August 2012/$5

Journal of the Air Force Association

AIR FORCE MAGAZINE

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ICBM Vigilance

Today's Abnormal Air Wars

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Journal of the Air Force Association
AIR FORCE MAGAZINE

August 2012, Vol. 95, No. 8

About the cover: A C-130 over Afghanistan. See "The Aerial Lifeline," p. 20. USAF photo by SrA. Krista Rose.

FEATURES

Journal of the Air Force Association

AIR FORCE MAGAZINE

DEPARTMENTS

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Editorial

By Adam J. Hebert, Editor in Chief

Valor Cannot Be Stolen

JULY 16, 2012, WASHINGTON D.C.

"I'm a retired marine of 25 years. I retired in the year 2001," said Xavier Alvarez, introducing himself at a 2007 meeting of the Claremont, Calif., district water board. "Back in 1987, I was awarded the congressional Medal of Honor [for bravery during the Iran hostage crisis]. I got wounded many times by the same guy."

Alvarez was a compulsive liar, and his story was a complete fabrication. His previous tales had included yarns about him playing hockey for the Detroit Red Wings and marrying a Mexican actress, but it was the Medal of Honor claim that landed him in hot water.

His boast violated the Stolen Valor Act of 2005, a law passed to stem a tide of people falsely claiming they had earned military honors. The act sought to uphold the prestige and reputations of those who really had earned awards by putting an end to an epidemic of liars and imposters.

Various reports show that false claims are disturbingly common:

- An Illinois judge once claimed he had earned two Medals of Honor and displayed the counterfeit medals in his courtroom.
- Half the people (24 of 49) who identified themselves as Medal of Honor recipients in a Library of Congress oral history project lied.
- In just Virginia, more than 600 people falsely claimed they received the Medal of Honor in a single year.

These sorts of claims are made for many reasons: in the pursuit of free drinks, for an advantage in an election, to impress members of the opposite sex, or to improve the chances of getting hired. In many cases, such as Alvarez's, the liars seek nothing more than praise, adulation, and unearned respect.

It has long been a crime for people to wear military medals they have not earned, in much the same way that it is illegal to impersonate a police officer or government employee. The Stolen Valor Act made it a crime not just to wear undeserved military awards, but even to say they received them.

Most cases, involving lies about Purple Hearts, Silver Stars, and so forth, were punishable by up to six months in prison.

The Medal of Honor, however, holds a special place in the military and societal pantheon. It signals extraordinary bravery in service to one's country. Tellingly, more than half of the medals awarded since World War I were delivered posthumously. The act made Medal of Honor lies punishable by up to a year in prison.

Alvarez successfully appealed his conviction under the Stolen Valor Act all the way to the Supreme Court, by challenging the constitutionality of the law itself. On June 28, the court overturned the law in a six-to-three decision, ruling

People lie about the Medal of Honor because it means so much.

the act was unconstitutionally broad and therefore violated American rights to free speech.

The law did not require proof anyone was actually harmed by the false claims. Alvarez's statements gained him nothing tangible. They were simply "a pathetic attempt to gain respect that eluded him," wrote Justice Anthony Kennedy in the court's majority opinion.

The Stolen Valor Act sought to protect the respect owed to real heroes, those who have risked their lives to earn their military decorations. Unfortunately, the act was so broadly written it would have allowed laws saying lying is a crime.

Worries that false claims are devaluing military awards seem unfounded. People lie about having earned the Medal of Honor *because* the medal is held in such high regard.

"Any true holders of the medal who had heard of Alvarez's false claims would have been fully vindicated by the community's expression of outrage," Kennedy noted in his opinion. Alvarez was humiliated and ridiculed. This surely outweighs any psychological benefit he got from the lie in the first place.

So, for the time being, the lowlifes of the earth are free to claim they earned military honors—just as in most cases it is legal to lie about education, jobs, sexual prowess, or nonexistent careers as professional athletes.

This is a tough decision to swallow. It is, however, the correct decision. The Constitution protects free speech except under the most narrow of exceptions.

"Fundamental constitutional principles require that laws enacted to honor the brave must be consistent with the precepts of the Constitution for which they fought," Kennedy wrote in his opinion. "One of the costs of the First Amendment is that it protects the speech we detest as well as the speech we embrace."

In fact, several justices expressed hope that lawmakers would rewrite the act more narrowly, so it would pass constitutional muster. That is our hope as well. In the meantime, those who wish to defend true military heroes still have plenty of recourse.

First, there are already many concerned citizens on the lookout for frauds. These watchdogs should continue to check into questionable cases and ask hard questions. The chance of being exposed and humiliated is a huge risk to the insecure attention-seekers making these false claims, and the more negative attention the liars get, the less likely they are to continue or be copied.

Second, DOD should create an online database listing the recipients of all major military awards. The government first said an index would be "impracticable and insufficiently comprehensive," which sounds a lot like an excuse. *Air Force* Magazine publishes indexes of USAF's Medal of Honor recipients, Air Force Cross awardees, and other heroes. Others keep even larger catalogs. The Pentagon should step up to what it now says is its goal and make an official database readily available.

Third, a new law could make it illegal to benefit from such lies. If a person loses an election, a promotion, or is beaten out for a job by someone claiming fake military honors, the honest person has been harmed. This material harm strengthens the argument that the lie became a crime. Congress should act to draft a new law, and some lawmakers have already pledged to do so.

Envious imposters will undoubtedly continue to disgrace themselves by claiming awards they did not earn. This takes nothing away from the true military heroes, however. Despite the downfall of the Stolen Valor Act, valor is earned, it is permanent, and it cannot be stolen. ■

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GENERAL DYNAMICS

Letters

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Saluting Crawford

I read your feature, "Caught in the Crossfire," in the June *Air Force* Magazine *[p. 26].* I was very impressed with the article and the documented heroism of those involved. Congratulations on a well-written account of heroism above and beyond the call of duty. As a veteran who was decorated for heroism myself, I salute all those involved in this act of extreme heroism. My only question is: What does it take to get a Medal of Honor?

Capt. James R. Lewis,
USAFR (Ret.)
Panama City, Fla.

The June [issue] has a wonderful article on Capt. Barry Crawford receiving the Air Force Cross. A comparison of his deeds with those of Medal of Honor recipient Lt. Michael Murphy, SEAL, US Navy, is telling. Does not this award call for closer review for an upgrade to the Medal of Honor? What does a current member of the USAF have to do to receive the Medal of Honor? It has gotten a bit ridiculous!

James W. Kenney
San Antonio

I found the article to be both inspirational and instructive.

First, it is gratifying that America still produces young people, like Capt. Barry Crawford Jr., who are willing to go in harm's way in extremely hostile territory in service to our nation. Captain Crawford's actions under fire were in the great tradition of our military, and I join with all who thank him for his leadership and courage when those in his charge needed him the most.

Second, I regret that the leadership above Captain Crawford placed him and his troops in an untenable situation, based on inadequate intelligence regarding the expected size of the opposition force. Apparently, Captain Crawford's assault force including "nearly 100 US and Afghan personnel" were placed in a situation where "more than a hundred enemy fighters" got the upper hand despite the Americans' control of the air. "Thirty-three aircraft and more than 40 air strikes" were needed to enable the friendlies to exfiltrate the area.

So, to summarize, the ground forces were nearly evenly matched, and the good guys controlled the air in mostly daylight conditions with decent weather. And when the dust settled our guys had "neutralized a numerically superior force" and avoided "massive casualties."

Okay. This puts the last 10 years in perspective, doesn't it? American leadership puts 130,000 troops on the ground in a country of 25 million people and we celebrate avoiding "massive casualties." I suggest that like the Persians, Greeks, Mongols, Brits, and Russians, America should just declare victory and leave.

Lt. Col. Douglas W. Schott,
USAF (Ret.)
Dayton, Tenn.

Famous AND Infamous

As one of Brian Shul's original burn survivor buddies and later his friend, I thought it was great to see Brian's name listed as a "Famous Flier" of the SR-71 Blackbird in the "Airpower Classics" section of your May issue of *Air Force* Magazine *[p. 152].* However, I am compelled to respond to the "godfather" of the SR-71 program, Maj. Gen. Patrick J. Halloran's unsolicited and insidious comments about Brian not qualifying as a famous flier because he doesn't meet the qualities of a "famous flier" by "Blackbird standards" *[Letters: "Famous or Infamous?" July, p. 7].*

Furthermore, I believe your magazine's letters editor erroneously titled the godfather's letter "Famous or Infamous?" I humbly submit that Maj. Brian Shul, USAF (Ret.), is both famous AND infamous! Let's not mince words as Halloran did. Shul was and is an American born and bred fighter jock. Cocky? Yes. Wistful? Yes. Happy-go-lucky? You bet. Prone to shoot for the stars? Ditto. What other famous American fliers come to mind when asking these questions?

Most.

Perhaps the last assignment he "volunteered" for just wasn't his cup of JP-7? So what if he was able to outrun two Libyan fired SA-2 missiles in one dual afterburner bound? And sure, Shul and backseater Walt Watson made a slow speed (152 knots) flyover ending with a full two afterburner pullout at a height of 50 feet at a nondescript RAF airfield after a mission to the Iron Curtain in the 1980s. These events alone in Major Shul's Blackbird career would make him famous and even infamous in my book! But I will stick my neck out even further (I hope the Blackbird Mafioso doesn't read this):

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

Major Shul was and still is also a legend and a hero!

There was a time in 1975 when I lay in a Brooke Army Medical Center's burn ward only wanting to quietly drift away from life and the pain my every breath brought. But then, there was Brian Shul at my bedside, encouraging me to live, to be a survivor as he was. He wasn't only there for me but for countless others who have found a will to survive, through his life's story. He did not have to be concerned for any of us.

He had his own healing and struggle to regain his flight status to deal with. But Brian still had a word of encouragement for all of us daily and a genuine love for all who allowed him into their veil of pain. Brian is *my* hero and more than meets my standards to be listed as a "Famous Flier" of anything!

SSgt. David R. Cox Sr.,
USAF (Ret.)
Southaven, Miss.

Godfather (Maj. Gen.) Patrick J. Halloran's letter was mean-spirited concerning Brian Shul. I do not know Shul, but it would not have hurt to address him as "Major" as the author did for Lt. Gen. William Campbell (God's gift to aviation). I cannot fathom Halloran's motivation for dissing Shul.

Lt. Col. Denny Domin,
USAF (Ret.)
Seabrook Island, S.C.

Two Generations

I read with interest the article "Linebacker I" by Rebecca Grant that was published in the June 2012 issue of *Air Force* Magazine *[p. 71]*. I would like to point out that the man in the photograph on p. 73, listed as Gen. Lucius Clay Jr., commander of Pacific Air Forces during Linebacker I, is actually Gen. Lucius Clay Sr. When we created a Civil Air Patrol squadron here in Roswell, General Clay Jr. was gracious enough to permit us to name the squadron after his father.

Barry S. Herrin
Roswell, Ga.

