Pact began in 1989. Soviet forces were pulled

DOD photo

An M109 155 mm self-propelled howitzer fires during a tactical exercise without troops. Bush ordered the destruction of the nuclear artillery shells fired by the M109.

back to the east, beyond the range of land-based American tactical nuclear delivery systems. The USSR had deployed thousands of these weapons itself, of course. Many were still stored at bases in remote corners of the crumbling Soviet empire. In the fast-changing political environment of the early 1990s, the biggest threat posed by these weapons was not their possible use in war, but the chance that they might go missing and end up in the hands of rogue dictators or terrorists.

A shock pushed Bush and his advisors into action.

Soviet hard-liners mounted an unsuccessful coup against Gorbachev in a last-ditch effort to maintain the empire stitched together by Lenin and Stalin. During the initial phase of the coup, the US was not sure who controlled the Soviet nuclear arsenal: Gorbachev, coup leaders, or the Soviet General Staff. "The abortive coup in Moscow in August 1991 ... caused alarms about the strength of central control over nuclear weapons inside the Soviet Union," wrote Congressional Research Service nuclear expert Amy F. Woolf in a February 2011 report on nonstrategic nuclear weapons.

While still on summer vacation at his Kennebunkport, Maine, compound, Bush ordered aides to begin drawing up a new disarmament proposal. By nature, Bush was a methodical chief executive, a "wouldn't be prudent" President, in comedian Dana Carvey's famous parody. But this was a time to move quickly. Negotiating a treaty would take too long. What mix of unilateral US moves might lure Gorbachev into reciprocal action?

The answer was the PNIs.

Though many of the ideas included in Bush's initiatives previously were the subject of interagency discussion, the final package was pulled together in about three weeks. "The US initiative was not contingent on a Soviet response, and the Bush Administration did not consult with Soviet leadership prior to its public announcement, but many hoped that the US initiative would provide President Gorbachev with the incentive to take similar steps to withdraw and eliminate many of his nation's nonstrategic nuclear weapons," writes Woolf.

End of a 35-Year Era

As analysts noted at the time, in a broad sense Bush's initiative was an attempt to bring arms control into a new era. The central nuclear threat to the US was rapidly becoming "loose nukes," as opposed to war. The need to deter the USSR was being replaced by the need to dissuade a Soviet successor state from continuing the arms race, as an attempt at political gain.

In an immediate, practical sense the PNIs were designed as an offer Gorbachev would find difficult to refuse. They were an opportunity for the last leader of the USSR and the new leader of the Russian Federation, Boris Yeltsin, to do something in the best interests of their citizens: Lower tensions while cutting back on military spending.

Gorbachev's reply came on Oct. 5, 1991. The Soviet Union would destroy all nuclear artillery ammunition and warheads for tactical missiles, remove warheads for nuclear anti-aircraft missiles and destroy some, destroy all nuclear land mines, and remove all naval tactical nukes from subs and surface ships. On strategic weapons, Gorbachev's moves included a pledge to stop building new mobile launchers for ICBMs, and to stop deploying existing rail-mobile missiles.

As was the case with Bush, the Soviet leader likely was offering up many things Soviet officials had discussed for some time. By USSR standards, however, the reply still came at lightning speed. "It is possible that President Gorbachev compiled his list of measures in the 10 days between the speech by President Bush and his response," wrote Woolf in a 2001 CRS study of unilateral versus bilateral approaches to arms control.

Gorbachev had other weighty matters on his mind at the time. Following the failed coup, the USSR hurtled toward dissolution. Throughout the fall, the Soviet Union became increasingly hollow as individual republics declared their independence. In the early evening of Dec. 25, Gorbachev resigned his office, declared it extinct, and passed on all his remaining powers to Russian leader Yeltsin.

Still, the reverse arms race continued. A few weeks later, Yeltsin asserted Russia's status as the Soviet Union's legal successor in terms of international agreements. He pledged Russian policy would be to eliminate nuclear weapons "gradually on a parity basis," and said he would continue and expand Gorbachev's recent reduction pledges.

On Jan. 28, 1992, President Bush weighed in with an addendum to his previous initiatives. In his State of the Union address Bush noted that for the first time in 35 years US bombers were not on a round-the-clock alert to respond to a possible nuclear attack. He added that the US would shut down production of the B-2 bomber following the purchase of 20 aircraft, would cease production of new warheads for sea-based Trident missiles, and end production of advanced cruise missiles, among other unilateral moves. Bush also offered to agree with Russia to ban multiple-warhead land-based missiles—a proposal which would lie at the heart of the START II arms accord he and Yeltsin would sign a year later. "The biggest thing that has happened in the world in my life, in our lives, is this: By the grace of God, America won the Cold War," said Bush.

The pledges stemming from the Presidential Nuclear Initiatives were just that—pledges. They did not have the time frames or verification procedures that generally accompany bilateral agree-

Without a treaty, Bush ordered US nuclear bombers off alert. Here, B-52s lie destroyed at Davis-Monthan AFB, Ariz. Several hundred chopped-up B-52s were left in place for months, so that Russian satellites could photograph them.

Photo by Richard Vandervord

ments. Still, the US implemented them fairly quickly.

It took only a few days or weeks to remove bombers and ICBMs from alert status, as promised. Nonstrategic nuclear weapons were removed from bases in South Korea by the end of 1991, and from bases in Europe by mid-1992. The Navy withdrew their corresponding weapons from ships, submarines, and forward bases by mid-1992. The actual dismantlement of warheads took much of the 1990s to complete for some weapons. This was due to the limited capacity of the Pantex plant in Texas, the only US site where the process occurs.

As for Soviet and Russian action, most nonstrategic nuclear weapons appear to have been withdrawn from Eastern Europe and the Transcaucasus prior to Gorbachev's 1991 announcement. They were out of Ukraine and Belarus by spring 1992. Their status on Russian territory itself is less certain. By some reports, some systems were not withdrawn until 1996 or 1997. "It appears Russia was not as quick as the United States to remove TNWs [theater nuclear weapons] from deployment," wrote nuclear expert Joshua Handler in a report on TNW disposition prepared for a 2001 UN conference.

In terms of destruction of the weapons, Russia provided far less information than the United States. Russian officials at the Nuclear Nonproliferation Treaty review conference in 2000 pledged that the dismantlement process would be finished that year, but there has been no confirmation this occurred. "Some analysts and experts in the United States have expressed concerns about the slow pace of eliminations in Russia," wrote CRS' Woolf in her 2011 report on nonstrategic nukes. "They note that the continuing existence of these warheads, along with the increasing reliance on nuclear weapons in Russia's national security strategy, indicate that Russia may reverse its pledges and reintroduce nonstrategic nuclear weapons into its deployed forces."

Trust, Don't Verify

It is also possible Russia simply does not have the money to spare to finish this effort or may be waiting to coordinate it with retirements of older strategic weapons. Uncertainty as to Russian compliance with its 1991 pledges points out one of the weaknesses of unilateral arms cuts—they're difficult to monitor. Since they are not binding in terms of international law, there is also always a possibility for a destabilizing reversal of course.

However, given that nations are unlikely to pursue such reductions except in the context of relatively good relations, these flaws may not matter much. So far, this appears to be the case with the PNI-inspired process. Russia and the US still have some profound geopolitical differences, but there is little indication any new Cold War is on the horizon.

Meanwhile, Bush's bold stroke demonstrates one of the strengths of such an approach: They can allow for sweeping change in a short period of time. The traditional bilateral START took nearly a decade to complete, from proposal to signing. Bush's PNI went from a theory to reality in less than a month.

The success of the PNIs can be seen in the fact that their architect's son, President George W. Bush, modeled his own approach to strategic arms on them.

The George W. Bush Administration proposed the US and Russia reduce their long-range nuclear warheads to between 1,700 and 2,200 apiece without dependence on a formal treaty. At Russian insistence, the US eventually agreed to put this arrangement on paper. In 2002, Bush and Russian President Vladimir Putin signed the Treaty of Moscow, a short, flexible document that codified the reduction pledge, but contained no verification provisions.

It was superseded by the New START pact, a more traditional treaty, which took effect in February 2011. ■

Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, i*s a longtime defense correspondent and a contributing editor to* Air Force *Magazine. His most recent article, "Alison," appeared in August.*

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An *Air Force* Magazine Directory
By June Lee, Editorial Associate

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Davis-Monthan AFB, Ariz.

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Air Force Operational Test & Evaluation Center
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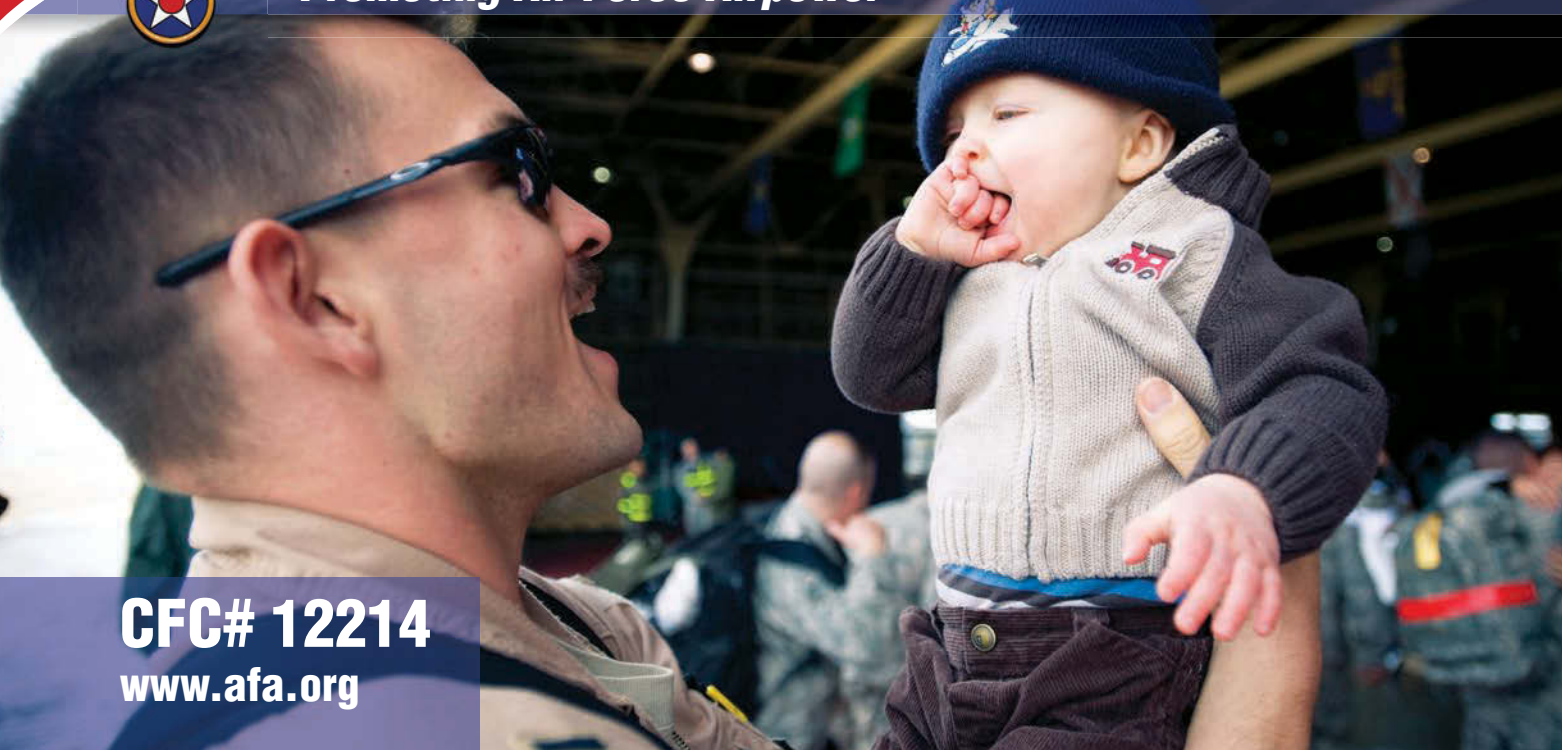

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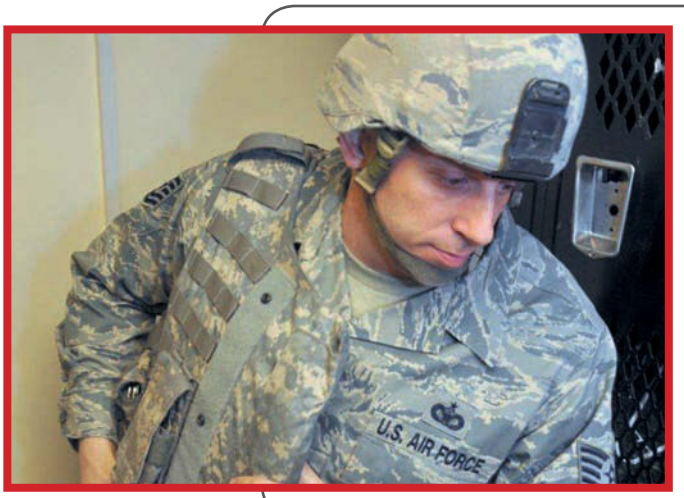
OUTSTANDING AIRMEN OF THE YEAR

SSGT. JORDAN S. BISHOPP
Explosive Ordnance Disposal Craftsman, 377th EOD Flight
377th Air Base Wing (Air Force Materiel Command)
Kirtland AFB, N.M.
Home of Record: Watseka, Ill.