Rebecca Grant's "Linebacker I" is an excellent example of the overwhelming strength of the US air arsenal with its hundreds of combat aircraft that USAF, the Navy, and the Marine Corps unleashed as they broke communist forces during the 1972 Easter Offensive. As an EWO, I flew with my Wurthsmith Air Force Base crew on the first time ever B-52 strike on the Haiphong Harbor area. Other B-52s hit targets farther north, including Hanoi, an unbelievable first time accomplishment by a B-52 crew. Air Force generals at U Tapao Air Base (not shown on your Thailand air operations map) strongly advised that the US continue the huge air campaign of tactical and strategic air strikes until the communists came to their knees and signed the peace agreement. Unfortunately, it was not heeded, as the North Vietnamese came back to the negotiations table and the largest air campaign of the war stopped. The rest is history and the US air arsenal was again called on to end the war just months later during Linebacker II, this time with great loss to our SAC forces (13 B-52s shot down), as the enemy had upgraded their threat systems and changed their tactics. Never again!

Lt. Col. Sid Howard,
USAF (Ret.)
Midwest City, Okla.

"Linebacker I" described the Constant Guard deployment in response to the Easter Offensive, but mischaracterized the Bullet Shot operation as a similar response. Actually, it was proactive—preparing for the invasion.

The Arc Light facility at Andersen AFB, Guam, had been inactive for some time when Bullet Shot kicked off at Carswell AFB, Tex., on Feb. 8, 1972. The cover story was that we were going to Guam as a show of force for President Nixon's visit to China. When he went home without us, we figured there was something else brewing.

B-52s from the 7th Bomb Wing at Carswell and two other SAC bases deployed to Andersen on Feb. 9 and within days had re-established Arc Light runs to Vietnam. The three-ship cells were designated by colors, which was simple during initial operations, when we ran three cells a day. It got more complex as virtually every B-52D in the fleet and a significant number of G models joined us by June and the numbers of daily cells increased. We were running out of colors.

I can't describe how the buildup progressed. However, we were already on station for the Easter Offensive. Bullet Shot II supported Linebacker I, which I believe resulted in 150 B-52s on Andersen alone—only the 24/7 operations allowed parking spots. Housing was at a premium. Being one of the first to arrive, I had a barracks room on base. Aircrews lived in the hotels, while the enlisted newcomers lived in the Tin City down the road and, as more came in, in Tent City.

Wonder how many crews out there can still play the Bugle Note? Bugle Note was a map package put in for two reasons: a long, long flight to the target and a suspicion that SAC ADVON contract cleaners at Tan Son Nhut were passing on target information to their friends. Under Bugle Note, as cells approached the Vietnamese coast, crews would be radioed their turn points, aiming points, and targets. This allowed for the close air support operations mentioned in the article.

The SAC historian can give you the date of the first B-52 raid across the border into Vietnam. I only remember being locked in the Arc Light facility until the bombers had exited enemy airspace. SAC had not, to that point, lost a bomber to hostile fire and was taking no chances.

The Linebacker I article was very informative. Sitting on our island paradise, we were generally unaware of what the rest of our Air Force was doing. Good work.

MSgt. John Pecarina,
USAF (Ret.)
Midlothian, Tex.

Nothing But Respect

This letter is in response to the letter from MSgt. Joe M. Gardner, USAF (Ret.), who wondered why Lee Archer was not listed in *Air Force* Magazine as an ace. [The editors] were correct in [their] response to him that the Air Force Historical Research Agency, where I work, maintains all the documentation confirming the aerial victory credits of members of the Air Service, the Army Air Forces, and the United States Air Force. Our documents prove that Lee Archer shot down a total of four enemy aircraft, not the five required to be an ace.

I have personally researched the aerial victory credits of all the Tuskegee Airmen and wrote an article about it, "112 Victories." During World War II, Lee Archer claimed to have shot down one enemy aircraft on July 18, 1944, and three more on Oct. 12, 1944. For each of those claims, he was awarded a credit by Fifteenth Air Force orders. Lee Archer's total number of aerial victory credits is four. There is no documentary evidence that Archer either claimed or was awarded any additional aerial victory credits. Lee Archer is not an ace and never was an ace.

There were no Tuskegee Airmen who were aces. However, three Tuskegee Airmen shot down four enemy aircraft. Besides Lee Archer, they were Joseph Elsberry and Edward Toppins.

The Tuskegee Airmen deserve to be remembered as American heroes who fought well as the first black pilots in the American military. The fact that none were aces does not diminish their accomplishments in any way. They shot down 112 enemy aircraft. More importantly, they protected American bombers they escorted, losing bombers to enemy aircraft on only seven of their 179 bomber escort missions during World War II.

Daniel L. Haulman
Air Force Historical Research Agency
Maxwell AFB, Ala.

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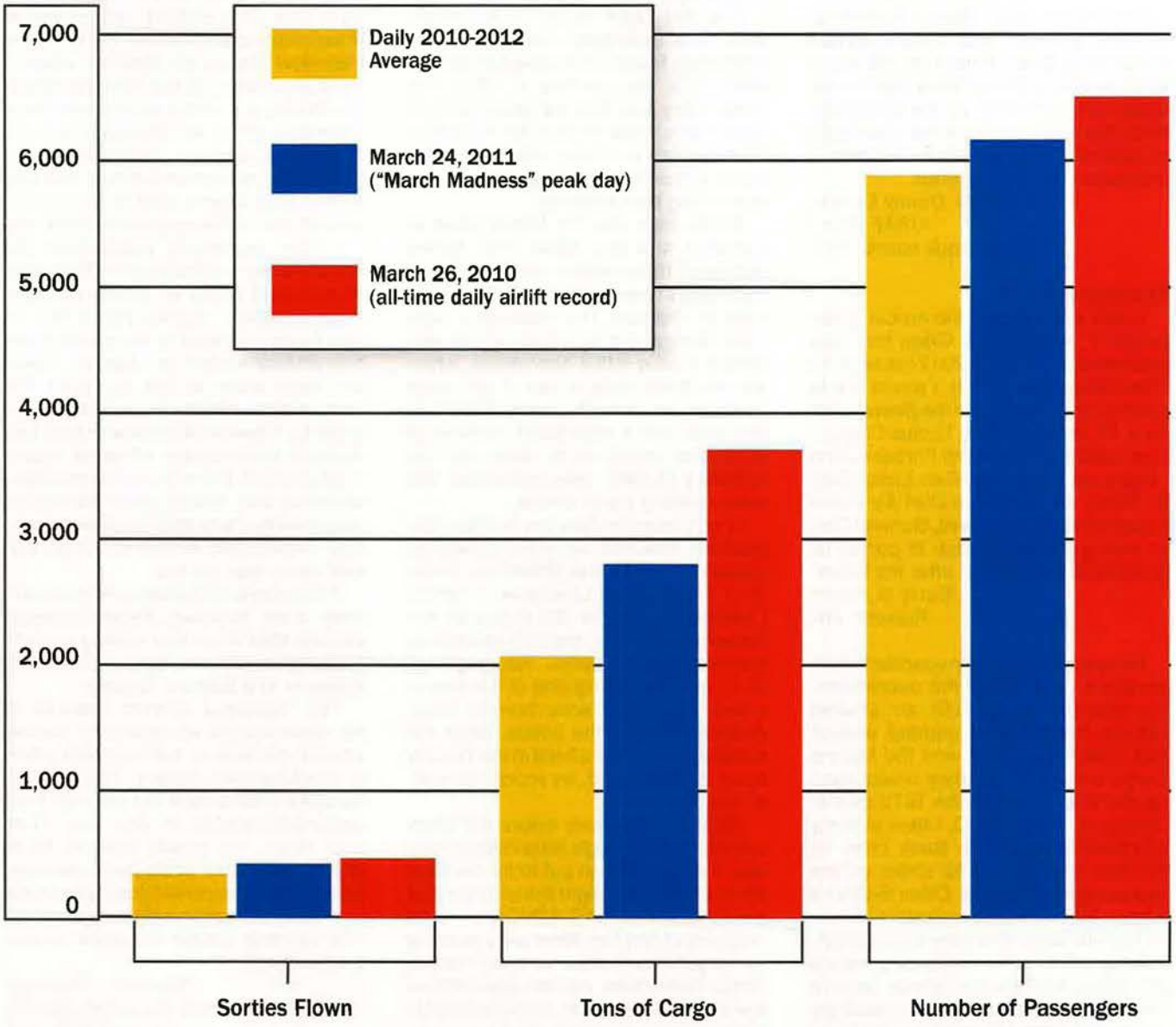
March Madnesses

It was March 2011. One week after air mobility forces began humanitarian relief to Japan in the wake of a double earthquake-tsunami disaster, NATO kicked off a no-notice air campaign over Libya. These simultaneous and unforeseen contingencies were in addition to a troop swap-out in Afghanistan and Iraq and a major presidential visit to South America. Dubbed "March Madness" by Air Force officials, last year's airlift operation was massive by any measure. Still, the peak day of March Madness fell well short of USAF's all-time daily airlift record, set almost exactly a year prior. On March 26, 2010, Air Mobility Command hauled more cargo in a single day than at any time in command history. On top of Operation Unified Response flights to Haiti, which delivered massive quantities of aid to the earthquake-shattered nation, that day AMC also juggled a troop surge in Afghanistan, another presidential trip overseas, and several ongoing exercises.

How March 2010 and March 2011 Stack Up



Air Force World

By Aaron M. U. Church, Associate Editor

First Woman Four-Star Heads AFMC

Gen. Janet C. Wolfenbarger assumed command of Air Force Materiel Command at Wright-Patterson AFB, Ohio, June 5. Wolfenbarger, who is the first woman to rise to four-star rank in the Air Force, succeeded Gen. Donald J. Hoffman, who had led AFMC since November 2008.

Wolfenbarger credited the Air Force's consistent efforts toward diversity for granting her the opportunity to lead a major command.

"This culture has been cultivated over many years, driven by leadership at every level who acknowledge and appreciate the value of contributions from every airman," she said at the change of command ceremony.

Hoffman retired from the Air Force after 38 years of active duty service July 1.

Maximum Effort

B-52 bombers simultaneously flew in two major exercises, flexing both nuclear and conventional strike muscle on a global scale late this spring.

As two B-52s were returning to Barksdale AFB, La., from a simulated maritime strike in the Baltic Sea, 10 bombers launched on a mass nuclear-generation exercise from Minot AFB, N.D., June 11, Air Force Global Strike Command said.

Participation in Baltops, a NATO exercise in the Baltic, "was a good example of how the Air Force can support the US Navy's operations by striking

Four Airmen Die Fighting Western Wildfires

Four airmen died and two more were seriously injured July 1 in the crash of their C-130, flying in firefighting operations in South Dakota.

Killed were Lt. Col. Paul K. Mikeal, 42, of Mooresville, N.C.; Maj. Joseph M. McCormick, 36, of Belmont, N.C.; Maj. Ryan S. David, 35, of Boone, N.C.; and SMSgt. Robert S. Cannon, 50, of Charlotte, N.C. The names of the injured had not been released at press time. Officials at US Northern Command are still investigating the cause of the crash.