On his third deployment, this one to Afghanistan, Bishopp completed more than 120 combat missions, neutralizing 46 improvised explosive devices. He analyzed 12 post-blast IED attacks, helping improve operations, and he collected and catalogued more than 500 post-attack IED items, providing evidence instrumental in the capture of at least three enemy IED bombers. Over three deployments, he completed more than 400 missions, countering 200 IEDs, and received the Bronze Star Medal, Army Commendation Medal with one oak leaf cluster, and the Joint Service Achievement Medal. One of his commanders calls him "the complete package," who shows superior job knowledge and leadership, particularly in mentoring younger airmen.

TSGT. RICARDO A. CHAVEZ
Military Training Instructor, 433rd Training Squadron
433rd Airlift Wing (Air Force Reserve Command)
Lackland AFB, Tex. (Part of Joint Base San Antonio)
Home of Record: El Paso, Tex.

Chavez began his Air Force career as a security forces specialist, including serving as an undercover agent for a joint drug enforcement team, before switching to the Reserve and cross-training as a military training instructor. Chavez has the Master MTI Blue Rope Award and is among USAF's top MTIs. He is considered a BEAST master—training recruits in basic combat skills and improving courseware in USAF's new Basic Expeditionary Airman Skills Training program. He has improved the MTI process, cutting class prep time by 26 percent and equipment errors by 42 percent. Chavez also serves as an MTI training manager, providing orientation and ensuring compliance for newly assigned instructors.



TSGT. DUSTIN K. GOODWIN
Flight Chief, 48th Security Forces Squadron
48th Fighter Wing (US Air Forces in Europe)
RAF Lakenheath, UK
Home of Record: Forbestown, Calif.

Goodwin has deployed twice to both Iraq and Afghanistan. Recently in Afghanistan, in a three-hour-long attack against his facility, he engaged 20 enemy fighters and killed three himself—at one point shunning full cover to take out two insurgents who were throwing grenades. He received a Bronze Star Medal and Air Force Combat Action Medal. He also responded outside the wire to 13 enemy rocket attacks, receiving an Army Combat Action Badge. Goodwin helped foil an espionage plot and organized transfer of a high-value-target prisoner, receiving State Department praise. He also worked with the Army's Criminal Investigation Division and US Secret Service to help defuse a potential threat to the President.

The Air Force Outstanding Airman program annually recognizes 12 enlisted members for superior leadership, job performance, community involvement, and personal achievements.

The program was initiated at the Air Force Association's 10th annual National Convention, held in New Orleans in 1956. The selection board comprises the Chief Master Sergeant of the Air Force and the command chief master sergeants from each USAF major command. The selections are reviewed by the Air Force Chief of Staff.

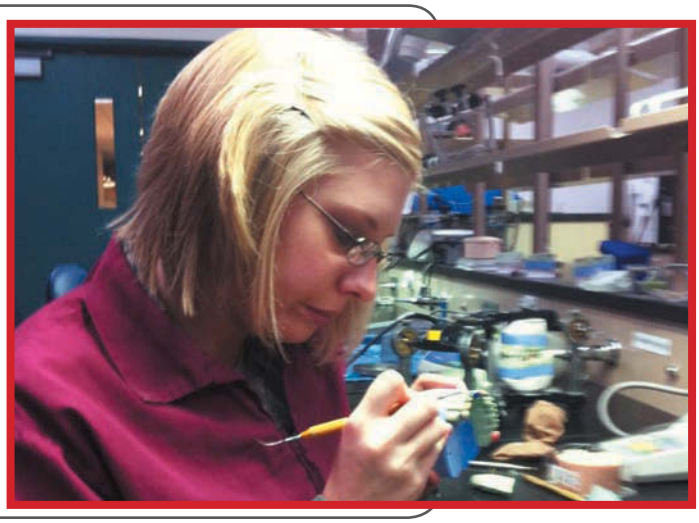
The 12 selectees are awarded the Outstanding Airman of the Year Ribbon with the bronze service star device and wear the Outstanding Airman badge for one year.

SMSGT. PATRICK D. JONES
Operations Flight Superintendent, 375th Civil Engineer Squadron
375th Air Mobility Wing (Air Mobility Command)
Scott AFB, Ill.
Home of Record: Shreveport, La.

Jones, who helps manage 250 multiskilled military and civilian engineers, was named best AMC superintendent and led his squadron to best in AMC. USAF benchmarked his work to develop a $15 million 24-mile pipe repair plan. He anchored the wing's Air Traffic System Evaluation Program, receiving AMC inspector general praise for "best to date" preparation. His effort during a major snow recovery operation ensured uninterrupted Tanker Airlift Control Center operations during Haiti earthquake relief activity. He also saved USAF some $2 million by enlisting Reserve help in repairing and converting 85 housing units to transient living facility quarters.

SRA. NORA L. LIMJOCO
Dental Lab Journeyman, 30th Medical Operations Squadron
30th Space Wing (Air Force Space Command)
Vandenberg AFB, Calif.
Home of Record: Bossier City, La.

Limjoco has "definitely raised the bar," according to one supervisor. In addition to excelling at her primary work, designing and fabricating dental prostheses, she directs the wing's Basic Life Support program, oversees the Precious Metals program, and is a member of the 30th Medical Group security team. As part of the BLS program, Limjoco has certified more than 3,000 base personnel, greatly improving wing emergency readiness. She led a five-person lab during the NCOIC's six-month absence and is rated No. 1 among five lab personnel by providers. Her efforts to develop a dental lab case log and initiate product timeline comment codes were lauded by Air Force Medical Operations Agency officials.



SMSGT. KATHLEEN M. McCOOL
Superintendent, Recruiter Screening Team
Air Force Recruiting Service (Air Education and Training Command)
Randolph AFB, Tex.
Home of Record: Tucson, Ariz.

McCool transitioned from health services management to military training instructor, achieving a Master MTI Blue Rope Award, before volunteering for recruiting and becoming one of the top 12 recruiters in the nation. She took her enlisted accessions production flight from bottom to first place among 189 AFRS production flights. She revamped the new recruiter assignment process, reducing screening time by 5,000 hours per year. She spearheaded AETC's special duty briefing team, increasing recruiter duty applications by 300 percent, and her mentoring skill enabled a new recruiter to earn top rookie honors in 2010. She also led recruiter hiring, securing high caliber personnel with a 96 percent successful recruiter schoolhouse graduation rate.

SMSGT. DAVID L. NEWMAN
Superintendent, Knowledge Operations Management, J3
US Strategic Command
Offutt AFB, Neb.
Home of Record: Port Hueneme, Calif.

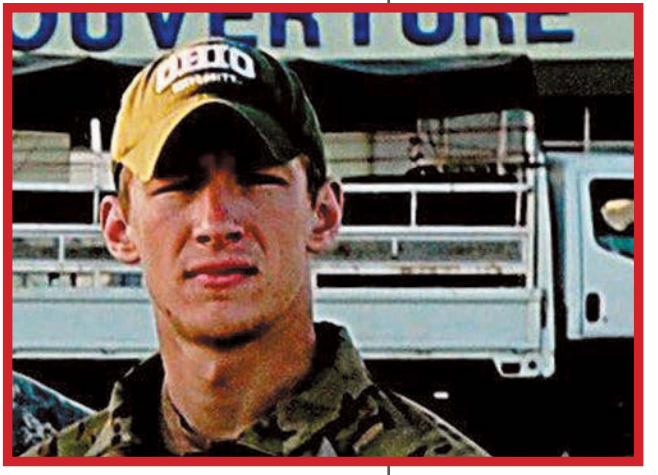
Newman orchestrated more than 1,800 taskings related to nuclear command and control policy and forecast more than 50 nuclear inspections across five platforms, helping revive NC2 accountability. He received a Joint Service Achievement Medal for leading the response team when USSTRATCOM headquarters flooded. Among other accomplishments, he spearheaded a two-day Combatant Commander Liaison Officer conference; revamped an evaluation program, improving quality and timeliness; led J3 implementation of DOD's Translingual Instant Messaging (TrIM) initiative; and worked with several Army and Air Force inspectors general on employing Defense Connect Online to capture testimony to save money and expedite investigations.

SSGT. JOHN C. NORRIS
Tactical Air Control Party, 148th Air Support Operations Squadron
193rd Special Operations Wing (Air National Guard)
Fort Indiantown Gap, Pa.
Home of Record: Oklahoma City

Norris served as a tactical air control party member on three deployments before leaving active duty to enroll full-time in college and join the Air National Guard. Before a recent deployment to Afghanistan, he created realistic training scenarios that increased TACP situational awareness and response times and successfully indoctrinated inexperienced airmen for combat operations. On deployment, he charged into enemy fire, rescuing two wounded soldiers, and then directed lethal fire from two Apache helicopters while ordering evacuation of the wounded. His Army commander has nominated him for a Bronze Star Medal with Valor Device. He also controlled 120 close air support strikes and conducted more than 100 combat patrols, receiving the Army Commendation Medal with Valor Device.

SRA. DANIEL T. SKIDMORE
Combat Control Journeyman, 21st Special Tactics Squadron
720th Special Tactics Group (Air Force Special Operations Command)
Pope Field, N.C.
Home of Record: Houghton, Mich.

Skidmore was among the first airmen in Haiti, deploying just 26 hours after the earthquake struck and quickly working to set up airfield operations. He and five other combat controllers ran the international airport out of rucksacks, averaging takeoffs and landings every five minutes for more than 4,100 sorties with no mishaps. Skidmore personally marshaled more than 100 aircraft and worked with Haiti air traffic personnel and Miami Center. He also helped rescue several American citizens. At his home base, he briefed a Senate delegation on ground operations in Haiti. In a recent deployment to Afghanistan, he participated in 60 combat missions and three firefights. In one ambush with his team pinned down, he returned fire while calling in close air support, successfully directing USAF F-15E fighters and Army AH-64 helicopters on precision strikes. He also organized and led CAS training for Army Special Forces.



SRA. ULLA B. STROMBERG

Medical Technician Journeyman, 99th Medical Operations Squadron
99th Air Base Wing (Air Combat Command)
Nellis AFB, Nev.
Home of Record: Manhattan, Kan.

Stromberg was selected for below-the-zone promotion and is a recipient of the Nellis Air Force Base Chief's "excellence in action" award. At Nellis, she provided care to 400 patients per month, attaining 111 percent of her goal, and assisted with 161 readiness reviews, helping assure wing medical readiness at more than 97 percent and achieve an excellent rating on the wing operational readiness inspection. She also was an Honor Guard trainer and ACC's Honor Guardsman of the Year. On deployment to Afghanistan, she aided 1,200 patients and 500 aeromedical evacuations—earning an "excellent care" comment and coin from an Army commander and an Army Achievement Medal. She also performed CPR on a Taliban officer in cardiac arrest, saving his life and preserving an intelligence source.

SRA. RAVEN S. TAYLOR

Medical Technician Journeyman, 354th Medical Operations Squadron
354th Fighter Wing (Pacific Air Forces)
Eielson AFB, Alaska
Home of Record: Waycross, Ga.

Taylor has often been called to fill in for more senior NCOs. She trained three sections in instrument sterilization procedures, ensuring wartime skills certification. She saved valuable time for nurses by contacting 600 patients about lab results. Taylor also revamped the infection control program, ensuring zero acquired infections over 18,000 patient visits. She oversaw 650 preventive health assessments during a 50 percent manning shortage to sustain the wing's medical readiness. She assisted with 20 minor surgeries, averting costly referrals. She led the medical screenings process, personally handling 2,000 patients, and achieved overall a 98 percent access rate. She also built minor surgical kits, enabling 60 new procedures and decreasing appointment times by 20 percent.

TSGT. BRADLEY A. WILLIAMS

Vehicle Operations Supervisor, 5th Logistics Readiness Squadron
5th Bomb Wing (Air Force Global Strike Command)
Minot AFB, N.D.
Home of Record: Elkhart, Ind.

Serving with an Army medium truck detachment on deployment, Williams participated in 200 missions, encountering 300 insurgent attacks. He led 17 convoys, providing critical supplies to 23 forward operating bases. He protected six convoys by rerouting them and coordinating with a quick reaction force after identifying vehicle-borne improvised explosive devices. He thwarted a small-arms attack. He conducted in-theater training, leading 25 premission convoy briefs and reinforcing combat skills for dozens of airmen and soldiers. He was among first responders on a major accident and coordinated life-saving medical evacuation. His feedback at the career field manager deployment after-action conference prompted USAF to change its convoy training standards. He received a Bronze Star Medal for his efforts while deployed. At Minot, as acting first sergeant, he personally counseled airmen on numerous financial and family problems.