The Air National Guard C-130 of the 145th Airlift Wing, based at Charlotte-Douglas Arpt., N.C., crashed while fighting the White Draw fire near Edgemont, S.D. It was equipped with the Modular Airborne Firefighting System (MAFFS) and was one of a number of C-130s dispatched to help control wildfires in several states.

The airmen had arrived at Peterson AFB, Colo., the day before the crash to help the US Forest Service fight several fires in the Rocky Mountain region. Hot, dry weather and high winds have made this summer one of the worst fire seasons to date.

USAF suspended MAFFS activities following the crash until safety and flight procedures could be reviewed with participating crews. The aircraft resumed firefighting duties July 3.

MAFFS—large tanks, usually filled with fire retardant—roll into a C-130's cargo area and enable the aircraft to spray from a low altitude a 100-foot-wide band of retardant in a quarter-mile line in a matter of seconds. The US Forest Service requests the firefighting aircraft to augment its fleet when those assets are maxed out. Before the accident, the Forest Service had eight operational MAFFS at their disposal and one backup.

Between June 25—when the MAFFS were called to Colorado—and July 5, C-130s dispersed an estimated 320,000 gallons of fire retardant in the region.

Four MAFFS were called to combat the Waldo Canyon Fire, which came within five miles of the Air Force Academy in Colorado Springs, Colo. High altitude, high temperature, and heavy smoke made the fires difficult to contain, and more fires erupted in Coloraco, South Dakota, and Wyoming. By June 30, all the MAFFS in the country were in the Rocky Mountain region.

—Seth J. Miller

USAF photo by A1C Dillon Davis

targets at sea," said Robert Thomson, AFGSC exercise division chief. "This type of exercise is a prime example of how teamwork among different nations can help increase stability," he added.

Constant Vigilance—the second major exercise for the bomber force in 24 hours—proved the nuclear bomber force's ability to "respond quickly and efficiently to real world situations," said Thomson.

Both exercises validated AFGSC's ability to "support both conventional and nuclear missions simultaneously," he added.

Kadena Air Combat

More than a dozen South Korea-based Air Force F-16 fighters and some 150 airmen flew to Japan for two weeks of air-to-air combat drills, tangling with F-15s at Kadena Air Base, in June.

"This dissimilar air-to-air combat training is vital to preserving the Pacific Air Forces' ability to gain and maintain air superiority," said Lt. Col. Douglas Thies, commander of the F-16 contingent from Kunsan AB, South Korea, which arrived at Kadena June 8.

"The chance to engage with the F-15 Eagles provides a unique opportunity ... to test my abilities against a different aircraft and learn how it operates," said Capt. Keegan Dale.

Kadena-based AWACS aircrews directed the 44th Fighter Squadron F-15s against the visiting Falcons, garnering realistic experience controlling aerial engagements and giving its tanker

07.06.2012

Two A-10 Thunderbolt II aircraft taxi onto the flight line at Spangdahlem AB, Germany, as another takes off for Exercise Dacian Thunder in Romania. Some 250 US airmen and 10 A-10 aircraft participated in the bilateral exercise with the Romanian Air Force. Dacian Thunder focused on training for close air support and combat search and rescue.

Senior Staff Changes

RETIREMENTS: Gen. Donald J. **Hoffman,** Brig. Gen. Scott A. **Bethel,** Brig. Gen. Cary C. **Chun.**

NOMINATION: To be Major General: Howard D. **Stendahl.**

CHANGES: Maj. Gen. Terrence A. **Feehan,** from Prgm. Executive, Prgms. & Integration, Missile Defense Agency, Office of the Undersecretary of Defense, Acq., Tech., & Log., Huntsville, Ala., to Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif. ... Maj. Gen. (sel.) Samuel A. **Greaves,** from Dir., Strat. Plans, Prgms., & Analyses, AFSPC, Peterson AFB, Colo., to Dep. Dir., Missile Defense Agency, Office of the Undersecretary of Defense, Acq., Tech., & Log., Huntsville, Ala. ... Brig. Gen. Roger W. **Teague,** from Vice Cmdr., SMC, AFSPC, Los Angeles AFB, Calif., to Dir., Strat. Plans, Prgms., & Analyses, AFSPC, Peterson AFB, Colo.

USAF photo by SSgt. Christopher Hubenthal

Fall Down Go Boom: *A B-52 drops live guided bombs as an F-15 flies alongside during the Midway White III training exercise in June over the Nevada Test and Training Range.*

crews practice in refueling a variety of aircraft.

Last USAF C-17 Ordered

The Air Force ordered its 224th—and likely final—C-17 Globemaster III airlifter from Boeing Co. in a $169.8 million contract announced June 19.

Boeing expects to roll out the aircraft from its Long Beach, Calif., facility next May, the Pentagon said in June.

Congress originally appropriated funds for the Air Force to build a fleet of 223 C-17s, but added money to replace one lost in a 2010 Alaska crash.

The replacement aircraft restores the fleet size to its planned 223-airframe inventory, and Air Force leaders maintain this is sufficient to meet current defense plans, with a small reserve margin.

The Pentagon is running a mobility study to assess how well it believes the transport enterprise—including airlift—supports the new defense strategy.

Pakistan Supply Routes Reopened

Pakistan reopened its overland supply routes to NATO forces for the transit of nonlethal materiel after nearly eight months of blockade, the State Department announced in early July. "This is a tangible demonstration of Pakistan's support for a secure, peaceful, and prosperous Afghanistan and our shared objectives in the region," Secretary of State Hillary Rodham Clinton said in the statement July 3. Pakistan closed its roadways to NATO last November in reaction to an allied airstrike that mistakenly killed 24 Pakistani soldiers. Pakistan's move will "help the United States and ISAF conduct the planned drawdown at a much lower cost," said Clinton, adding that the government agreed to "continue not to charge any transit fee in the larger interest of peace and security in Afghanistan and the region.

The Pakistan Bill

Pakistan's long hold on the use of supply routes through its territory—not counting extortionary kickbacks—had cost the Defense Department an extra $100 million a month to move materiel to and from Afghanistan, Senate Armed Services Committee Chairman Carl Levin (D-Mich.) said in June.

Before it agreed to lift the restrictions, Pakistan demanded an additional $5,000 per stranded shipping container, up from roughly $250 before Pakistan slammed the door on NATO last November.

"We have to avoid caving in to what I consider ... blackmail by Pakistan," Levin told journalists at a breakfast meeting in Washington, D.C. "That's 20 times more. We can't give in to that," he added.

Lack of access to the overland supply routes would have made it almost impossible to meet President Obama's 2014 deadline to the US military withdrawal, said a former US regional commander in Afghanistan, Marine Corps Maj. Gen. John A. Toolan Jr., in April.

Levin, who visited Afghanistan in June, said he is, however, optimistic that another recent deal, to allow troops and supplies to transit neighboring Kyrgyzstan, Kazakhstan, and Uzbekistan, could alleviate problems.

F-22 Backup O2 Systems Ordered

The Air Force in early June awarded Lockheed Martin a $19.2 million contract to procure the first batch of automatic backup oxygen systems for the F-22 fleet.

The service is installing A-BOS on all F-22s as an added safety margin to protect pilots from hypoxia-like symptoms intermittently reported over the last couple of years and which led to a fleetwide grounding in 2011.

Lockheed Martin will provide 40 A-BOS kits for retrofit, plus nonrecurring engineering activities and 10 spares by April 2013 under the terms of the June 5 contract.

In May, Defense Secretary Leon E. Panetta told the Air Force to accelerate its A-BOS retrofit schedule to modify all 185 F-22s a year earlier than originally planned.

The first A-BOS retrofit on the new timetable is slated for December, and the service aims to refit the entire fleet by June 2014.

Great Lakes, Great Partners

Michigan Air National Guard A-10s and KC-135s recently flew to Estonia to solidify interoperability with allies in the Baltic region, specifically for joint operations in Afghanistan.

The 127th Wing jets from Selfridge ANGB, Mich., and airmen from across the state arrived at Amari AB, Estonia, for Exercise Sabre Strike 2012, integrating with forces from Estonia, Latvia, and Lithuania. The exercised commenced June 10.

"The cooperation that we have enjoyed with the Estonian Air Force has been outstanding," said CMSgt. Dennis Barriger, one of the Michigan Air Guardsmen deployed to Estonia.

In addition to the nearly 150 Guardsmen, some 2,000 soldiers and airmen from Britain, Canada, Finland, and France participated in the US Army Europe air and ground exercises held simultaneously across Estonia, Latvia, and Lithuania June 10-22.

51 and Counting

USAF launched a secret national security payload atop an evolved expendable launch vehicle booster on June 29, marking 51 successful EELV launches without a failure, Air Force Space Command announced.

A United Launch Alliance Delta IV rocket carried the National Reconnaissance Office NROL-15 payload to orbit from Cape Canaveral AFS, Fla. It was the second EELV launch in nine days. Overall, USAF has recorded 87 consecutive successful national security space launches since 1999.

"We are proud of this launch success record, an amazing record in the history of spaceflight," said Gen. William L. Shelton, AFSPC commander, of the earlier, June 20, launch.

EELV rockets include both ULA's Atlas V-based booster and Delta IV rockets, which launch from Cape Canaveral or Vandenberg AFB, Calif.

"This morning's flawless launch is the product of many months of hard work and collaboration of government and industry teams," Col. James D. Fisher, director of NRO's space launch office, said after the June 20 launch.

No SOF Landing

The Air Force has dropped—for now—its plans for a low-altitude special operations training in parts of southern Colorado and northern New Mexico, according to 27th Special Operations Wing officials at Cannon AFB, N.M., this spring.

"The need for the low-altitude training still exists," but as a result of changing needs in Afghanistan and "the many public comments received," the wing is rethinking its proposal and considering another, more in-depth environmental review, the Air Force said in a news release.

"I want to ensure that pilots and crews receive the training they need to perform their combat missions," Sen. Mark Udall (D-Colo.), representing a constituency affected by the training, said in a June 6 statement. Welcoming the Air Force's move, he added that USAF's "training plan needed to be better coordinated with local communities and other airspace users."

Commander Pulled After CV-22 Crash

Air Force officials relieved the commander of the 8th Special Operations Squadron following the crash June 13 of one of its CV-22 Osprey tilt-rotors on a training sortie from Hurlburt Field, Fla.

The 1st Special Operations Wing justified the removal based on a "loss of confidence" in the commander's "ability to effectively command the unit," Col. James C. Slife said in a statement June 21.

The squadron's demanding mission "require[s] new leadership to maintain the highest levels of precision," he added.

All five of the Osprey's aircrew were injured in the crash. At the time of the accident, the aircraft was on a two-ship gunnery training sortie over the neighboring Eglin Range Complex. First responders found the aircraft upside down and severely damaged, said Slife.

Maj. Brian Luce, one of the pilots, and TSgt. Christopher Dawson, a flight engineer, were released from the hospital two days after the crash. The squadron temporarily suspended flight operations to attend to the victims and their families.

Capt. Brett Cassidy, the second pilot, was released from the hospital June 19, according to Hurlburt officials.

At press time flight engineers TSgt. Edilberto Malave and SSgt. Sean McMahon were still undergoing treatment and rehabilitation.