Yuri Gagarin and Alan Shepard were the first men in space, but Ham got there ahead of them.

The Astrochimps

By John T. Correll

Just before noon on Jan. 31, 1961, the Redstone rocket carrying the Mercury space capsule rose from Cape Canaveral, Fla. A few minutes later, the capsule broke free and climbed toward its apogee of 157 miles.

Inside, cool as a cucumber and performing his duties perfectly, was a 37-pound chimpanzee known previously as Chop Chop Chang or simply Number 65. On this mission, he would earn his new name, Ham, derived from an acronym of his home unit, the Holloman Aeromedical Laboratory in New Mexico.

Animals, notably monkeys and dogs, had been shot into space before, but always as inactive passengers. Ham's flight was more than that. He had things to do and levers to push—more than 50 actions to perform during his suborbital trip. During his 16.5-minute flight, Ham experienced 6.6 minutes of weightlessness and pressures equal to 14.7 times the force of gravity, but his response times were as good as they were on Earth.

Through no fault of Ham's, the capsule overshot its planned trajectory. It splashed down in the Atlantic Ocean 422 miles from Cape Canaveral. The capsule was damaged in the landing and began to sink, but a Navy helicopter arrived soon and rescued Ham. Aboard the recovery ship USS *Donner,* Ham shook hands with the captain and ate an apple and half an orange. Ham had demonstrated he could function in space. It was up to humans to prove they could do as well.

On April 12 (71 days after Ham's flight), Soviet cosmonaut Yuri Gagarin, the first man in space, made a full orbit of Earth in Vostok 1. On May 5 (94 days after Ham), Alan Shepard became the first American astronaut in space. His suborbital flight in Freedom 7 used the Redstone rocket and Mercury capsule

Chimpanzee No. 65, subsequently known as Ham, settles into his form-fitting "couch" before being launched on his suborbital flight. At left is his handler, MSgt. Edward Dittmer.

NASA photos

validated by Ham. Fifty years later Ham is remembered—with the possible exception of Cheeta in the Tarzan movies—as the most famous chimpanzee of all time.

Animals in Space

In the postwar period, the United States and Soviet Union conducted numerous experiments with animals carried aboard rockets. Subjects included monkeys, mice, dogs, and in at least one instance, fruit flies. The first primate in space was Albert, a rhesus monkey who rode a US-launched V-2 rocket to an altitude of 39 miles in June 1948.

As the prospect of human spaceflight drew near, the need for testing increased. Little was known about the effects and stresses of weightlessness and high G forces, and whether astronauts could function—or even survive—in the environment of space.

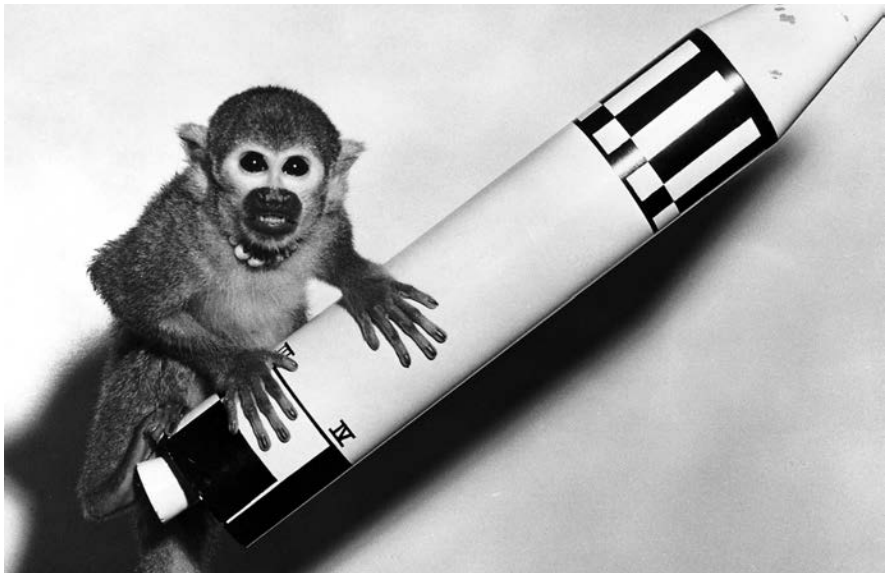
"Before a man is lifted into space, we must learn whether an animal in space can perform tasks that it has learned on the ground," an Air Force spokesman said. "If the animal's sensory or motor abilities are impaired so it cannot perform these tasks, we must assume that a man suffering the same impairment will be ineffective as a monitor of dials or a reporter of information."

Holloman Air Force Base, near Alamogordo, N.M., was one of the main sites for research about problems pilots could encounter in high-altitude aircraft and spacecraft. Animal rights activists today cite the risks and the high mortality rate for early test animals. However, the knowledge was so critical that humans took extraordinary risks, too. Col. John P. Stapp, head of the aeromedical laboratory at Holloman in the late 1950s, personally made 29 rocket sled runs, including one on Dec. 10, 1954, during which he accelerated to 632 mph and stopped in 1.4 seconds, subjecting himself to more than 42 times the force of gravity.

Project Mercury, the US human spaceflight program, conducted tests in two phases, beginning with small primates and progressing to experiments with

***Below: The capsule containing Ham on liftoff from Cape Canaveral, Fla. Monkeys had flown into space before, but never higher-order primates. Left: Ham "shakes hands" with the captain of the recovery ship USS* Donner.**

NASA photos



Miss Baker, a squirrel monkey, poses with a model of the Jupiter missile that carried her to an altitude of 300 miles. Some visitors leave bananas instead of flowers at her grave in Huntsville, Ala.

chimpanzees, whose metabolic and physical similarities to humans were greater. Public interest was considerable, and some of the animals became celebrities.

In May 1959, a rhesus monkey named Able and a tiny squirrel monkey named Baker rode in the nose cone of a Jupiter missile to an altitude of 300 miles. Baker, aka Miss Baker, weighed only 11 ounces. Her space capsule was the size of a large thermos bottle.

The two monkeys appeared at a press conference, munching peanuts and crackers, and were featured on the cover of *Life* magazine. Able died a few days later during a medical procedure to remove an electrode, but Baker lived another 25 years, mostly at the US Space and Rocket Center in Huntsville, Ala. Baker received 100 to 150 letters a day from schoolchildren who read about her. More than 300 people attended her funeral in 1984. Her gravestone at the entrance to the Rocket Center reads: "Miss Baker, squirrel monkey, first US animal to fly in space and return alive. May 28, 1959." Sometimes visitors leave bananas instead of flowers.

Another rhesus monkey, Sam (named for USAF's School of Aerospace Medicine), made national headlines in December 1959 when he survived the deliberate abort and premature separation of a Mercury capsule from the rocket in a test of the launch escape system.

Banana Pellets

The "Chimp in Space" project began at Holloman in 1958 to test the life support systems of Mercury spacecraft as well as the effects of spaceflight.

There were 65 chimpanzees at Holloman, and the 6571st Aeromedical Research Laboratory was assigned to train them, prepare them for flight, and handle them after recovery. MSgt. Edward C. Dittmer was the longtime noncommissioned officer in charge of training for the chimpanzees who were candidates for space travel. He was also the handler for the two chimps who eventually flew in space, Ham and Enos.

The space chimps began their training in the spring of 1959, at the same time as Mercury astronauts. "Eventually one of the beasts would be chosen for what amounted to a dress rehearsal of the first manned flight," Tom Wolfe said in his chronicle of the early astronauts, *The Right Stuff.*

The chimps got plenty of cuddling and attention from human attendants. "They are taught to wear carefully fitted space suits and to tolerate being strapped for long periods on softly padded contour couches," *Time* magazine reported. "They are taken up in stunting aircraft to get accustomed to sudden noise, vibration and G forces, and to learn what weightlessness feels like."

They were trained by operant conditioning. The control panels of their trainers had two levers and two lights. The task was to pull the right-hand lever when the white light came on and the left lever in response to the blue light. When they did it right, a banana-flavored pellet was dispensed as a reward. When they did it wrong, they got a mild electric shock to the bottoms of their feet. During the actual spaceflight, how well they worked the levers would test the capability to perform and operate in space under conditions of weightlessness and high G forces.

The chimpanzees were more skillful than humans in working with the lights and levers in the capsule mockup. According to *Life,* "One female chimp learned to work the levers with her feet and kept her hands free to grab pellets."

Ham, Minnie, and Enos

In January 1961, six chimps (four female, two male) and their handlers moved from Holloman to Cape Canaveral and into a compound behind "Hangar S." They worked out on their Mercury capsule trainers and awaited the first mission, which was scheduled for Jan. 31.

It was not until the night before that Project Mercury officials chose Chop Chop Chang (Ham)—who was "exceptionally frisky and in good humor"—to fly the mission and picked a female chimpanzee named Minnie as his backup. Ham was born in Cameroon in West Africa in July 1957 and was brought to Holloman in 1959. He was affectionate and cuddly. "He'd put his arm around me and he'd play, you know," Dittmer said. "He was a well-tempered chimp."

Ham's mission down the Atlantic Test Range was designated Mercury-Redstone 2. Ham returned to the Cape as a candidate for the second chimp

Right: Enos, the second chimp in space, was less friendly than Ham (note wrist tethers). He was an exceptional spacefarer, though, and continued to pull levers correctly despite a malfunction in his capsule's control system that delivered mild shocks to his feet.

mission into space, Mercury-Atlas 5, on Nov. 29, 1961, but his spacefaring days were over.

The chimp-onaut for the second mission was Enos, aka Number 85, who was regarded as the brightest and quickest member of the chimp colony. Like Ham, he was born in Cameroon and came to Holloman in April 1960.

But unlike Ham, he was not friendly or cuddly. He was quick to bite. "Enos was a good chimp," said Dittmer. "He was smart but he didn't take to people, very little. They said he was a mean chimp, but he wasn't really mean. He just didn't take to cuddling."

Enos was a little older and a little larger than Ham was at the time of the first flight, and since his mission was more complex, his training was more intensive. He had undergone 1,263 hours of training, 343 of them in the Mercury capsule simulator. At 10:07 a.m. on Nov. 29, the Atlas missile booster lifted Enos and the Mercury capsule from the Cape for what was intended to be three orbits of the Earth.

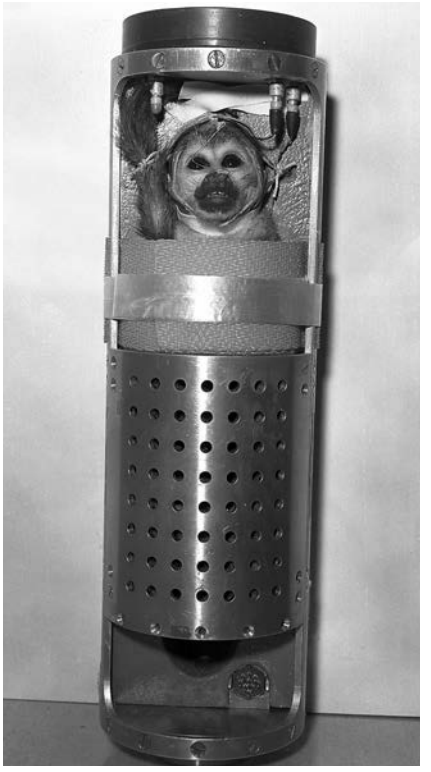
Whatever Enos lacked in warmth, he more than made up for in operational ability. He was the epitome of the "Right Stuff." Shortly into the flight, the lever for the motor skills testing malfunctioned. No matter how Enos performed his tasks, he got a shock to the bottoms of his feet. That did not hamper him. He continued to pull his levers correctly.

The mission was terminated after two orbits, not because of anything Enos did wrong but as the result of an attitude control system malfunction. The capsule splashed down off Puerto Rico following a flight of three hours and 21 minutes.

Enos blazed the way for John Glenn's Friendship 7 orbital flight Feb. 20, 1962. When Glenn later met the President's four-year-old daughter, Caroline Kennedy, in Washington, her first question was, "Where's the monkey?"

Data recorded from the missions found that pulse and respiration rates and blood pressures for Ham and Enos were unexceptional during their flights and that performance of their tasks "was unaffected by the weightless state."

Not that either Ham or Enos liked spaceflight. After Ham's mission, the press wanted more photos of him in his contour couch, but he resisted being strapped back into it and no amount of urging could persuade him otherwise. When the capsule was opened on the second mission, Enos ran out and jumped into Dittmer's arms, making an exception to his no-cuddling rule.



Miss Baker, all 11 ounces of her, in her bio-pack being readied for her Jupiter mission. The capsule was the size of a thermos.