A board of officials is investigating the accident.

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NATO Stands With Turkey

NATO condemned Syria's shootdown of a Turkish RF-4 Phantom reconnaissance aircraft off the Syrian coast, expressing solidarity with Turkey—a NATO member—in an emergency meeting June 26.

"We consider this act to be unacceptable and condemn it in the strongest terms," stated NATO General Secretary Anders Fogh Rasmussen, following the ambassadorial meeting convened at Turkey's request in response to the attack.

The Alliance's 28 members stopped short of threatening military action against Syria, vowing instead to "follow the situation closely and with great concern," according to NATO's statement.

"Let me make this clear. The security of the Alliance is indivisible. We stand together with Turkey in the spirit of strong solidarity," said Rasmussen.

Turkey claims Syrian air defenses deliberately shot down the RF-4 in international airspace after the aircraft inadvertently entered Syrian airspace on a training sortie June 22. Instead of scrambling fighters to intercept the aircraft, Syrian air defenses breached peacetime protocol, firing on the Phantom without warning, according to a Turkish foreign ministry statement.

US Secretary of State Hillary Rodham Clinton condemned the shootdown as "yet another reflection of the Syrian authorities' callous disregard for international norms, human life, and peace and security." At press time, the Phantom crew was still missing.

The wing is refining its requirements and expects to have a revised plan for special operations flight training needs in early 2013.

The Final Drone of Phantoms

The last F-4 Phantom destined for conversion to a QF-4 aerial target drone recently entered the 309th Aircraft Maintenance and Regeneration Group's refurbishment line at Davis-Monthan AFB, Ariz., according to the base newspaper, *Desert Lightning News*.

Regeneration workers towed the RF-4C reconnaissance version from the base's aircraft boneyard into the rework hangar to prepare for its modification to drone configuration.

The recce Phantom, serial No. 68-0609, will become the 318th QF-4 drone supplied to the Air Force when it is delivered next January.

Once this conversion is completed, the 576th Aerospace Maintenance and Regeneration Squadron refit team will begin work on the Air Force's QF-16 Falcon full-scale aerial target program.

Davis-Monthan has 210 F-16s in stock, from which the Air Force plans to convert some 126 to QF-16 drones, according to AMARG officials.

The Boeing-modified prototype QF-16 flew its maiden sortie in May.

Navy Global Hawk Is Triton

Northrop Grumman unveiled the Navy's first production Global Hawk remotely piloted aircraft on June 14, bestowing on it the name Triton. The ceremony was held at the company's Palmdale, Calif., facility June 14.

The name is in keeping with a Navy tradition of naming surveillance types for Greek sea gods. The MQ-4C Triton's symbolic namesake is the mythical messenger of the sea.

Working in tandem with the Navy's new P-8A Poseidon maritime patrol aircraft, Triton extends the aircraft's field of view, feeding back data from its

I'm Getting Dizzy: ***SSgt. Edwin Martinez-Diaz checks the rotation of an F-15 engine at the 18th Component Maintenance Squadron engine test facility on Kadena AB, Japan. The facility is primarily used for testing uninstalled engines following maintenance and as a trim pad to perform tests on aircraft that run above 80 percent of the engine's rated capacity.***

USAF photo by A1C Justin Veazie

The War on Terrorism

Operation Enduring Freedom

Casualties

As of July 12, a total of 2,030 Americans had died in Operation Enduring Freedom. The total includes 2,027 troops and three Department of Defense civilians. Of these deaths, 1,601 were killed in action with the enemy while 429 died in noncombat incidents.

There have been 16,781 troops wounded during OEF.

Air Commando Posthumously Awarded Silver Star

Combat controller SrA. Mark Forester was posthumously awarded the Silver Star for gallantry in Afghanistan, in an Air Force Special Operations Command ceremony at Hurlburt Field, Fla., in June.

"Though he cannot be here to accept this recognition and probably would have shunned the attention if he were, we honor and document his heroic actions in the presence of his family, his teammates, and his friends," said Lt. Gen. Eric E. Fiel, AFSOC commander.

Forester was killed by an insurgent sniper's bullet while assisting a fallen comrade to safety during an assault on an insurgent haven in Uruzgan province, on Sept. 29, 2010. His actions that day "led to the elimination of 12 insurgents and capture of a significant weapons cache," AFSOC stated in a news release.

His parents, Ray and Pat Forester, of Haleyville, Ala., accepted the award on his behalf at Hurlburt, June 15.

"We commit his actions forever to memory, as is due a true hero and brother-in-arms," said Fiel. The Silver Star is the third highest combat military decoration awarded for valor in the face of the enemy.

Pilot Error in C-17 Mishap

Investigators determined that pilot error was the chief cause of a landing accident that severely damaged a C-17 airlifter at FOB Shank, Afghanistan, in January, Air Mobility Command announced.

"The pilot and co-pilot failed to identify that the landing distance required to safely stop the aircraft exceeded the runway length," AMC stated in a press release outlining the accident investigation board's findings June 11.

As a result, the airlifter overran the FOB's airstrip and impacted a berm, causing significant damage to the landing gear, undercarriage, cargo bay floor, underbelly mounted antennas, and main structural components, AMC added.

Investigators concluded that the failure of ground personnel at Shank to properly assess the runway's condition and suitability for landings also contributed to the crash.

Although there were no significant injuries or damage to other equipment, AMC tallied the cost of the repairs to the aircraft alone at $69.4 million.

Spartans Go Home

Air National Guard C-27J Spartans ceased supporting Army operations in Afghanistan in June, and Air Force leaders don't plan to deploy the aircraft again, service officials recently said.

In a small June ceremony at Kandahar, the Air Force inactivated the 702nd Expeditionary Airlift Squadron that had operated two C-27Js from that base since August 2011.

The small airlifters provided direct support to Army units in southern Afghanistan, earning high marks from the operators and the soldiers whom they supported.

In less than a year, the two aircraft flew 3,200 sorties, ferrying 1,400 tons of cargo and 25,000 passengers, and executing 71 airdrops, according to Kandahar officials.

"We feel like we've made a difference for the young troops on the tip of the spear," said Lt. Col. Michael Lunt, 702nd EAS commander at the inactivation ceremony June 18.

Though the Air Force is seeking to eliminate the C-27J fleet in its Fiscal 2013 budget, service leaders decided to pull the Spartans out of Afghanistan even before the end of the year to avoid paying some $20 million in contractor support costs, a spokeswoman said. In their place, USAF is now operating the larger C-130 to directly support Army units in the field.

Lawmakers have resisted the Air Force's request to retire the airplane. Both the Ohio ANG's 179th Airlift Wing in Mansfield and the Maryland ANG's 175th Wing in Baltimore continue to train with the aircraft Stateside.

360-degree multifunction active sensor radar, according to the Navy.

Triton was developed under the sea service's Broad Area Maritime Surveillance program. "Today is a significant day for the BAMS team," said Rear Adm. William E. Shannon III, program executive officer for unmanned aviation and strike weapons.

Triton will "provide the fleet a game-changing persistent maritime and littoral intelligence, surveillance, and reconnaissance capability," he said.

Based on USAF's RQ-4B Global Hawk, Triton should become operational in 2015. The Navy plans to buy a total of 68 production MQ-4Cs.

Mysterious Raptor Accident

The Air Force released few details about a May 31 F-22 accident at Tyndall AFB, Fla.

"Everything surrounding that incident" is under investigation , said 325th Fighter Wing spokesman Herman Bell.

Tyndall's 325th Fighter Wing trains pilots transitioning to the Raptor from other fighters, and the mishap sortie occurred the second time the student flew the F-22, according to Bell.

Though the pilot was uninjured, the aircraft suffered "a number of scrapes on the bottom," Bell said, and had to be towed from the scene.

The F-22 is "still fully intact," but the accident will likely be considered a Class A mishap, totaling more than $1 million in damage, said Bell. "The individual walked away unharmed. That's the important thing."

Sharpening the Lancer

B-1B bombers are getting one of the most comprehensive cockpit and operator station reworks ever. The upgrade includes new displays, network interfaces, and controls.

Cockpit upgrades include two new eight-by-10-inch multifunction displays with digital flight instruments and color moving maps, 337th Test and Evaluation Squadron officials at Dyess AFB, Tex., said in a June press release.

The bomber's two weapon crew workstations get five new color displays with similar map and sensor displays, in addition to new keyboard and cursor hardware.

"The B-1 has never seen this many upgrades in one block," said Maj. Thomas Bryant, assistant director of operations with the 337th TES.

In addition to the new panels, a modernized data link will integrate the B-1 into Link 16 networks and allow external targeting information to go directly into the B-1's own system.

"These upgrades will give us an entirely new aircraft; this is a game changer," Bryant said. The upgrades

are being made under the Sustainment Block 16 modification effort.

Developmental testing is slated to begin next March, followed by operational testing beginning in September 2013.

Russia's Next Generation Bomber

Russian Prime Minister Dmitry Medvedev reiterated Russia's commitment to developing a fifth generation strategic bomber during a visit to an aircraft factory in Kazan in June.

Simply updating the existing Tu-95MC and Tu-160 bomber fleets to extend their service lives isn't sufficient, Medvedev said, according to a UPI report citing Russia's state-run news agency RIA Novosti. He insisted Russia must develop a new bomber.

Medvedev's comments came just days after Russian Deputy Prime Minister Dmitry Rogozin claimed that modern air defenses rendered bombers obsolete from the outset, sparking a row with Russia's military Chief, Gen. Nikolai Makarov.

"If we reach production phase, this plane will outperform any modern aircraft of the same class, including those built by the Americans," said Makarov, according to RIA Novosti.

Makarov said Russia has already "made some progress in the development of the new bomber."

Devil in the Details

USAF halted integration work on its Blue Devil Block II surveillance airship due to "delays, technical challenges, and higher-than-expected deployment costs," a service spokeswoman said in June.

Virginia-based firm Mav6 designed the craft to locate and monitor improvised explosive devices in Afghanistan, winning a fixed-fee Air Force contract in 2010 to build, test, and deploy the airship.

"Since that time, technical problems have remained, to include flight-control software, tailfin design, and electrical system wiring," she said June 8.

The airship's intelligence, surveillance, and reconnaissance payload was to include full-motion video, wide-area motion imagery systems, signals intelligence, and multiple data links, she said.

The Air Force will continue to use the Blue Devil Block 1 imagery and sensor suite, mounted on modified business aircraft, to support troops in Afghanistan into Fiscal 2013, USAF's science chief Steven H. Walker, told lawmakers in February.

Norway's F-35s

Norway's Defense Minister, Espen B. Eide, has authorized purchase of the country's first two F-35 strike fighters as part of an estimated $4 billion deal for as many as 52 of the aircraft. "For the first time in three decades we are now ordering new combat aircraft for the armed forces," Eide said in announcing the agreement June 15.

Defense Secretary Leon E. Panetta earlier in June approved a Norwegian request to integrate its indigenously developed Joint Strike Missile on the F-35. Approval paved the way for the formal purchase deal.