Ham returned to Holloman where he was kept under careful observation for any developing indications of ill effects from spaceflight. In 1963, he moved to the National Zoo for a long stay as the resident celebrity. Visitors usually found him genial and in good temper. When groups of schoolchildren came to see him, Ham would step to the front of his cage and listen with attention to what the teacher escorts had to say. He grew taller and gained weight, none of it fat, during his time in Washington.

In September 1980, he moved to the North Carolina Zoological Park in Asheboro, where he socialized with other chimps and found a girlfriend. Ham died Jan. 19, 1983, at age 26. His skeleton was preserved for ongoing examination by the Armed Forces Institute of Pathology, but his other remains were laid to rest in front of the flagpole at the International Space Hall of Fame and the New Mexico Museum of Space History in Alamogordo.

Minnie died in 1998 at age 41, having given birth to nine offspring. Enos died Nov. 4, 1962, of dysentery, not related to the space program. The disposition of Minnie's and Enos' remains is unknown.

Retirement was less auspicious for the rest of the Project Mercury chimpanzees. By the 1970s, they were no longer needed for the space program and many of them became subjects for medical research. In 1998, the Air Force divested itself of the chimpanzee colony. Of the 141 chimps then at Holloman, 30 went to the Primarily Primates sanctuary in San Antonio and the others were taken over by a private biomedical testing organization that assumed control of the facility at the base. In 1999, another 21 of the chimps moved from Holloman to the Save the Chimps sanctuary in Florida.

The National Institutes of Health took over ownership of the Holloman chimps in 2000 and established the Alamogordo Primate Facility, located on the base, in 2001. Currently, 186 chimps are there. They have not been research subjects since 1995. NIH planned to allow medical research to resume, but has backed down—at least for now—under pressure from animal rights activists, including the world's leading authority on chimpanzees, Jane Goodall.

Space Pioneers Not Forgotten

In April 2009, Scott Carpenter, one of the original Mercury astronauts, and Robert Crippen, commander of the first space shuttle mission, toured the Save the Chimps sanctuary near Fort Pierce, Fla. The 286 chimpanzees residing there include some descendants of the Holloman chimp-onauts, among them Li'l Mini, youngest offspring of Minnie, who was Ham's understudy for the first mission.

At the 150-acre park, the chimps cavorted on ropes and swings and lounged about eating popsicles. As Carpenter and Crippen drove through in golf carts, the chimps jumped and screamed and amused themselves by spitting water on anyone who got too close.

"There were a lot of unknowns back in the '50s about how the human body would react to space and some real bad concerns that you might die," Crippen said. "And these guys opened that up to at least give people confidence that it was OK to put Al Shepard and the guys up for the first time."

"I have great respect for space travelers more senior than I, and I have great respect for the species that did it first," Carpenter said. ■

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributing editor. His most recent article, "Near Failure at Nagasaki," appeared in the July issue.*

AFA Almanac

By Frances McKenney, Assistant Managing Editor

Chapters of the Year

Year	Recipient(s)
1953	San Francisco Chapter
1954	Santa Monica Area Chapter (Calif.)
1955	San Fernando Valley Chapter (Calif.)
1956	Utah State AFA
1957	H. H. Arnold Chapter (N.Y.)
1958	San Diego Chapter
1959	Cleveland Chapter
1960	San Diego Chapter
1961	Chico Chapter (Calif.)
1962	Fort Worth Chapter (Tex.)
1963	Colin P. Kelly Chapter (N.Y.)
1964	Utah State AFA
1965	Idaho State AFA
1966	New York State AFA
1967	Utah State AFA
1968	Utah State AFA
1969	*(no presentation)*
1970	Georgia State AFA
1971	Middle Georgia Chapter
1972	Utah State AFA
1973	Langley Chapter (Va.)
1974	Texas State AFA
1975	Alamo Chapter (Tex.) and San Bernardino Area Chapter (Calif.)
1976	Scott Memorial Chapter (Ill.)
1977	Thomas B. McGuire Jr. Chapter (N.J.)
1978	Thomas B. McGuire Jr. Chapter (N.J.)
1979	Brig. Gen. Robert F. Travis Chapter (Calif.)
1980	Central Oklahoma (Gerrity) Chapter
1981	Alamo Chapter (Tex.)
1982	Chicagoland-O'Hare Chapter (Ill.)
1983	Charles A. Lindbergh Chapter (Conn.)
1984	Scott Memorial Chapter (Ill.) and Colorado Springs/Lance Sijan Chapter (Colo.)
1985	Cape Canaveral Chapter (Fla.)
1986	Charles A. Lindbergh Chapter (Conn.)
1987	Carl Vinson Memorial Chapter (Ga.)
1988	Gen. David C. Jones Chapter (N.D.)
1989	Thomas B. McGuire Jr. Chapter (N.J.)
1990	Gen. E. W. Rawlings Chapter (Minn.)
1991	Paul Revere Chapter (Mass.)
1992	Central Florida Chapter and Langley Chapter (Va.)
1993	Green Valley Chapter (Ariz.)
1994	Langley Chapter (Va.)
1995	Baton Rouge Chapter (La.)
1996	Montgomery Chapter (Ala.)
1997	Central Florida Chapter
1998	Ark-La-Tex Chapter (La.)
1999	Hurlburt Chapter (Fla.)
2000	Wright Memorial Chapter (Ohio)
2001	Lance P. Sijan Chapter (Colo.)
2002	Eglin Chapter (Fla.)
2003	Hurlburt Chapter (Fla.)
2004	Carl Vinson Memorial Chapter (Ga.)
2005	Central Florida Chapter
2006	Enid Chapter (Okla.)
2007	Central Oklahoma (Gerrity) Chapter
2008	Lance P. Sijan Chapter (Colo.)
2009	Paul Revere Chapter (Mass.)
2010	C. Farinha Gold Rush Chapter (Calif.)
2011	Lance P. Sijan Chapter (Colo.)

AFA Member of the Year Award Recipients

State names refer to recipient's home state at the time of the award.

Year	Recipient(s)
1953	Julian B. Rosenthal (N.Y.)
1954	George A. Anderl (Ill.)
1955	Arthur C. Storz (Neb.)
1956	Thos. F. Stack (Calif.)
1957	George D. Hardy (Md.)
1958	Jack B. Gross (Pa.)
1959	Carl J. Long (Pa.)
1960	O. Donald Olson (Colo.)
1961	Robert P. Stewart (Utah)
1962	*(no presentation)*
1963	N. W. DeBerardinis (La.) and Joe L. Shosid (Tex.)
1964	Maxwell A. Kriendler (N.Y.)
1965	Milton Caniff (N.Y.)
1966	William W. Spruance (Del.)
1967	Sam E. Keith Jr. (Tex.)
1968	Marjorie O. Hunt (Mich.)
1969	*(no presentation)*
1970	Lester C. Curl (Fla.)
1971	Paul W. Gaillard (Neb.)
1972	J. Raymond Bell (N.Y.) and Martin H. Harris (Fla.)
1973	Joe Higgins (Calif.)
1974	Howard T. Markey (D.C.)
1975	Martin M. Ostrow (Calif.)
1976	Victor R. Kregel (Tex.)
1977	Edward A. Stearn (Calif.)
1978	William J. Demas (N.J.)
1979	Alexander C. Field Jr. (Ill.)
1980	David C. Noerr (Calif.)
1981	Daniel F. Callahan (Fla.)
1982	Thomas W. Anthony (Md.)
1983	Richard H. Becker (Ill.)
1984	Earl D. Clark Jr. (Kan.)
1985	George H. Chabbott (Del.) and Hugh L. Enyart (Ill.)
1986	John P. E. Kruse (N.J.)
1987	Jack K. Westbrook (Tenn.)
1988	Charles G. Durazo (Va.)
1989	Oliver R. Crawford (Tex.)
1990	Cecil H. Hopper (Ohio)
1991	George M. Douglas (Colo.)
1992	Jack C. Price (Utah)
1993	Lt. Col. James G. Clark (D.C.)
1994	William A. Lafferty (Ariz.)
1995	William N. Webb (Okla.)
1996	Tommy G. Harrison (Fla.)
1997	James M. McCoy (Neb.)
1998	Ivan L. McKinney (La.)
1999	Jack H. Steed (Ga.)
2000	Mary Anne Thompson (Va.)
2001	Charles H. Church Jr. (Kan.)
2002	Thomas J. Kemp (Tex.)
2003	W. Ron Goerges (Ohio)
2004	Doyle E. Larson (Minn.)
2005	Charles A. Nelson (S.D.)
2006	Craig E. Allen (Utah)
2007	William D. Croom Jr. (Tex.)
2008	John J. Politi (Tex.)
2009	David R. Cummock (Fla.)
2010	L. Boyd Anderson (Utah)
2011	Steven R. Lundgren (Alaska)

Profiles of AFA Membership

As of June 2011 (Total 111,479)

41%	One-year members
20%	Three-year members
40%	Life members
15%	Active duty military
51%	Retired military
15%	Former service
5%	Guard and Reserve
5%	No military service
4%	Cadet
2%	Spouse/widow(er)

Of AFA's service members who list their rank:

69% are officers
26% are enlisted

Of AFA's retired military members who list their rank:

63% are officers
28% are enlisted

H. H. Arnold Award Recipients

Named for the World War II leader of the Army Air Forces, the H. H. Arnold Award has been presented annually in recognition of the most outstanding contributions in the field of aerospace activity. Since 1986, the Arnold Award has been AFA's highest honor to a member of the armed forces in the field of national security.

1948	W. Stuart Symington, Secretary of the Air Force
1949	Maj. Gen. William H. Tunner and the men of the Berlin Airlift
1950	Airmen of the United Nations in the Far East
1951	Gen. Curtis E. LeMay and the personnel of Strategic Air Command
1952	Sens. Lyndon B. Johnson and Joseph C. O'Mahoney
1953	Gen. Hoyt S. Vandenberg, former Chief of Staff, USAF
1954	John Foster Dulles, Secretary of State
1955	Gen. Nathan F. Twining, Chief of Staff, USAF
1956	Sen. W. Stuart Symington
1957	Edward P. Curtis, special assistant to the President
1958	Maj. Gen. Bernard A. Schriever, Cmdr., Ballistic Missile Div., ARDC
1959	Gen. Thomas S. Power, CINC, SAC
1960	Gen. Thomas D. White, Chief of Staff, USAF
1961	Lyle S. Garlock, Assistant Secretary of the Air Force
1962	A. C. Dickieson and John R. Pierce, Bell Telephone Laboratories
1963	The 363rd Tactical Recon. Wing and the 4080th Strategic Wing
1964	Gen. Curtis E. LeMay, Chief of Staff, USAF
1965	The 2nd Air Division, PACAF
1966	The 8th, 12th, 355th, 366th, and 388th Tactical Fighter Wings and the 432nd and 460th TRWs
1967	Gen. William W. Momyer, Cmdr., 7th Air Force, PACAF
1968	Col. Frank Borman, USAF; Capt. James Lovell, USN; and Lt. Col. William Anders, USAF, Apollo 8 crew
1969	*(No presentation)*
1970	Apollo 11 team (J. L. Atwood; Lt. Gen. S. C. Phillips, USAF; and astronauts Neil Armstrong and USAF Cols. Buzz Aldrin and Michael Collins)
1971	John S. Foster Jr., Dir. of Defense Research and Engineering
1972	Air units of the Allied Forces in Southeast Asia (Air Force, Navy, Army, Marine Corps, and the Vietnamese Air Force)
1973	Gen. John D. Ryan (Ret.), former Chief of Staff, USAF
1974	Gen. George S. Brown, USAF, Chm., Joint Chiefs of Staff
1975	James R. Schlesinger, Secretary of Defense
1976	Sen. Barry M. Goldwater
1977	Sen. Howard W. Cannon
1978	Gen. Alexander M. Haig Jr., USA, Supreme Allied Commander, Europe
1979	Sen. John C. Stennis
1980	Gen. Richard H. Ellis, USAF, CINC, SAC
1981	Gen. David C. Jones, USAF, Chm., Joint Chiefs of Staff
1982	Gen. Lew Allen Jr. (Ret.), former Chief of Staff, USAF
1983	Ronald W. Reagan, President of the United States
1984	The President's Commission on Strategic Forces (the Scowcroft Commission)
1985	Gen. Bernard W. Rogers, USA, SACEUR
1986	Gen. Charles A. Gabriel (Ret.), former Chief of Staff, USAF
1987	Adm. William J. Crowe Jr., USN, Chm., Joint Chiefs of Staff
1988	Men and women of the Ground-Launched Cruise Missile team
1989	Gen. Larry D. Welch, Chief of Staff, USAF
1990	Gen. John T. Chain, CINC, SAC
1991	Lt. Gen. Charles A. Horner, Cmdr., CENTCOM Air Forces and 9th Air Force
1992	Gen. Colin L. Powell, USA, Chm., Joint Chiefs of Staff
1993	Gen. Merrill A. McPeak, Chief of Staff, USAF
1994	Gen. John Michael Loh, Cmdr., Air Combat Command
1995	World War II Army Air Forces veterans
1996	Gen. Ronald R. Fogleman, Chief of Staff, USAF
1997	Men and women of the United States Air Force
1998	Gen. Richard E. Hawley, Cmdr., ACC
1999	Lt. Gen. Michael C. Short, Cmdr., Allied Air Forces Southern Europe
2000	Gen. Michael E. Ryan, Chief of Staff, USAF
2001	Gen. Joseph W. Ralston, CINC, EUCOM
2002	Gen. Richard B. Myers, USAF, Chm., Joint Chiefs of Staff
2003	Lt. Gen. T. Michael Moseley, Cmdr., air component, CENTCOM, and 9th Air Force
2004	Gen. John P. Jumper, Chief of Staff, USAF
2005	Gen. Gregory S. Martin, Cmdr., AFMC
2006	Gen. Lance W. Lord, Cmdr., AFSPC
2007	Gen. Ronald E. Keys, Cmdr., ACC
2008	Gen. Bruce Carlson, Cmdr., AFMC
2009	Gen. John D. W. Corley, Cmdr., ACC
2010	Lt. Gen. David A. Deptula, USAF Deputy Chief of Staff, ISR
2011	Gen. Duncan J. McNabb, Cmdr., TRANSCOM

John R. Alison Award Recipients

AFA's highest honor for industrial leadership.

1992	Norman R. Augustine, Chairman, Martin Marietta
1993	Daniel M. Tellep, Chm. and CEO, Lockheed
1994	Kent Kresa, CEO, Northrop Grumman
1995	C. Michael Armstrong, Chm. and CEO, Hughes Aircraft
1996	Harry Stonecipher, Pres. and CEO, McDonnell Douglas
1997	Dennis J. Picard, Chm. and CEO, Raytheon
1998	Philip M. Condit, Chm. and CEO, Boeing
1999	Sam B. Williams, Chm. and CEO, Williams International
2000	Simon Ramo and Dean E. Wooldridge, missile pioneers
2001	George David, Chm. and CEO, United Technologies
2002	Sydney Gillibrand, Chm., AMEC; and Jerry Morgensen, Pres. and CEO, Hensel Phelps Construction
2003	Joint Direct Attack Munition Industry Team, Boeing
2004	Thomas J. Cassidy Jr., Pres. and CEO, General Atomics Aeronautical Systems
2005	Richard Branson, Chm., Virgin Atlantic Airways and Virgin Galactic
2006	Ronald D. Sugar, Chm. and CEO, Northrop Grumman
2007	Boeing and Lockheed Martin
2008	Bell Boeing CV-22 Team, Bell Helicopter Textron, and Boeing
2009	General Atomics Aeronautical Systems Inc.
2010	Raytheon
2011	United Launch Alliance

W. Stuart Symington Award Recipients

AFA's highest honor to a civilian in the field of national security, the award is named for the first Secretary of the Air Force.

1986	Caspar W. Weinberger, Secretary of Defense
1987	Edward C. Aldridge Jr., Secretary of the Air Force
1988	George P. Schultz, Secretary of State
1989	Ronald W. Reagan, former President of the United States
1990	John J. Welch, Asst. SECAF (Acquisition)
1991	George Bush, President of the United States
1992	Donald B. Rice, Secretary of the Air Force
1993	Sen. John McCain (R-Ariz.)
1994	Rep. Ike Skelton (D-Mo.)
1995	Sheila E. Widnall, Secretary of the Air Force
1996	Sen. Ted Stevens (R-Alaska)
1997	William Perry, former Secretary of Defense
1998	Rep. Saxby Chambliss (R-Ga.) and Rep. Norman D. Dicks (D-Wash.)
1999	F. Whitten Peters, Secretary of the Air Force
2000	Rep. Floyd Spence (R-S.C.)
2001	Sen. Michael Enzi (R-Wyo.) and Rep. Cliff Stearns (R-Fla.)
2002	Rep. James V. Hansen (R-Utah)
2003	James G. Roche, Secretary of the Air Force
2004	Peter B. Teets, Undersecretary of the Air Force
2005	Rep. Duncan Hunter (R-Calif.)
2007	Michael W. Wynne, Secretary of the Air Force
2008	Gen. Barry R. McCaffrey, USA (Ret.)
2009	Sen. Orrin G. Hatch (R-Utah)
2010	John J. Hamre, Center for Strategic & International Studies
2011	Rep. C. W. "Bill" Young (R-Fla.)

AFA Lifetime Achievement Award Recipients

The award recognizes a lifetime of work in the advancement of aerospace.

2003	Maj. Gen. John R. Alison, USAF (Ret.); Sen. John H. Glenn Jr.; Maj. Gen. Jeanne M. Holm, USAF (Ret.); Col. Charles E. McGee, USAF (Ret.); and Gen. Bernard A. Schriever, USAF (Ret.)
2004	Gen. Russell E. Dougherty, USAF (Ret.), and Florene Miller Watson
2005	Sen. Daniel K. Inouye; William J. Perry; and Patty Wagstaff
2007	CMSAF Paul W. Airey, USAF (Ret.)
2008	Col. George E. Day, USAF (Ret.); Gen. David C. Jones, USAF (Ret.); and Harold Brown
2009	Doolittle Raiders, Tuskegee Airmen, and James R. Schlesinger
2010	Col. Walter J. Boyne, USAF (Ret.); Andrew W. Marshall; Gen. Lawrence A. Skantze, USAF (Ret.); and Women Airforce Service Pilots
2011	Natalie W. Crawford; Lt. Gen. Thomas P. Stafford, USAF (Ret.); Gen. Larry D. Welch, USAF (Ret.); Heavy Bombardment Crews of WWII; and Commando Sabre Operation-Call Sign Misty

Gold Life Member Card Recipients

Awarded to members whose AFA record, production, and accomplishment on a national level have been outstanding over a period of years.

Name	Year	Card No.	Name	Year	Card No.
Gill Robb Wilson	1957	1	Martin H. Harris	1988	11
Jimmy Doolittle	1959	2	Sam E. Keith Jr.	1990	12
Arthur C. Storz Sr.	1961	3	Edward A. Stearn	1992	13
Julian B. Rosenthal	1962	4	Dorothy L. Flanagan	1994	14
Jack B. Gross	1964	5	John O. Gray	1996	15
George D. Hardy	1965	6	Jack C. Price	1997	16
Jess Larson	1967	7	Nathan H. Mazer	2002	17
Robert W. Smart	1968	8	John R. Alison	2004	18
Martin M. Ostrow	1973	9	Donald J. Harlin	2009	19
James H. Straubel	1980	10			

The Twelve Founders

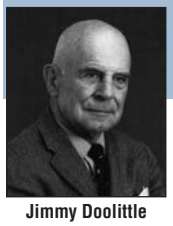
John S. Allard, Bronxville, N.Y.
Everett R. Cook, Memphis, Tenn.
Edward P. Curtis, Rochester, N.Y.
Jimmy Doolittle, Los Angeles
W. Deering Howe, New York
Rufus Rand, Sarasota, Fla.
Sol A. Rosenblatt, New York
Julian B. Rosenthal, New York
James M. Stewart, Beverly Hills, Calif.
Lowell P. Weicker, New York
Cornelius Vanderbilt Whitney, New York
John Hay Whitney, New York

Dottie Flanagan Staff Award of the Year

A donation from the late Jack B. Gross, national director emeritus, enables AFA to honor staff members each quarter. Those members become eligible for the staff award of the year.

1992	Doreatha Major
1993	Jancy Bell
1994	Gilbert Burgess
1995	David Huynh
1996	Sherry Coombs
1997	Katherine DuGarm
1998	Suzann Chapman
1999	Frances McKenney
2000	Ed Cook
2001	Katie Doyle
2002	Jeneathia Wright
2003	Jim Brown
2004	Pearlie Draughn
2005	Ursula Smith
2006	Susan Rubel
2007	Ed Cook
2008	Michael Davis
2009	Chris Saik
2010	Bridget Wagner

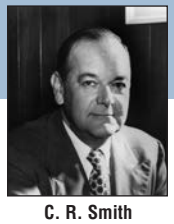
AFA Chairmen of the Board and National Presidents



Jimmy Doolittle
President, 1946-47
Chairman, 1947-49

Edward P. Curtis
Chairman, 1946-47

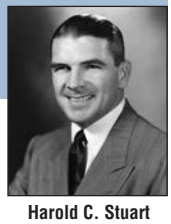
Thomas G. Lanphier Jr.
President, 1947-48
Chairman, 1951-52



C. R. Smith
President, 1948-49
Chairman, 1949-50

Robert S. Johnson
President, 1949-51

Carl A. Spaatz
Chairman, 1950-51



Harold C. Stuart
President, 1951-52
Chairman, 1952-53

Arthur F. Kelly
President, 1952-53
Chairman, 1953-54

George C. Kenney
President, 1953-54
Chairman, 1954-55

John R. Alison
President, 1954-55
Chairman, 1955-56

Gill Robb Wilson
President, 1955-56
Chairman, 1956-57

John P. Henebry
President, 1956-57
Chairman, 1957-58

Peter J. Schenk
President, 1957-59

James M. Trail
Chairman, 1958-59

AFA Chairmen of the Board and National Presidents (cont.)

Howard T. Markey
President, 1959-60
Chairman, 1960-61

Julian B. Rosenthal
Chairman, 1959-60

Thos. F. Stack
President, 1960-61
Chairman, 1961-62

Joe Foss
President, 1961-62
Chairman, 1962-63

John B. Montgomery
President, 1962-63

W. Randolph Lovelace II
President, 1963-64
Chairman, 1964-65

Jack B. Gross
Chairman, 1963-64

Jess Larson
President, 1964-67
Chairman, 1967-71

Robert W. Smart
President, 1967-69

George D. Hardy
President, 1969-71
Chairman, 1966-67
Chairman, 1971-72

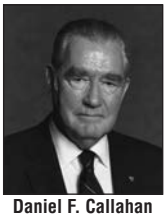
Martin M. Ostrow
President, 1971-73
Chairman, 1973-75

Joe L. Shosid
President, 1973-75
Chairman, 1972-73
Chairman, 1975-76

George M. Douglas
President, 1975-77
Chairman, 1977-79

Gerald V. Hasler
President, 1977-79
Chairman, 1976-77

Victor R. Kregel
President, 1979-81
Chairman, 1981-82



Daniel F. Callahan
Chairman, 1979-81

John G. Brosky
President, 1981-82
Chairman, 1982-84

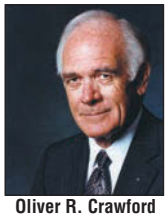
David L. Blankenship
President, 1982-84
Chairman, 1984-85

Edward A. Stearn
Chairman, 1985-86

Martin H. Harris
President, 1984-86
Chairman, 1986-88

Sam E. Keith Jr.
President, 1986-88
Chairman, 1988-90

Jack C. Price
President, 1988-90
Chairman, 1990-92



Oliver R. Crawford
President, 1990-92
Chairman, 1992-94

James M. McCoy
President, 1992-94
Chairman, 1994-96

Gene Smith
President, 1994-96
Chairman, 1996-98

Doyle E. Larson
President, 1996-98
Chairman, 1998-2000

Thomas J. McKee
President, 1998-2000
Chairman, 2000-02

John J. Politi
President, 2000-02
Chairman, 2002-04

Stephen P. Condon
President, 2002-04
Chairman, 2004-06

Robert E. Largent
President, 2004-06[a]
Chairman, 2006-08[b]

Joseph E. Sutter
Chairman, 2008-10

S. Sanford Schlitt
Chairman, 2010-

[a] The office of National President, an elected position, was disestablished in 2006.
[b] AFA's Chairman of the Board also serves as Chairman of both AFA affiliates, the AFA Veteran Benefits Association and the Air Force Memorial Foundation.