Eide said Norway will now "begin preparations for the final phase" of JSM development "after receiving confirmation from US authorities of their support."

The order is the largest defense acquisition in Norway's history, according to the defense release.

Most of the fleet will be based at Ørland in central Norway, with a small quick-reaction alert force detached to the country's far north. The initial aircraft are slated for delivery in 2016, Reuters reported.

Earlier in the month, the Pentagon also notified Congress of a potential sale of two C-130J airlifters to Norway. The $300 million deal would replace a C-130J lost earlier this year and boost Norway's overall airlift capacity.

F-35 in Ballistic Missile Defense

A testbed F-35 fighter's active electronically scanned array radar and distributed aperture system detected and tracked several ballistic missiles earlier this year, contractor Northrop Grumman revealed in June.

The AN/AAQ-37 DAS and AN/APG-81 radar simultaneously locked on and tracked five ballistic rockets from launch to well past the second-stage burnout, according to a company release June 26.

"Northrop Grumman demonstrated these ballistic missile tracking modes with only minor modifications to the baseline F-35 radar and DAS software," said Jeff Leavitt, vice president of Northrop Grumman's combat avionic systems business unit.

USAF photo by SSgt. Scottie McCord

***Wave Your Green Flag If You're Sure:** A1C Benjamin Schwartz (l) and SSgt. Jeffrey White cover the engine of an E-3 AWACS at Nellis AFB, Nev., after it completed a six-hour flight for Green Flag West, a multinational air-land combat integration training exercise.*

Bare Base Consolidation

The Air Force consolidated its contingency response mission under the administrative control of a single wing at JB McGuire-Dix-Lakehurst, N.J., inactivating the 615th Contingency Response Wing at Travis AFB, Calif., this spring.

"The 621st CRW must remain ready to answer the call whenever and wherever," said Maj. Gen. William J. Bender, commander of the Air Force Expeditionary Center at McGuire, during the 615th's inactivation ceremony May 29.

McGuire's 621st CRW now oversees all airmen specially trained in the rapid set-up and operation of air bases at austere sites worldwide. The unit's two response groups and single operations support group now report directly to the 621st CRW.

Old School, New School

The Air Force elevated its foreign air advisory course to a full-up schoolhouse,

christening the US Air Force Air Advisor Academy in an activation ceremony at JB McGuire-Dix-Lakehurst, N.J., June 12.

The course was started to equip US advisors to train Afghan and Iraqi airmen, but today "the skill set air advisors bring to the fight is highly sought after in all areas of responsibility," said 37th Training Wing Commander Col. Eric Axelbank.

The course was always run by Air Education and Training Command, but hosted by Air Mobility Command's expeditionary center at McGuire since its founding in 2008.

The new academy remains at McGuire, but now reports directly to AETC's 37th TRW at JBSA-Lackland, Tex., said a wing spokeswoman.

Graduates are tasked with helping develop nascent air forces across US Africa Command, US Central Command, and US Southern Command areas of responsibility. The school plans to graduate roughly 1,500 airmen annually, in a variety of specialties.

Drill Sergeant Misconduct Prompts Probe

The Air Force is launching a comprehensive review of its basic military training system in response to repeated problems with its instructor corps. The Air Force appointed Maj. Gen. Margaret H. Woodward, acting planning director on the Air Staff, to oversee the probe into basic military training misconduct, which included allegations of basic trainees being sexually assaulted by their instructors.

Woodward will look into "sexual and other abuse-of-power misconduct" at BMT and all other Air Education and Training Command initial and technical training units, service officials announced.

AETC Commander Gen. Edward A. Rice Jr. said he didn't "presume that there are command-climate issues," but he's not ruling out the possibility. The review "will be comprehensive and will look at every aspect of BMT to include the command structure," reported the *Beaumont Enterprise* of Beaumont, Tex., June 12.

The service removed 35 BMT instructors from their jobs for a variety of reasons, including illicit sexual conduct as well as medical and academic issues, repeated tardiness, and failing to meet uniform standards, according to the newspaper.

The Air Force did not disclose how many of the cases dealt with sexual misconduct, but Col. Polly Kenny, 2nd Air Force staff judge advocate in Biloxi, Miss., told the newspaper the "majority" did not.

USAF photo by SSgt. Stephany D. Richards

Braving the Heat: *A C-130 Hercules equipped with a Modular Airborne Firefighting System drops retardant over Waldo Canyon near Colorado Springs, Colo., helping the US Forest Service contain the dangerous and out of control wildfires that raged there. Four airmen lost their lives in the firefighting effort in South Dakota. (See "Four Airmen Die Fighting Western Wildfires," p. 10.)*

Another New Mobility Study

The Office of the Secretary of Defense has launched a study to assess the air, land, and sea mobility capabilities of the armed forces to examine whether these match the requirements set out in the new national military strategy.

In its Fiscal 2013 budget request the Air Force proposed cutting the air mobility fleet to 275 strategic transports and 318 theater airlifters. USAF's proposed airlift fleet would support the new framework with "slightly" excess capacity, Chief of Staff Gen. Norton A. Schwartz said in March.

The Mobility Capabilities Assessment for 2018 study "is one of many future efforts designed to provide senior leaders with insights regarding future capabilities," said OSD spokeswoman Cheryl Irwin.

Schwartz said he thinks the study will validate USAF's force structure proposals and offer analytical proof of their soundness.

The nine-month study is a joint undertaking by OSD's Cost Assessment and Program Evaluation office, the Joint Staff, and US Transportation Command, Irwin said June 8.

AFSOC Training Grows

Air Force Special Operations Command recently stood up a training wing to meet the increased demand for air commandos, activating the 24th Special Operations Wing at Hurlburt Field, Fla.

The 24th SOW "allows a single commander to lead the recruiting, training, and development of our special tactics warriors and ultimately provide combatant commanders with world-class airmen to accomplish their mission," said AFSOC Commander Lt. Gen. Eric E. Fiel, speaking at the June 12 activation.

DOD photo by TSgt. Michael R. Holzworth

USAF photo by SSgt. Miguel Lara III

North, to Alaska: *Above, an F-16C taxis toward the runway at Eielson AFB, Alaska, before taking off on a mission during Red Flag Alaska 2012 in June. At right, a German Air Force Eurofighter taxis at Eielson as a USAF KC-135R takes off during the realistic air combat exercise. It was the first overseas deployment for the German fighter aircraft and the first time Eurofighters participated in a US exercise.*

AFSOC now boasts three dedicated wings—the 1st SOW and 24th SOW at Hurlburt, as well as the 27th SOW at Cannon AFB, N.M.

Resident expertise will include airfield reconnaissance, assessment, and control, joint terminal attack control, personnel recovery, weather, and environmental reconnaissance, according to Hurlburt officials.

Montana Fights F-15 Move

The state of Montana has sued the Pentagon to halt the transfer of the Montana Air National Guard F-15s to California, putting Defense Department plans on hold until the federal case is decided.

Though the Great Falls unit will re-equip with eight C-130s drawn from the Texas Air Guard, the new aircraft would arrive "up to 18 months" after the F-15s are scheduled to leave, said Montana Attorney General Steve Bullock.

"The state of Montana is left with no choice but to act to prevent a mission gap that would leave the Montana Air National Guard at enormous risk," stated a Montana Department of Justice June 15 news release.

The 120th Fighter Wing in Great Falls operates 15 F-15s, all of which would go to the California Air Guard under USAF's Fiscal 2013 force structure rearrangements. This gap "would cause irreparable harm" to the wing's operations, Bullock said.

Gov. Brian Schweitzer (D) petitioned the federal court to declare that any F-15 transfer may only occur with his consent, and only after the C-130s are fully prepared to stand up at Great Falls, according to court papers.

Loaner Falcons Packed Away

The last of 34 F-16s loaned to Italy under the Peace Caesar program touched down at Davis-Monthan AFB, Ariz., for storage at the beginning of June.

A flight of six F-16s arrived at Davis-Monthan in May, followed by another six on June 1, according to Teresa Pittman, spokeswoman for the base's 309th Aerospace Maintenance and Regeneration Group.

The F-16s were lent to Italy at that country's request when the Italian Air Force had to retire its F-104 Starfighters before its Eurofighter Typhoons were fully delivered.

Italy received the first aircraft in 2003 to ensure unbroken coverage of its national airspace. It operated the jets until this year.

Eurofighter announced that Italy's Typhoons finally assumed sole responsibility for defending Italian airspace in May.

Crash Site Found in Alaska

Defense Department archaeologists are investigating the wreckage of a C-124 Globemaster transport that crashed in Alaska in 1952.

An Alaska Army National Guard UH-60 Black Hawk helicopter crew first spotted and photographed the unidentified wreck site on a training sortie over Knik Glacier June 10, according to the Joint POW/MIA Accounting Command.

Several days later, a specialized JPAC investigation team arrived from JB Pearl Harbor-Hickam, Hawaii, to survey the crash site roughly 45 miles east of Anchorage. After identifying the aircraft, the team collected bone fragments and personal equipment for identification at a lab in Hawaii, reported the Associated Press June 28.

The Military Air Transport Service C-124A was flying a routine transport hop from McChord AFB, Wash., to Elmendorf AFB, Alaska, when it went missing with 41 passengers and 11 crew aboard, according to a report in the *Anchorage Daily News*.

At the time, USAF and Civil Air Patrol search airplanes succeeded in locating the crash but found no survivors among the 52 people known to be on board, and the aircraft has since been buried in deep snow.

Berlin Candy Bomber Honored

Officials earlier this spring dedicated the C-17 Aircrew Training Center at JB Charleston, S.C., in honor of retired Col. Gail S. Halvorsen, the famous "Candy Bomber" of the 1948-49 Berlin Airlift.

"Halvorsen's kindness provides the 'why' to what we do day in and day out as an airlift wing," said Col. Erik W. Hansen, 437th Airlift Wing commander, christening the center June 15.

Famed for dropping packets of candy out the flare chute of his C-47 and C-54 transports to German children in bombed-out Berlin during the Soviet blockade, Halvorsen's greatest legacy was the compassion he showed as an airman, stressed Hansen.

"When I first flew over Berlin, I could look through the buildings," recounted Halvorsen—now 92 years old—at the ribbon cutting. "I didn't understand how two million people could have lived there," he recalled.