Vice Chairmen for Field Operations

Joseph E. Sutter	2006-08
James R. Lauducci	2008-10
Justin M. Faiferlick	2010-

Vice Chairmen for Aerospace Education

L. Boyd Anderson	2006-07
S. Sanford Schlitt	2007-10
George M. Muellner	2010-

National Treasurers

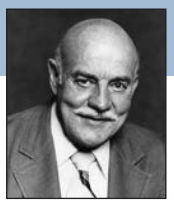
W. Deering Howe	1946-47
G. Warfield Hobbs	1947-49
Benjamin Brinton	1949-52
George H. Haddock	1952-53
Samuel M. Hecht	1953-57
Jack B. Gross	1957-62
Paul S. Zuckerman	1962-66
Jack B. Gross	1966-81
George H. Chabbott	1981-87
William N. Webb	1987-95
Charles H. Church Jr.	1995-2000
Charles A. Nelson	2000-05
Steven R. Lundgren	2005-10
Leonard R. Vernamonti	2010-

National Secretaries

Sol A. Rosenblatt	1946-47
Julian B. Rosenthal	1947-59
George D. Hardy	1959-66
Joseph L. Hodges	1966-68
Glenn D. Mishler	1968-70
Nathan H. Mazer	1970-72
Martin H. Harris	1972-76
Jack C. Price	1976-79
Earl D. Clark Jr.	1979-82
Sherman W. Wilkins	1982-85
A. A. "Bud" West	1985-87
Thomas J. McKee	1987-90
Thomas W. Henderson	1990-91
Mary Ann Seibel	1991-94
Mary Anne Thompson	1994-97
William D. Croom Jr.	1997-2000
Daniel C. Hendrickson	2000-03
Thomas J. Kemp	2003-06
Judy K. Church	2006-09
Joan Sell	2009-11

AFA Executive Directors/ President-CEOs

Willis S. Fitch
Executive Director
1946-47



James H. Straubel
Executive Director
1948-80

Russell E. Dougherty
Executive Director
1980-86

David L. Gray
Executive Director
1986-87

John O. Gray
Executive Director
1987-88
1989-90

Charles L. Donnelly Jr.
Executive Director
1988-89

Monroe W. Hatch Jr.
Executive Director
1990-95

John A. Shaud
Executive Director
1995-2002

Donald L. Peterson
Executive Director, 2002-06[c]
President-CEO, 2006-07

Michael M. Dunn
President-CEO
2007-

[c] The position of Executive Director was replaced in 2006 by President-CEO.

AFA's Regions, States, and Chapters

These figures indicate the number of affiliated members as of June 30, 2011. Listed below the name of each region is the region president.

CENTRAL EAST REGION 10,506
Jeffrey Platte

Delaware	**464**
Brig. Gen. Bill Spruance	125
Delaware Galaxy	339
District of Columbia	**444**
Nation's Capital	444
Maryland	**2,081**
Baltimore*	650
Central Maryland	358
Thomas W. Anthony	1,073
Virginia	**7,243**
Danville	43
Donald W. Steele Sr. Memorial	2,964
Gen. Charles A. Gabriel	1,192
Langley	1,309
Leigh Wade	133
Northern Shenandoah Valley	228
Richmond	573
Roanoke	283
Tidewater	337
William A. Jones III	181
West Virginia	**274**
Brig. Gen. Pete Everest	59
Chuck Yeager	215

FAR WEST REGION 10,071
Richard Taubinger

California	**9,347**
Bob Hope	698
Brig. Gen. Robert F. Travis	661
C. Farinha Gold Rush	1,252
Charles Hudson	89
David J. Price/Beale	357
Fresno*	295
Gen. B. A. Schriever Los Angeles	506
General Doolittle Los Angeles Area*	1,006
Golden Gate*	493
High Desert	174
Maj. Gen. Charles I. Bennett Jr.	254
Monterey Bay Area	183
Orange County/Gen. Curtis E. LeMay	606
Palm Springs	366
Robert H. Goddard	562
San Diego	707
San Gabriel Valley	257
Tennessee Ernie Ford	508
William J. "Pete" Knight	373
Hawaii	**724**
Hawaii*	724

FLORIDA REGION 8,917
James Connors

Florida	**8,917**
Brig. Gen. James R. McCarthy	284
Cape Canaveral	934
Central Florida	1,136
Col. H. M. "Bud" West	288
Col. Loren D. Evenson	414
Eglin	1,207
Falcon	449
Florida Highlands	295
Gold Coast	619
Hurlburt	760
Miami-Homestead	468
Red Tail Memorial	544
Waterman-Twining	1,519

GREAT LAKES REGION 7,066
William Grider

Indiana	**1,422**
Central Indiana	385
Columbus-Bakalar	102
Fort Wayne	227
Grissom Memorial	254
Lawrence D. Bell Museum	208
Southern Indiana	246
Kentucky	**662**
Gen. Russell E. Dougherty	403
Lexington	259
Michigan	**1,150**
Battle Creek	90
Lake Superior Northland	131
Lloyd R. Leavitt Jr.	203
Mount Clemens	726
Ohio	**3,832**
Capt. Eddie Rickenbacker Memorial*	566
Frank P. Lahm	453
Gen. Joseph W. Ralston	304
North Coast*	252
Steel Valley	159
Wright Memorial*	2,098

MIDWEST REGION 6,517
Michael Cook

Illinois	**2,542**
Chicagoland-O'Hare	1,051
Heart of Illinois	206
Land of Lincoln	285
Scott Memorial	1,000
Iowa	**625**
Fort Dodge	67
Gen. Charles A. Horner	242
Northeast Iowa	202
Richard D. Kisling	114
Kansas	**631**
Lt. Erwin R. Bleckley	414
Maj. Gen. Edward R. Fry	217
Missouri	**1,410**
Whiteman	251
Harry S. Truman	521
Spirit of St. Louis	638
Nebraska	**1,309**
Ak-Sar-Ben	1,053
Lincoln	256

NEW ENGLAND REGION 3,361
John Hasson

Connecticut	**647**
Flying Yankees/Gen. George C. Kenney	401
Lindbergh/Sikorsky	246
Massachusetts	**1,622**
Minuteman	278
Otis	250
Paul Revere	678
Pioneer Valley	246
Worcester*	170
New Hampshire	**675**
Brig. Gen. Harrison R. Thyng	675
Rhode Island	**230**
Metro Rhode Island	184
Newport Blue & Gold	46

Vermont **187**
Green Mountain 187

NORTH CENTRAL REGION **2,895**
James Simons

Minnesota **1,108**
Gen. E. W. Rawlings 892
Richard I. Bong 216

Montana **244**
Big Sky 244

North Dakota **412**
Gen. David C. Jones 187
Happy Hooligan 115
Red River Valley 110

South Dakota **445**
Dacotah 233
Rushmore 212

Wisconsin **686**
Billy Mitchell 686

NORTHEAST REGION **5,630**
Eric Taylor

New Jersey **1,440**
Brig. Gen. Frederick W. Castle 124
Hangar One 121
Highpoint 110
Mercer County 156
Sal Capriglione 232
Shooting Star 205
Thomas B. McGuire Jr. 492

New York **1,887**
Albany-Hudson Valley* 321
Chautauqua 58
Gen. Carl A. "Tooey" Spaatz 182
Genesee Valley 198
Iron Gate 130
L. D. Bell-Niagara Frontier 310
Long Island 688

Pennsylvania **2,303**
Altoona 64
Eagle 45
Joe Walker-Mon Valley 234
Lehigh Valley 207
Liberty Bell 583
Lt. Col. B. D. "Buzz" Wagner 106
Mifflin County* 93
Olmsted 272
Pocono Northeast 185
Total Force 262
York-Lancaster 252

NORTHWEST REGION **4,407**
Rick Sine

Alaska **731**
Edward J. Monaghan 548
Fairbanks Midnight Sun 183

Idaho **106**
Snake River Valley 106

Oregon **1,021**
Bill Harris 264
Columbia Gorge* 757

Washington **2,549**
Greater Seattle 855
Inland Empire 592
McChord 1,102

ROCKY MOUNTAIN REGION **5,495**
Grant Hicinbothem

Colorado **3,904**
Gen. Robert E. Huyser 110
Lance P. Sijan 2,257
Mel Harmon 131
Mile High 1,406

Utah **1,226**
Northern Utah 536
Salt Lake 321
Ute-Rocky Mountain 369

Wyoming **365**
Cheyenne Cowboy 365

SOUTH CENTRAL REGION **6,728**
Thomas Gwaltney

Alabama **2,394**
Birmingham 344
Montgomery 1,421
South Alabama 186
Tennessee Valley 443

Arkansas **863**
David D. Terry Jr. 675
Lewis E. Lyle 188

Louisiana **946**
Ark-La-Tex 611
Maj. Gen. Oris B. Johnson 335

Mississippi **866**
Golden Triangle 333
John C. Stennis 403
Meridian 130

Tennessee **1,659**
Chattanooga 127
Everett R. Cook 368
Gen. Bruce K. Holloway 576
H. H. Arnold Memorial 139
Maj. Gen. Dan F. Callahan 449

SOUTHEAST REGION **6,837**
David Klinkicht

Georgia **3,154**
Carl Vinson Memorial 1,117
Dobbins 1,498
Savannah 309
South Georgia 230

North Carolina **2,079**
Blue Ridge 381
Cape Fear 234
Kitty Hawk 71
Pope 394
Scott Berkeley 378
Tarheel 621

South Carolina **1,604**
Charleston 477
Columbia Palmetto 359
Strom Thurmond 399
Swamp Fox 369

SOUTHWEST REGION **6,279**
John Toohey

Arizona **3,627**
Cochise 109
Frank Luke 1,888
Prescott/Goldwater 430
Tucson 1,200

Nevada **1,213**
Thunderbird 1,213

New Mexico **1,439**
Albuquerque 949
Fran Parker 327
Llano Estacado 163

TEXOMA REGION **11,591**
David Dietsch

Oklahoma **2,031**
Altus 200
Central Oklahoma (Gerrity) 1,168
Enid 312
Tulsa 351

Texas **9,560**
Abilene 347
Aggieland 185
Alamo 3,526
Austin 692
Concho 233
Del Rio 129
Denton 442
Fort Worth 1,494
Gen. Charles L. Donnelly Jr. 268
Northeast Texas 403
San Jacinto 1,042
Seidel-AFA Dallas 799

*These chapters were chartered prior to Dec. 31, 1948, and are considered original charter chapters; the North Coast Chapter of Ohio was formerly the Cleveland Chapter; and the Columbia Gorge Chapter of Oregon was formerly the Portland Chapter.

AFA's Overseas Chapters

CHAPTER	LOCATION
United States Air Forces in Europe	
Charlemagne	Geilenkirchen, Germany
Dolomiti	Aviano AB, Italy
Lufbery-Campbell	Ramstein AB, Germany
Spangdahlem	Spangdahlem AB, Germany
United Kingdom	Lakenheath, UK
Pacific Air Forces	
Keystone	Kadena AB, Japan
MiG Alley	Osan AB, South Korea
Tokyo	Tokyo, Japan

AFA Membership

Year	Total	Life Members	Year	Total	Life Members
1946	51,243	32	1979	147,136	1,869
1947	104,750	55	1980	156,394	2,477
1948	56,464	68	1981	170,240	3,515
1949	43,801	70	1982	179,149	7,381
1950	38,948	79	1983	198,563	13,763
1951	34,393	81	1984	218,512	18,012
1952	30,716	356	1985	228,621	23,234
1953	30,392	431	1986	232,722	27,985
1954	34,486	435	1987	237,279	30,099
1955	40,812	442	1988	219,195	32,234
1956	46,250	446	1989	204,309	34,182
1957	51,328	453	1990	199,851	35,952
1958	48,026	456	1991	194,312	37,561
1959	50,538	458	1992	191,588	37,869
1960	54,923	464	1993	181,624	38,604
1961	60,506	466	1994	175,122	39,593
1962	64,336	485	1995	170,881	39,286
1963	78,034	488	1996	161,384	39,896
1964	80,295	504	1997	157,862	41,179
1965	82,464	514	1998	152,330	41,673
1966	85,013	523	1999	148,534	42,237
1967	88,995	548	2000	147,336	42,434
1968	97,959	583	2001	143,407	42,865
1969	104,886	604	2002	141,117	43,389
1970	104,878	636	2003	137,035	42,730
1971	97,639	674	2004	133,812	42,767
1972	109,776	765	2005	131,481	43,094
1973	114,894	804	2006	127,749	43,266
1974	128,995	837	2007	125,076	43,256
1975	139,168	898	2008	123,304	43,557
1976	148,202	975	2009	120,507	43,782
1977	155,850	1,218	2010	117,480	43,954
1978	148,711	1,541	2011	111,479	44,182

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

Think Big, Plan Big

The **Frank Luke Chapter** hosted the Southwest Region Conference in Litchfield Park, Ariz., with AFA representatives present from Arizona, New Mexico, and Nevada.

The three-day event not only covered AFA regional business but also offered guest speakers and panel discussions on Air Force, space, and cyberspace topics, with a local focus.

Retired Lt. Gen. John F. Regni, superintendent of the US Air Force Academy until his retirement in 2009, led the roster of speakers. He is today director of Science Foundation Arizona, a nonprofit based in Phoenix that encourages investment in science through administration of research, development, and education grants.