"There are 31 American heroes and 39 British heroes of the Berlin Airlift ... and I'm not one of them," said Halvorsen, accepting the honor for his fellow airmen who died in crashes during the airlift. ■

Verbatim

verbatim@afa.org

By Robert S. Dudney

Good for the Goose

"Risk is part of our lives as members of the military. I'm asking these airmen [F-22 pilots] to assume some risk that exceeds the norm in day-to-day training, and I have to be willing to do it myself and experience firsthand what they do. Flying the airplane allows me to understand exactly what our airmen are dealing with. ... I'm confident we're on the right track, ensuring the safety of our crews and maintaining the F-22's combat readiness."—***Gen. G. Michael Hostage III, head of Air Combat Command, on qualifying to fly the F-22 despite problems with its oxygen system, Air Force News Service dispatch, July 5.***

Reaching Across the Aisle

"It seems like the biggest bipartisanship accomplishment we've had in recent memory is to destroy the Defense Department."—***Sen. Lindsey O. Graham (R-S.C.), remarks on sequestration at a Senate Appropriations Committee defense panel hearing, June 13.***

The Real Deal Speaks Out

"There are lots of things people do that revolt me, but I'm happy that I fought for this country—not to give them the right to do something stupid, but for the majority of the people to do the right thing. I'm a free-speech guy."—***Jack Jacobs, Vietnam War-era Medal of Honor recipient, on a recent Supreme Court's ruling that lying about military honors is protected under the First Amendment,*** **Washington Post,** ***July 2.***

Air Defense, Assad-Style

"The plane was using the same corridor used by Israeli planes three times in the past. Soldiers shot it down, since we did not see it on our radars and we were not informed about it. I say 100 percent, I wish we did not shoot it down. ... We are in a state of war, so every unidentified plane is an enemy plane. Let me state it again: We did not have the slightest idea about its identity when we shot it down."—***Syrian President Bashar Assad, discussing Syria's June 22 shootdown of a Turkish RF-4 reconnaissance aircraft, interview with Turkish newspaper*** **Cumhuriyet,** ***July 3.***

God and Man in USAF

"In recent months, the USAF has made various changes regarding the religious freedom of individuals bravely serving in the military. Most of these changes occurred following a Sept. 1, 2011, memorandum issued by Gen. Norton Schwartz, Chief of Staff of the USAF, imposing a stringent policy with regards to religion. The memo stated that General Schwartz expected 'chaplains, not commanders, to notify airmen of Chaplain Corps programs,' suggesting that the mere mention of these programs is impermissible. We believe this statement exemplifies the troubling 'complete separation' approach that is creating a chilling effect down the chain of command as airmen attempt to comply. ... The USAF repeatedly has succumbed to demands from organizations that seek to remove all references to God and faith in our military. ... The changes lend credence to the notion that the Air Force will remove any reference to God or faith that an outside organization brings to its attention."—***Letter from 66 members of Congress to Secretary of Defense Leon E. Panetta, June 19.***

A Family Resemblance

"While cyber [weaponry] may not look or smell exactly like a fighter aircraft or a bomber aircraft, the relevancy in any potential conflict in 2012 is the same. We have to be able to succeed against an enemy that wants to attack us in any way."—***Col. Robert Garland, commandant of USAF's Weapons School,*** **Wall Street Journal,** ***July 6.***

The McCain Mutiny

"It's outrageous, it's a national disgrace. They try all these experiments and all these different ideas that they have in the new class of carrier and obviously disregard the cost."—***Sen. John McCain (R-Ariz.), remarks on the Navy's new $12.3 billion aircraft carrier, USS*** **Gerald R. Ford,** ***interview with Bloomberg News, June 19.***

Some Way To Save Money

"It [biofuel] costs too much money. Buying fuel at $27 a gallon versus $4 a gallon is just something that no one would do in all circumstances."—***Rep. Mike Conway (R-Tex.), National Public Radio broadcast on the Navy's move to expensive "green" biofuels, July 5.***

Showboating?

"Amid lingering tensions in Northeast Asia, people cannot help but ask what is the real intention behind such brazen [US] showboating of military muscle in the region. ... With the US displaying its war machines and firing its missiles in the region with increasing frequency, it is impossible to believe that Washington means to play a positive and constructive role in the Asia-Pacific."—***Commentary in*** **China Daily,** ***which often reflects Beijing's official thinking, on a recent spate of US military exercises in the Pacific, July 6.***

Blowback Assured

"Don't throw the first punch unless you're willing to take that fight all the way to the end. I'd be very cautious about using any offensive capability until our networks in America are better protected. Ninety-five percent of those networks out there are private networks. That's part of the problem. If you're going to offensively do something, you'd better be darn careful that those networks can protect themselves. ... I would argue today that that's probably not a good idea."—***Rep. Mike Rogers (R-Mich.), chairman of the House Intelligence Committee, remarks on American use of cyber attacks against Iran, Federal News Radio, June 22.***

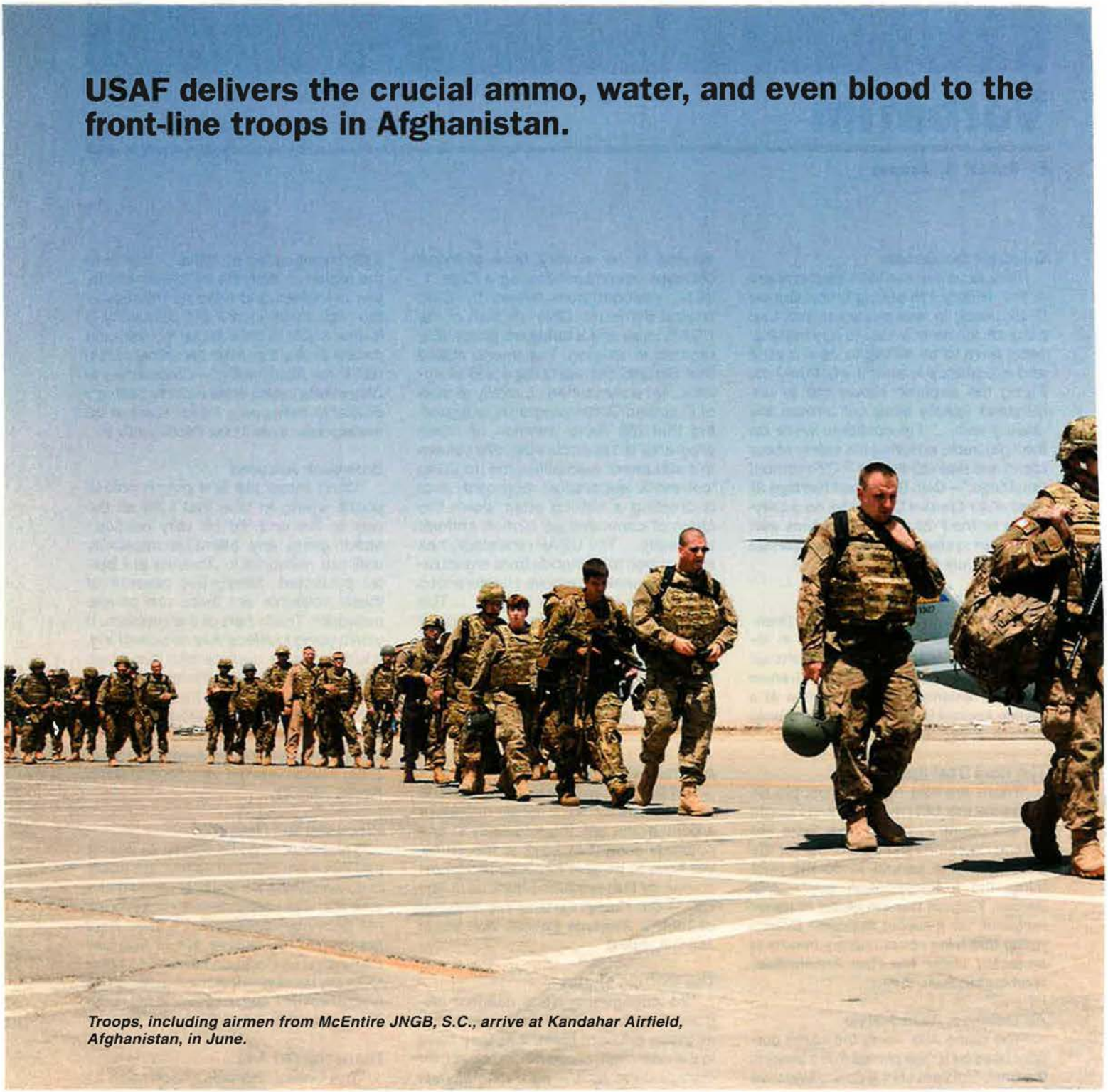
Preposterous Notion

"I just want to go on record as saying that there are many of us that are going to do everything we possibly can to make sure that this preposterous notion does not gain any real traction."—***Rep. Trent Franks (R-Ariz.), House Armed Services Committee, on Obama Administration plan to shrink US strategic nuclear arsenal to a level of about 1,000 weapons, Associated Press dispatch, July 3.***

There You Go Again

"The United States is abandoning its role as the global champion of human rights. Revelations that top officials are targeting people to be assassinated abroad, including American citizens, are only the most recent, disturbing proof of how far our nation's violation of human rights has extended. This development began after the terrorist attacks of Sept. 11, 2001, and has been sanctioned and escalated by bipartisan executive and legislative actions, without dissent from the general public. As a result, our country can no longer speak with moral authority on these critical issues."—***Former President Jimmy Carter, op-ed titled "A Cruel and Unusual Record,"*** **New York Times,** ***June 24.***

USAF delivers the crucial ammo, water, and even blood to the front-line troops in Afghanistan.



Troops, including airmen from McEntire JNGB, S.C., arrive at Kandahar Airfield, Afghanistan, in June.