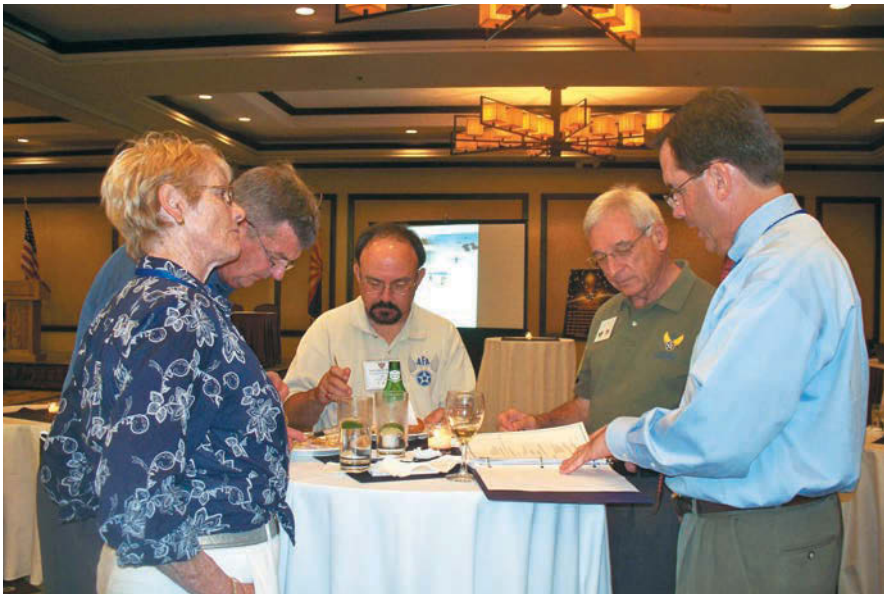
Werner J. A. Dahm, a former Air Force chief scientist, was another keynote speaker. He is now director of Arizona State University's Security and Defense Systems Initiative.

A panel of military personnel included Brig. Gen. Jerry D. Harris Jr., commander of Luke Air Force Base's 56th Fighter Wing; Col. Jose R. Monteagudo from the 944th Fighter Wing at Luke; Col. Kirk W. Smith from the 27th Special Operations Wing at Cannon AFB, N.M.; and Col. Gary Brewer, from the 161st Air Refueling Wing at Phoenix's Sky Harbor Airport.

A local newspaper covering the conference reported that the military panelists spoke about the F-16 phaseout at Luke, solar power on base, increasing the number of Reserve personnel in the 944th, and missions carried out by the air refueling unit.

Other panels covered the CyberPatriot program, the defense industry, and deployment of Luke airmen.

Several exhibitors—Raytheon and the Civil Air Patrol among them—took part in the conference. It received coverage by *Arizona Aviation Journal,* which quoted Luke Chapter's aerospace education VP Scott Chesnut on the six months of planning that went into the event: "We thought big," he told the magazine, "and planned big."



AFA Board Chairman Sandy Schlitt (second from right) goes over the agenda at the Southwest Region Conference in June in Litchfield Park, Ariz. He was a keynote speaker. L-r: Karel Toohey; Southwest Region President John Toohey; Arizona State President Ross Lampert; and Scott Chesnut, conference master of ceremonies.

More photos at http://www.airforce-magazine.com, in "AFA National Report"

Can You Do That for Me?

Sponsored by the **Lance P. Sijan Chapter** in Colorado Springs, the seventh annual Space and Cyberspace Warfare Symposium took place June 14-16 in Keystone, Colo.

Featured speakers included Gen. William L. Shelton, head of Air Force Space Command, and Lt. Gen. Michael J. Basla, AFSPC vice commander, both from Peterson Air Force Base. Some of the other speakers came from the NRO, DIA, Army Space and Missile Defense Command, and Microsoft.

CMSgt. Ira D. Cutting hosted the Enlisted Professional Development sessions, with members from all military branches in the space and cyberspace fields taking part. Cutting is the enlisted space operations functional manager in AFSPC's Manpower, Personnel, and Services Directorate.

Three days of symposium activities also included an awards luncheon and banquet. At the luncheon, Operational Excellence Awards went to Maj. Vincent B. Smits, from AFSPC headquarters, and MSgt. Bryan E. Neumann, from 24th Air Force.

The O'Malley Award Banquet, where the chapter spotlights leadership in space operations, honored Brig. Gen. David D. Thompson, director of air, space, and cyberspace operations at AFSPC. He is the 12th recipient of this chapter award, named for Gen. Jerome F. O'Malley, head of Tactical Air Command at the time of his death in an airplane crash in 1985. O'Malley's daughter, Sharon Burg, addressed the audience that evening, before joining Shelton in presenting the award.

The Sijan Chapter's symposium originated in 2004, when Gen. Lance W. Lord, then head of Air Force Space Command, returned to Colorado from AFA's Air Warfare Symposium in Florida, inspired to create a similar conference focusing on space warfare. "Can you do that for me?" he asked the Sijan Chapter leadership.

Russell J. Anarde was among those stepping up to the plate. He served as chairman for that first symposium. Chapter Secretary Hank Scarangella and Tom Ocvirk co-chaired this year's events, with Chapter President Kevin Estrem as advisor.

Attendance through the years has hovered around 300, reported Estrem. The symposium received a comprehen-

sive writeup in a blog by Don Jewell in *GPS World* magazine.

Successful Day's Work

The **Highpoint Chapter** of New Jersey recently received $1,500 from a military relief group. The amount represented the chapter's share from a fund-raising effort in May, held to benefit military personnel.

The chapter president, Chaplain Richard Ball, with help from chapter veterans affairs VP Murlin Lower, spent the day at this all-services event organized by the local, county-focused Armed Forces Relief Committee.

Pavinci's Italian Grill, a restaurant-marina on Lake Hopatcong, N.J., hosted the fund-raiser. Displays set up in its parking lot included a vintage Jeep, a water tank on wheels more commonly known as a "water buffalo," a "Deuce 'n-a-Half"—which is the nickname for a 2.5-ton Army truck—and equipment from the fire department. Other draws? Live entertainment: A different band played every hour from early afternoon until 11 that night. A video clip of the performance by at least one band, Rock-It Science, appears on YouTube.

Lower noted that the Highpoint group had been specifically invited to participate in this fund-raiser because it is the area's only Air Force presence.

Indeed, Ball worked the fund-raiser not only as an AFA representative but also in his role as a former Army chaplain. He met 30 veterans, personnel about to be deployed, and family members seeking guidance from a clergyman, and folks needing advice from someone familiar with the military bureaucracy. Ball stayed at the fund-raiser until 1:30 a.m.

Donations at evening's end totaled $6,000—actually less than last year, Ball reports—divided among local military organizations representing the four armed services. The chapter will use its share to aid Air Force families in the area, Lower said.

At the Air Force Academy, AFA National Secretary Joan Sell watches cadet Tania Buda add the Outstanding Squadron streamer to Cadet Squadron 22's guidon. The unit received AFA's Outstanding Squadron Trophy during graduation activities and was honored at a reception. At far right is cadet Michael Shaw.

Mountaineer Leadership

Through the annual Mountaineer Cadet Officer Leadership School in West Virginia, the **Chuck Yeager Chapter**

has helped train cadets to excel in Air Force JROTC.

MCOLS takes place in the "Mountaineer State," at Concord University in Athens, W. Va. Over the course of five days, cadets take classes in leadership; develop skills through drill and ceremonies; enhance physical fitness with intramural sports; and increase confidence through such exercises as orienteering, water safety, and rope-bridge crossing.

The latest MCOLS session in June involved 185 cadets from 18 high schools in five states: Missouri, North Carolina, Tennessee, Virginia, and West Virginia. Retired Lt. Col. Jay Thompson from E. C. Glass High School in Lynchburg, Va., led MCOLS.

The chapter provided all the awards for the graduation pass-in-review ceremony, attended by Central East Region President Jeff Platte. Among the award winners were: Grace Charlton, from Battlefield High School in Haymarket, Va., named Outstanding Cadet; Will Johnston, E. C. Glass High School, Outstanding Cadre Cadet; and Fernando Munoz, from Dobyns Bennett High School in Kingsport, Tenn., and Kendra Ferguson, North Forsyth High School in Winston-Salem, N.C., both taking home trophies as Outstanding Flight Cadre.

MCOLS in West Virginia got its start in 2001, organized by David F. Slaughter,

then the Yeager Chapter's aerospace education VP. He is now a member of the **Gen. Bruce K. Holloway Chapter** (Tenn). Some 40 cadets attended that inaugural session.

Gabreski Scholars—and More

New York's **Long Island Chapter** presented a jam-packed program for its awards luncheon in East Farmingdale.

Held at a theme restaurant called the 56th Fighter Group, the third annual Francis S. Gabreski Scholastic Grant luncheon began with the dedication of one of the facility's dining rooms in the name of Gabreski. A two-war ace—28 aerial victories in World War II and 6.5 in Korea—Gabreski commanded the 56th Fighter Group from 1949 to 1951 and was a Long Island Chapter member until his death in 2002. Several Gabreski family members were on hand for the room dedication.

Chapter Aerospace Education VP Alphonse A. Parise and US Rep. Steve Israel (D-N.Y.) presented Gabreski Scholastic Grants to Catherine Manett from Patchogue-Medford High School in Medford, N.Y., and Stacey Forte from Brentwood (N.Y.) High School. Both students are AFJROTC cadets. Each received $1,000.

Chapter President Fred Di Fabio presented plaques of appreciation to Israel; Steve Bellone, who is a Babylon (N.Y.) town supervisor; and Jeff Clyman, president of the American Airpower Museum, also located at Republic Airport. The awards acknowledged their support for chapter activities and veterans' issues.

Susan Ohlinger, a fifth-grade teacher at Burr Intermediate School in Commack, N.Y., was named Chapter Teacher of the Year.

Other presentations included three Jubilee of Liberty Medals for Normandy veterans. The Normandy Regional Council originally bestowed the medals in France to American vets attending the 50th anniversary in 1994 commemorating World War II's D-Day landing. Since then, the medals have been presented in the US to Normandy veterans who weren't able to attend that first ceremony.

Di Fabio said the chapter has arranged 18 Jubilee ceremonies over the

In Anchorage, Alaska, the Eleventh Air Force Memorial gets a clean-up from volunteers led by Edward J. Monaghan Chapter members Anita Porter, fourth from left; Suellyn Novak, in hat; and John Cloe, next to her.

Reunions

reunions@afa.org

7th/42nd ACCS. Sept. 16-18 at Bay St. Louis, MS. **Contact:** Dianne Calmes (228-216-1083) (calmoose@aol.com).

20th FW Assn, all units (1930-present). Oct. 26-30 in San Antonio. **Contact:** 770-429-9955 or abbyndavid@aol.com.

23rd Flying Tiger Assn, all units (1942-current). Nov. 10-13 at the Grand Hyatt Tampa Bay, FL. **Contact:** Jeff Hogan (910-922-1774) (ftreunion2011@yahoo.com).

49th Fighter Sq, 49th FIS (1941-present). Oct. 6-9 at the St. Anthony Hotel in San Antonio. **Contact:** Bob Thomalen (845-225-2445) (the3garridebs@verizon.net).

58th Fighter Assn, all associated units. Oct. 4-9 at the Hilton Garden Inn Savannah Airport in Savannah, GA. **Contact:** Jean Kupferer, 2025 Bono Rd., New Albany, IN 47150 (812-945-7649) (jkupferer@insightbb.com).

81st Fighter Wg, all units (January 1942-December 1993). Oct. 18-21 in Biloxi, MS. **Contact:** Sharon Palmer, 70 Rilla Ln., Sequim, WA 98382 (360-683-4697) (kitkatpalmer@gmail.com).

376th Air Refueling Sq. Oct. 4-6 in Bossier City, LA. **Contact:** Bill Bryan (360-692-3609) (376bill897@gmail.com).

Air War College Class of 1972 & 1982. Oct. 27-28 at Maxwell AFB, AL. **Contact:** Kathy Escaravage (334-953-5190) (awc.studentops@maxwell.af.mil).

AF Veterans Assn. Oct. 5-8 in Dayton, OH. **Contact:** Cliff Johnson, 1779 Wilmington Rd., Cedarville, OH 45314 (937-766-5398) (johnsonc@cedarville.edu).

Misty, Operation Commando Sabre. Oct. 192-23 at Destin Beach, FL. **Contact:** Jack Doub (229-415-3579) (jack.doub@gmail.com).

Vietnam Security Police Assn, including Thailand. Oct. 5-9 in Dayton, OH. **Contact:** Dennis Evans (866-672-6533) (denniseevans@aol.com). ▪

E-mail unit reunion notices four months ahead of the event to reunions@afa.org, or mail notices to "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.

Victor Kregel, 1922-2011

Retired Lt. Col. Victor R. Kregel, who was AFA's Chairman of the Board from 1981 to 1982, died in Colorado Springs, Colo., on July 20 at age 89.

Born in Irwin, Pa., he joined the Army Air Corps for World War II and went through both Air Corps and Navy flight programs. He flew in the Southwest Pacific as an air-sea rescue pilot. He also participated in the Berlin Airlift. He served for 23 years.

Colonel Kregel held several AFA offices, including National President (1979-1981), and was the association's Member of the Year for 1976.