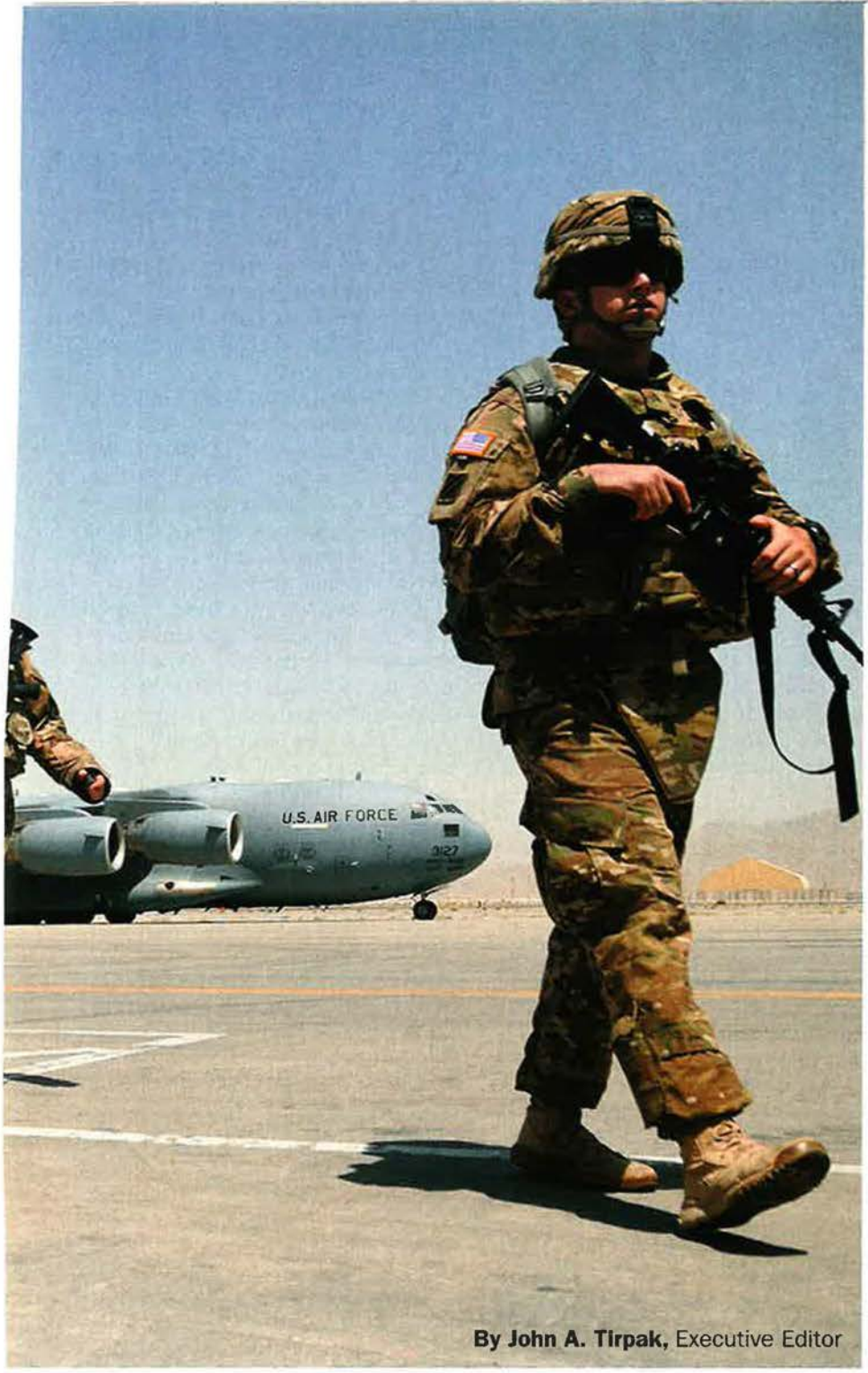
THE AERIAL I

A furious, drenching rain pours down on the flight line at Bagram Airfield, Afghanistan. It's just after 3 a.m. on a recent Monday. Despite the hour and the weather, C-130s, C-17s, a giant C-5, and even a reconditioned Vietnam War-era C-7 pass back and forth on the taxiways and ramps.

Other Air Force and commercial aircraft are parked in rows on the aprons. Most of these are being loaded, unloaded, or refueled and readied for more missions. The engine noise and activity are relentless.

"This is 24/7, 365, here," declares Lt. Col. Daniel Lemon, then commander of the aerial port squadron at Bagram, referring to the heavy flight line activity. If possible, that's an understatement.

Lemon oversees a vast materiel processing operation at Bagram. The materiel arrives by air, gets sorted into vast



USAF photo by TSgt. Caycee Cook

By John A. Tirpak, Executive Editor

LIFELINE

aisles of outdoor steel-wire shelves and parking lots, and then heads out again—usually within a few days. From Bagram, supplies are delivered to forward operating bases—or FOBs—scattered across Afghanistan.

Conversely, wheeled vehicles such as Humvees and MRAPs as well as other heavy equipment will usually be loaded on aircraft for "retrograde"—that is, for withdrawal from Afghanistan for pre-positioning depots elsewhere in the region or return to the United States.

Almost certainly, there will be no letup in this operating tempo for some time. Under the strategic agreement signed in May between President Barack Obama and Afghan President Hamid Karzai, US forces will steadily withdraw from Afghanistan. Responsibility for the country's security will slowly be handed off to Afghan Army and police forces.

As US personnel depart, the first to leave will be those ground forces handling logistics and support—the forces that have previously brought supplies overland with convoys.

The last to go will be the combat troops positioned at the many remote FOBs and the airmen who sustain them. Those remaining ground forces will depend more and more on airlift for every basic need—food, water, ammunition and fuel, to name a few.

Flexible and Agile

Already, an estimated 27,000 US troops in Afghanistan have become wholly dependent on airlift for these needs. That number is expected to steadily increase.

In Afghanistan, the quantity of air-dropped supplies has risen dramatically, jumping from 3.5 million pounds in 2006 up to 80 million pounds in 2011.

As the number of troops on the ground begins to decline, the airdropped volume of goods also will decline, though airdrop will constitute an ever-greater percentage of the total resupply effort.

"We are on track to do roughly the same amount that we did in 2010," said Col. Jacqueline D. Van Ovost, mobility director for US Air Forces Central. She added that 2011 was the spike year. Numbers in 2012 have declined somewhat because of reductions in personnel and other factors.

However, she said, the FOBs are becoming "more isolated" as the drawdown progresses, and that fact increases their need for resupply by air. The FOBs also don't have the facilities to store large quantities of supplies, she noted, and must rely on just-in-time shipments.

The Air Force has great flexibility. It can use large C-17s that can air-drop 40 pallets at a time. Or it can go small with a C-130 delivering a half-dozen pallets.

For homeward redeployment of forces through 2014, USAF is using C-17s and C-5s primed for "multimodal" operations. That means these aircraft haul heavy gear such as vehicles or helicopters out of Afghanistan to a Middle East airfield near a seaport. After a quick transfer, the equipment moves the rest of the way to its final destination by sea, thus reducing overall cost.

Staff photo by John A. Tirpak

A C-17 taxis in at Bagram Airfield, Afghanistan, the busiest aerial port facility in USAF, by far. About 98 percent of incoming cargo reaches far-flung forward operating bases within 72 hours of arriving at Bagram.

This multimodal way became essential, said Van Ovost, after Pakistan last year froze convoy US shipments to and from the Karachi seaport. Wheeled and rail traffic over the Northern Distribution Network through Uzbekistan and other countries picked up the traffic.

The multimodal concept also has been exercised for inbound deliveries.

In an interview, Lemon reported that USAF mobility forces currently carry out about 110 missions a day, in and out of Afghanistan. His organization in any 24-hour period can cope with loading and unloading seven aircraft—three widebodies and four narrow-bodies.

Still, there is usually a backlog. As Lemon was speaking, a gigantic Russian Antonov Il-76 and a commercial 747 shared the ramps with a dozen or so USAF "gray tail" airplanes. On the other side of the airfield, Army attack and utility helicopters, USAF rescue helicopters, A-10 attack airplanes, and various remotely piloted aircraft went about their missions.

Increased Velocity

Lemon's organization pushes to make sure materiel doesn't sit idle. "The goal is to get the cargo out to the FOBs in less than 72 hours," he said. "Over the years, the workload has increased, but we're getting better with our velocity output."

He displayed a chart showing that in August 2010, the percentage of monthly cargo pushed on to its final destination within 72 hours stood at 55 percent. By January 2012, the figure had reached 98 percent. There it has remained.

Lemon credits some of the increased velocity to major improvements at Bagram's Air Terminal Operations Center, an aerial port much like those at Stateside locations at Dover AFB, Del., or JB Charleston, S.C. There's fresh concrete, modern hangars, and plenty of forklifts and loaders.

Thirteen of these loaders are capable of hoisting a 60,000-pound load. Another six are of the 10,000-pound variety. Also on hand are a number of 25,000-pound-capable Halvorsens.

It's the busiest aerial port in the Air Force. Charleston moves an average of 61 passengers and 92 tons of cargo each day. At Travis AFB, Calif., the figures are 113 passengers and 116 tons of materiel. In stark contrast, Bagram each day handles an average of 1,475 passengers and 600 tons of cargo.

"Any time there's a huge Army or Air Force unit going in or out, they go through us," Lemon said. "We synchronize their strategic lift out of here, we help them organize their cargo, we let them know their pax [passenger] show times, [and] coordinate with the TACC," or Tanker Airlift Control Center.

The work complement is a mixture of about 40 percent Active Duty and 60 percent Guard and Reserve personnel. Active airmen, who deploy as part of an air mobility expeditionary force, will come for about 120 days, though most overstay that limit. Guardsmen and Reservists, though, will usually split a deployment with another person, with each filling a job for about 60 days.

Lemon's group works closely with Air Forces Central's directorate for air mobility. The group gets a clear picture of what's coming in and plans days or weeks in advance as to how to marry up the cargo arriving with the tactical aircraft on hand.

Load planning, Lemon said, is "like a Tetris game; we try to optimize every piece of airlift, every cubic feet of space of that aircraft so that we don't fly anything empty."

Knowing what's on an aircraft at all times is of premier importance. This fact became all too evident at dawn on one recent day in Afghanistan. An Air Force C-130—loaded, engines turning, ready to take off—was unable to depart for an hour. There had been a failure of the local network keeping tabs on aircraft and the loads they carry. That meant neither

USAF photo by Capt. Raymond Geoffroy

A C-130H assigned to the 774th Expeditionary Airlft Squadron—the "Weasels"—is serviced at Bagram. Airlifters must vault the Hindu Kush range in the background on their multiple daily missions.

AFCENT nor the TACC at Scott AFB, Ill., could "see" what was moving. Only after the network came up again could the C-130 take off. It promptly taxied, rose, and vanished as it headed toward the Hindu Kush mountains to the north.

Most of the cargo from Bagram goes to the FOBs on C-130s. They do this in one of three ways.

The typical delivery is called an air-land mission; the C-130 takes off and flies to a short airfield adjacent to a FOB.

Then, there are two kinds of airdrop missions. In one, airmen drop unguided bundles of supplies by parachute. The other method features the Joint Precision Airdrop System; a GPS-aided steering mechanism guides the dropped load to a specific point.

Our Friends: Speed and Altitude

In air-land missions, say crew members, airfields can be extremely rudimentary—a dirt road, loose gravel—all the way up to a well-built short concrete runway of 3,000 feet or so. After a decade of Operation Enduring Freedom, more than half the FOBs have sturdy runways, but austere strips still abound.

Since most of the FOBs are in contested areas, flight crews wear body armor and helmets. The cockpit walls and floor have been paneled with sheets of Kevlar, and pilots make an aggressive approach, with gut-wrenching, high-rolling turns to quickly bleed off altitude and airspeed.