In his civilian career, he was an executive with LTV Corp. before retiring to Colorado. He was also an avid, award-winning amateur golfer.

past 14 years, recognizing more than 300 local veterans. Media coverage of these chapter ceremonies led three more vets to come forward recently. Receiving recognition at this chapter luncheon were: John McMullen from Plainview; Seymour Bosworth from South Hampton; and Michael Bonchonsky of Huntington.

Maj. Scott Clyman, 79th Fighter Squadron, 20th Fighter Wing, Shaw AFB, S.C., was guest speaker for this chapter luncheon. He spoke to the audience of some 100 guests about his experiences as an F-16 pilot in Iraq and Afghanistan.

"AFA Burritos"

From Alamogordo, N.M., the **Fran Parker Chapter** President Lt. Col. Matthew Martin e-mailed a photo with a tempting title: AFA Burritos.

Turns out, chapter members handed out 600 of those filled flour tortillas at Holloman AFB, N.M., as part of a celebration on May 6 called "Spring Fling."

The 49th Wing's airmen at the base received that day off to celebrate their success in an operational readiness exercise. In late April, the wing earned an "Excellent" rating from the Air Combat Command inspector general team, after proving an ability to rapidly deploy Holloman's F-22s, with 400 personnel, and more than 220 tons of cargo.

Spring Fling included sports events, music, and food, with the Fran Parker Chapter covering the cost of the burritos and joining the 49th Force Support Squadron in making and serving them.

Chapter members offered the Mexican food, along with salsa and guacamole, at the Holloman bowling alley, which was celebrating the grand opening of its cantina in conjunction with Spring Fling.

"We're thrilled to have the support of the AFA to kick it off to a great start," said 49th FSS Commander Maj. Chris Busque.

In addition, chapter members helped out at the Spring Fling's various sports events, providing bottled water and distributing copies of *Air Force* Magazine.

Tending the Memorial in Anchorage

In June, **Edward J. Monaghan Chapter** members in Anchorage, Alaska, led a cleanup of the Eleventh Air Force memorial at Merrill Field, located near Joint Base Elmendorf-Richardson.

The memorial marks the site where Army Air Corps personnel landed Aug. 12, 1940, as forerunners of what would become Eleventh Air Force, famous for having driven the Japanese from the Aleutians in World War II.

John H. Cloe, Community Partners VP, explained that the chapter spear-

headed fund-raising to construct the memorial, which was dedicated in 2001. The chapter now has overall responsibility for its upkeep and recently received a $1,500 matching grant from the state of Alaska for this effort, he said.

University of Alaska-Anchorage AFROTC cadets partner with the chapter to maintain the monument. In the most recent cleanup, five cadets turned out: Ashley and Zack Beegle, Jeff Elmore, Travis Shultz, and Kaleigh Wotring. Boy Scouts Lucas and Tyler Ryynnannen and their father, Dan, joined in. From the chapter, Suellyn Novak, Chapter Secretary Anita Porter, and Cloe helped wield rakes, brooms, towels, and trowels to clean the black granite edifice and landscape the area.

Nowak coordinates the chapter's continuing involvement with upkeep for this memorial.

More Chapter News

■ The **Mercer County Chapter** in New Jersey received mention in *The Trenton Times* newspaper after members helped decorate more than 2,000 gravesites for Memorial Day, reports then-Chapter President Stewart Zitzner. The AFAers joined with Cub Scouts, Boy Scouts, and Girl Scouts to carry out this project.

■ In California, the **Orange County/Gen. Curtis E. LeMay Chapter** and other military-oriented groups helped pay for some Buena Park High School AFJROTC cadets to attend an annual summer encampment at Vandenberg AFB, Calif., in July. While in a dining facility on base, they had a chance to meet Lt. Gen. James M. Kowalski, command of Air Force Global Strike Command, who was visiting Vandenberg. One of the cadet chaperons for this AFJROTC event was Donald Zweifel of the **General Doolittle Los Angeles Area Chapter.**

H. B. Henderson, 1925-2011

AFA National Director Emeritus Harry B. Henderson died July 10 in Newport News, Va. He was 85 years old. Nicknamed "Buzz," he was born in Pahala, Hawaii, on Dec. 26, 1925. After high school in Hardin, Mont., he joined the military for World War II, becoming a Navy aviator and serving in the Pacific. After the war he graduated from the University of Southern California and in 1950 was called to active duty from the Naval Reserve for the Korean War. He later became Convair's assistant chief test pilot for F-102s and F-106s and then corporate manager of Aeronautical Systems for General Dynamics. He remained with the company for 37 years before retiring in 1992. Henderson served as president of AFA's San Diego Chapter, state president, Central East Region president, and a national committee member before being elected to the board of directors in 1984.

Patricia Teevan, 1943-2011

Patricia Teevan, *Air Force* Magazine's former director of advertising and industry relations, died Aug. 7 in Arlington, Va. She was 68 years old. She had worked for AFA for 40 years and before her retirement in 2006 had been nicknamed "the dean" of the staff. Although she began her career with AFA in 1966, her name first appeared on the magazine's masthead in May 1972, when she became the advertising service manager. Ms. Teevan played a key role in AFA events, gathering sponsors and exhibitors for the National Convention and other symposiums. She was a native of Massachusetts. ■

AFA Conventions

Sept. 17-18	**AFA National Convention,** Washington, D.C.
Sept. 19-21	**AFA Air & Space Conference,** Washington, D.C.

Before They Had Radar

Photo from Library of Congress via sciencephoto.com

In World War I, the world's armies began using large sound amplifiers to detect approaching aircraft. This practice continued in the 1920s and 1930s. Above, a US Army technician in 1921 tests a pair of "horn" sound locators at Bolling Field in Washington, D.C. Behind him, visible northward across the Anacostia River, is Roosevelt Hall at Fort Leslie McNair, which then housed the Army War College. Passive acoustic detectors picked up the noise of approaching aircraft engines. The concept, however, was crude and rendered obsolete by radar, first used to great effect in the 1940 Battle of Britain. At right, Denise Miley, a radar operator with the RAF's Women's Auxiliary Air Force at RAF Bawdsey, UK, tracks aircraft.

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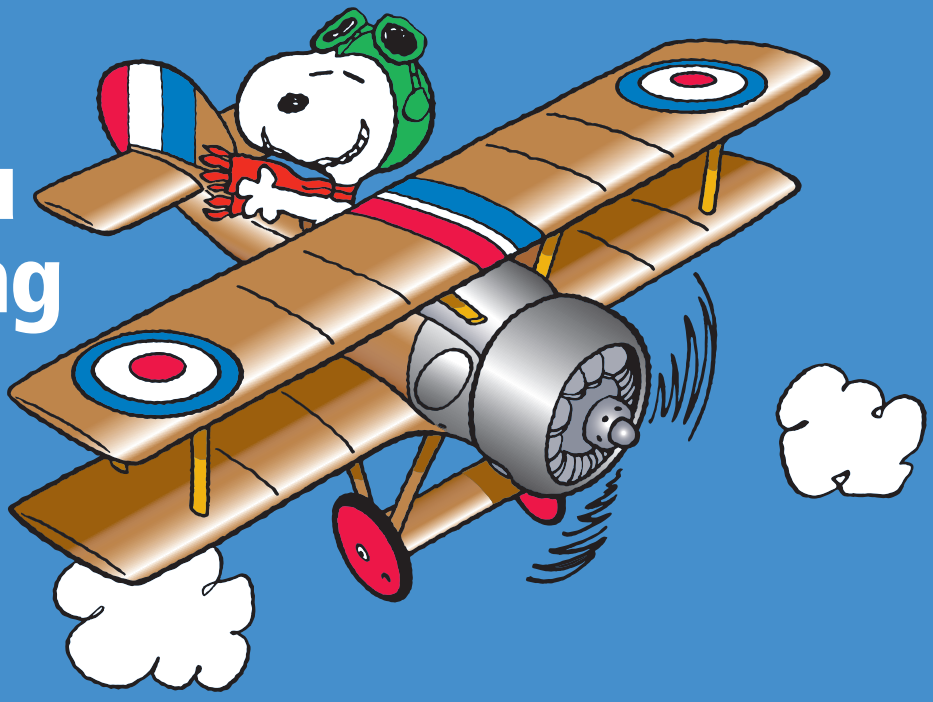

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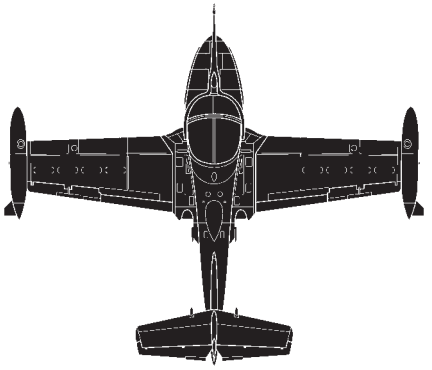
A-37 Dragonfly



The USAF A-37 Dragonfly was perhaps the most underestimated aircraft of the Vietnam War. Its mix of accuracy, reliability, and maneuverability was ideal for the war in Southeast Asia. Derived from the Cessna T-37 Tweet trainer, the A-37 became an effective replacement for the Douglas A-1 Skyraider ground-attack aircraft, which was suffering high losses.

After evaluating two T-37Cs in the attack role, the Air Force asked Cessna for two prototype YAT-37D aircraft. Each was to be equipped with two GE turbojet engines, stronger wings, huge 95 gallon wingtip tanks, a 7.62 minigun, improved communications systems, and tougher landing gear.

A test program converted some 39 T-37Bs into A37-As with only minor changes. The A-37A Dragonflys also were well-armed, able to drop bombs, napalm, and cluster munitions. These so-called "Super Tweets" could also fire miniguns and unguided rockets.

In the Combat Dragon evaluation program, 25 A-37As were sent to the 604th Air Commando Squadron at Bien Hoa AB, South Vietnam. Missions included forward air control, ground attack, helicopter escort, and night bombing. A-37A successes led to procurement of 577 newly built A-37Bs—first flown in 1967—with much stronger airframes and bigger engines. A probe-and-drogue refueling system was added, extending both range and loiter time. The Dragonfly flew more than 160,000 sorties, with only 22 losses to combat.

—Walter J. Boyne

This aircraft: USAF A-37B Dragonfly—*#73-1090*—in 1991 when assigned to 412th Flight Test Wing, Air Force Flight Test Center, Edwards AFB, Calif.

In Brief

Designed, built by Cessna ★ first flight Oct. 22, 1963 ★ crew of one or two (pilot and observer) ★ number built/converted 596 ★ **Specific to A-37D:** two J85-GE-17A turbojet engines ★ armament one GAU-2B/A nose-mounted minigun and hard points for M134 minigun, 20 mm cannon, 30 mm cannon, AIM-9 Sidewinder ★ load seven 70 mm FFAR, napalm tanks, four 500-lb Mk 82 bombs, SUU-14 bomblet dispenser ★ max speed 507 mph ★ cruise speed 490 mph ★ max range 920 mi ★ weight (loaded) 14,000 lb ★ span 35 ft 10 in ★ length 28 ft 3 in ★ height 8 ft 10 in.

Famous Fliers

Notables: John Blaha, Stumpy Bowen, John Bradley, Gene Bywater, Lon Holtz, Lloyd Langston, Robert Macaluso, Ollie Maier, Richard Martel, Wayne Moorhead, Lou Weber. **Test Pilots:** Bob Hagan, Hank Waring.

Interesting Facts

Nicknamed "Super Tweet" ★ survived collisions with trees and still returned to base ★ flown by Air National Guard until 1990s ★ remains in service in South America ★ used by both Ecuador and Peru in 1995 border war ★ served with South Korea's aerobatic team ★ used by total of 14 air forces ★ captured aircraft flown by North Vietnam Air Force in war with China ★ could conserve fuel by flying on only one engine.

USAF photo

An A-37A firing rockets in Vietnam.

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[1]Forrester Research, Inc., "Customer Advocacy 2011: How Customers Rate U.S. Banks, Investment Firms, and Insurers," March 2011. [2]Based on 2010 Member Communications Trend Survey. Use of the term "member" does not convey any legal, ownership, or eligibility rights for property and casualty insurance products. Ownership rights are limited to eligible policyholders of United Services Automobile Association. The term "honorably served" applies to officers and enlisted personnel who served on active duty, in the Selected Reserve or National Guard and have a discharge type of "Honorable." Eligibility may change based on factors such as marital status, rank or military status. Contact us to update your records. Adult children of USAA members are eligible to purchase auto or property insurance if their eligible parent purchases USAA auto or property insurance. Property and casualty insurance products are available to current and former military members and their former dependents who meet certain membership eligibility criteria. To find out if you are eligible, contact USAA. Underwriting restrictions apply. Automobile insurance provided by United Services Automobile Association, USAA Casualty Insurance Company, USAA General Indemnity Company, Garrison Property and Casualty Insurance Company, USAA County Mutual Insurance Company, San Antonio, TX, and is available only to persons eligible for P&C group membership. Each company has sole financial responsibility for its own products. AFA receives financial support from USAA for this sponsorship. 133277-1011

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