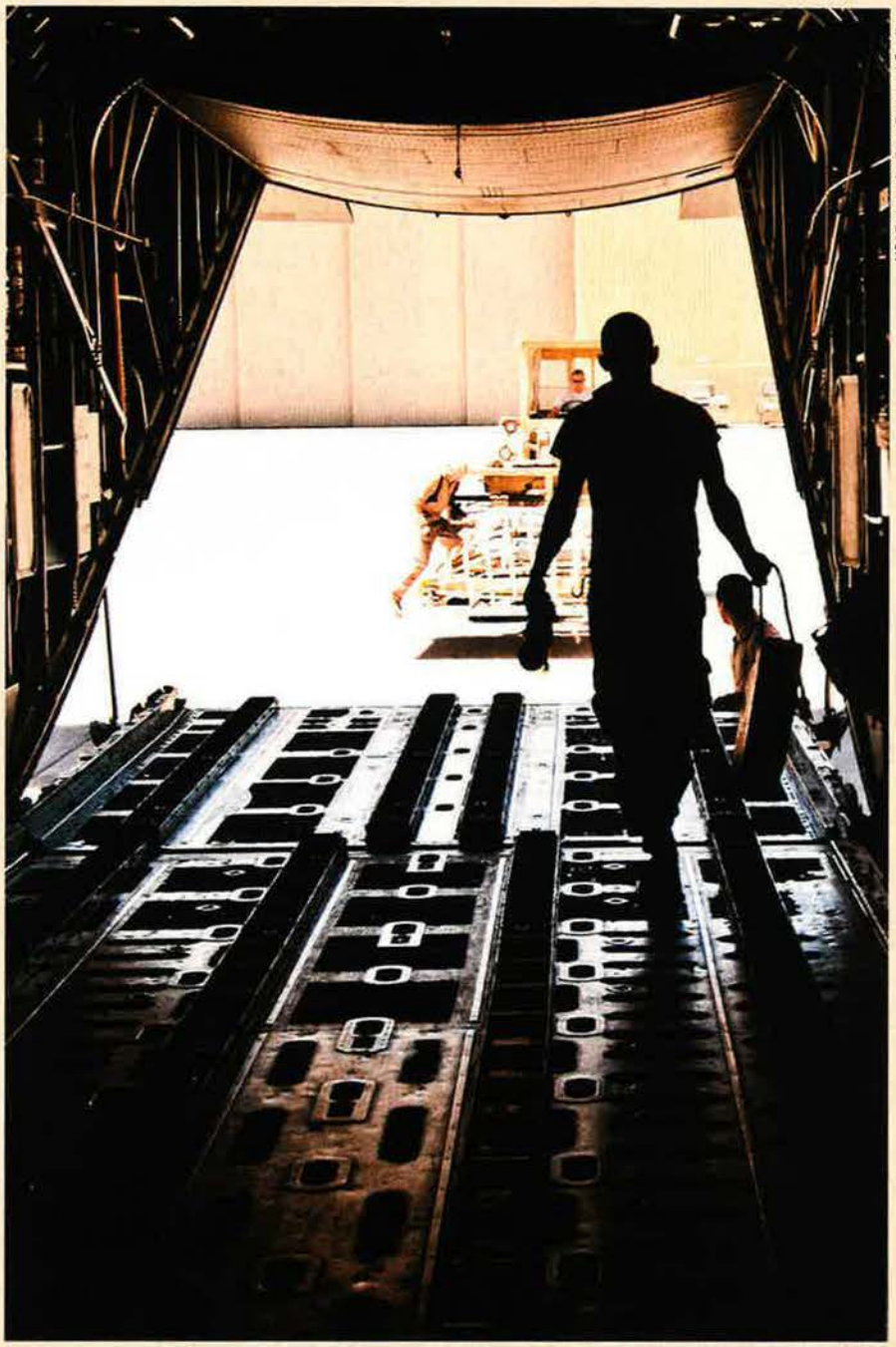
"Speed is our friend and altitude is our friend," said Lt. Col. John Strike, chief of tactics with the 774th Expeditionary Airlift Squadron at Bagram. The C-130s will usually "fly a high profile ... and then, [swiftly descend] the last five to 10 minutes of the mission."

Thus far, say aircrew members, the enemy has not used shoulder-fired missiles, though they are prepared for it. "All but one of our airplanes have ... countermeasures on them, and all our crews are qualified in it," Strike said.

Crews do, however, routinely discover holes in their aircraft caused by small-arms fire. A round from a standard AK-47 Kalashnikov assault rifle can reach about 3,000 feet. Pilots keep this in mind. Rocket-propelled grenades are another common threat.

Most of the protective measures are taken mindful of rifles and RPGs, said Strike, because "we're dropping down low; that's going to be the small-arms threat."

Upon landing, the aircraft will taxi to a safe spot or revetment adjacent to the FOB. Two Air Force security forces personnel, called a FAS (Fly Away Sentry) team, are the first off the aircraft, taking up stations at either wing tip to protect the aircraft and crew, and give cover for the unloading process.



USAF photo by Capt. Raymond Geoffroy

Airmen of the 455th Air Expeditionary Wing prepare to load cargo on an Air National Guard C-130H at Bagram in June. As the US draws down in Afghanistan, the need for air resupply of forward-based forces is increasing.

A C-130H can carry 16 pallets of cargo; a C-130J can carry 20; and in both cases, if there is appropriate gear at the destination, the aircraft can be unloaded in just a few minutes.

Strike said at some bases where there is no offloading gear available, loadmasters will simply unhook the parcels from the cargo deck while the aircraft is stationary. A sudden burst of engine power, and inertia alone will drop the pallets the few feet onto the landing strip.

Once offloaded, a C-130 will make a hasty exit. Often, it will drop off only half or less of its load, then go on to another or several more FOBs, in what some crews call a "round robin" sortie, eventually winding up back at Bagram.

For an airdrop, crews will contact the FOB well before reaching the drop zone, to make sure the zone is secure and that someone is anticipating the delivery and is ready to collect it. In

fact, the aircraft can't drop unless the ground officer gives the all-clear.

If radio contact with a FOB is lost, there are other ways the crew can communicate with the recipients on the ground, including e-mail or with colored smoke. Only rarely does a problem prevent the aircrew from dropping its bundles, called the Containerized Delivery System, or CDS.

Seconds before reaching the drop zone, the C-130's loadmasters cut the cords holding the bundles to the aircraft, and the units slide, one by one, out the rear cargo door.

The pilots don't swing the Hercules around to see the parade of parachutes or whether they reach the intended landing zone, though.

"That's a big no-no," Strike said. "Planes that go over the same spot more than once typically get shot at. ... You just don't do that." Feedback on the quality of the drop is usually provided by the Army or Marine ground logistics officer later, by phone or in an e-mail. Typically, it's a short message amounting to, "Thanks a lot, we've got it," one loadmaster said.

A staple of C-130 deliveries in Vietnam, the LAPES technique—for Low-Altitude Parachute Extraction System—was discontinued about 15 years ago and has never been used in Afghanistan. With LAPES, a C-130 would fly almost low enough to land. A parachute would deploy out the back door, pulling the cargo out to land—hard—on the ground below. The technique was "impressive" but just too rough on the dropped equipment, Strike said.

The JPADS, which is used today, looks like a chunky green suitcase strapped atop a cargo pallet. With two large yellow dials suggesting eyes, the unit has a robot-like appearance when affixed to the top of a load. On its "head" it wears a disposable parachute or set of three parachutes, depending on the deployment altitude and the nature of the cargo. The JPADS and CDS loads are built identically, with the control unit the only difference between them.

In the Back of the Truck

An Army unit at Bagram builds the bundles around the clock. A typical airdrop bundle will include four drums of fuel, topped by crates of food and bottled water, but standard loads exist for all combinations of materiel, to include everything from ammunition and weapons to energy drinks and ice cream.

A joint airborne inspector, who could be Army or Air Force, comes aboard the aircraft before takeoff to ensure the loads are attached properly to the drop wire and are ready to go.

The JPADS unit incorporates GPS guidance with actuators attached to the parachute rigging. It can steer the wing-style parachute to a precision landing.

Upon approach to the landing zone, the loadmasters will switch on the individual units, which glow to life with the message "ready to fly" on their small display screens. The loadmasters then throw air sondes out the back of the aircraft. The instrument probes—about the size of a can of tennis balls with a rounded metal bottom and a parachute—send the JPADS units information about the location and prevailing winds. This communication link is painstakingly checked before the mission even launches, as air sondes that have long been in storage may take a while to "wake up" and recognize where they are.

The value of JPADS is that loads can be released in any weather, and thanks to the steering capability, the dropping aircraft need not directly overfly the drop zone but can offset a significant distance to avoid ground threats. The aircraft also can drop from a higher altitude—particularly important if the aircraft is at 18,000 feet dropping to troops at 12,000 feet, or when the drop zone is in a valley where an aircraft wouldn't have enough room to descend, drop, and climb back out.

Strike said the Army officer on the ground will choose the aimpoint for a JPADS delivery, but with USAF's advice on avoiding "collateral damage—houses, buildings," and other obstacles to avoid. A 100-yard landing zone is typical.

"They'd like it right in the back of the truck if they could," Strike noted. "Unfortunately, we don't do that."

Unlike a GPS guided bomb, which is largely unaffected by winds, he explained, a load on a parachute is at the mercy of wind shear and sudden gusts and must compensate more slowly. The precision of JPADS is good but not quite so pinpoint as a bomb. Strike said there have been no complaints about its accuracy, though.

The C-130 unit at Bagram maintains an alert aircraft in prepped condition, preflighted and ready to go at a moment's notice if there's an urgent request for resupply, such as from

Staff photos by John A. Tirpak

From far left: Bundles topped with the Joint Precision Airdrop System await loading at Bagram's pallet-building facility. The satellite guidance systems allow extremely accurate airdrops. Second photo: A C-130H from the West Virginia Air Guard takes on a paradrop load. The aircraft is fitted with anti-missile countermeasures, but assault rifles and rocket-propelled grenades are the more common threat. Third photo: C-130s from all over the Air Force line the ramp at Bagram. At least one C-130 is kept on alert at all times for emergency resupply of a unit low on ammo, food, or water.

a FOB running out of ammunition. Strike said some personnel are always in crew rest and ready to go, and the Army rigging unit has bundles ready to go with fuel, ammo, water, and other emergency supplies.

For one such mission in May, the crew arrived at the aircraft only 15 minutes after the call came in from AFCENT's air mobility directorate. The airplane was loaded and ready to launch about an hour after receiving the mission. After that, it was an 80-minute flight to the FOB; "we go as fast as we can," Strike said. The needed water and ammunition reached the FOB well before the base ran dry.

"As they keyed the mike, we could hear the machine gun fire in the background, so they were real happy to get the ammunition," Strike said. The mission, and others like it, was a "pretty rewarding thing to do."

Lemon noted that on many occasions, a C-130 has been held waiting for an inbound C-17 with a blood shipment.

"Our guys will literally run out to the plane and hand it to the loadmaster. ... We had one story where the plane went to the FOB, a nurse met the plane, took the blood and went to the operating room."

Beyond 2014

The C-130 is complemented in the airdrop role by the C-17, which can land at some FOB strips if necessary, and previously by the C-27J. The large C-17s can do a major airdrop, with the ability to release 40 bundles at a time, while the C-27J was used to support brigade-level Army units Van Ovost noted. Both aircraft require some 3,000 feet of runway, and, she asserted, the C-27 was more efficient than the C-130 only when sending a small load to a FOB.

A C-7 Caribou operated by a private contractor works out of Bagram, Van Ovost acknowledged, providing the Army with "one version of airdrop we call low altitude, low velocity." In such missions, airdrops take place at very low altitude—150 feet or so—whereas the C-130 will typically drop from higher than 300 feet. The Army has the C-7 Caribou contract for these very low drops, she said. The Army decides where and when it is safe for that aircraft to operate.

The Caribou can go to locations needing one or two bundles or a single person. The C-130 cannot do the typical mission the C-7 performed in Vietnam—landing on the side of a mountain. That capability is needed so rarely that a single aircraft under contract is probably the smart way to get it, she said.

"And it is our hope, really, that commercial contractors come to Afghanistan and make a niche there," to support Afghan forces in the years to come, Van Ovost said. One of ISAF's goals is to leave a transportation infrastructure the Afghans can use to maintain their own army and police forces.

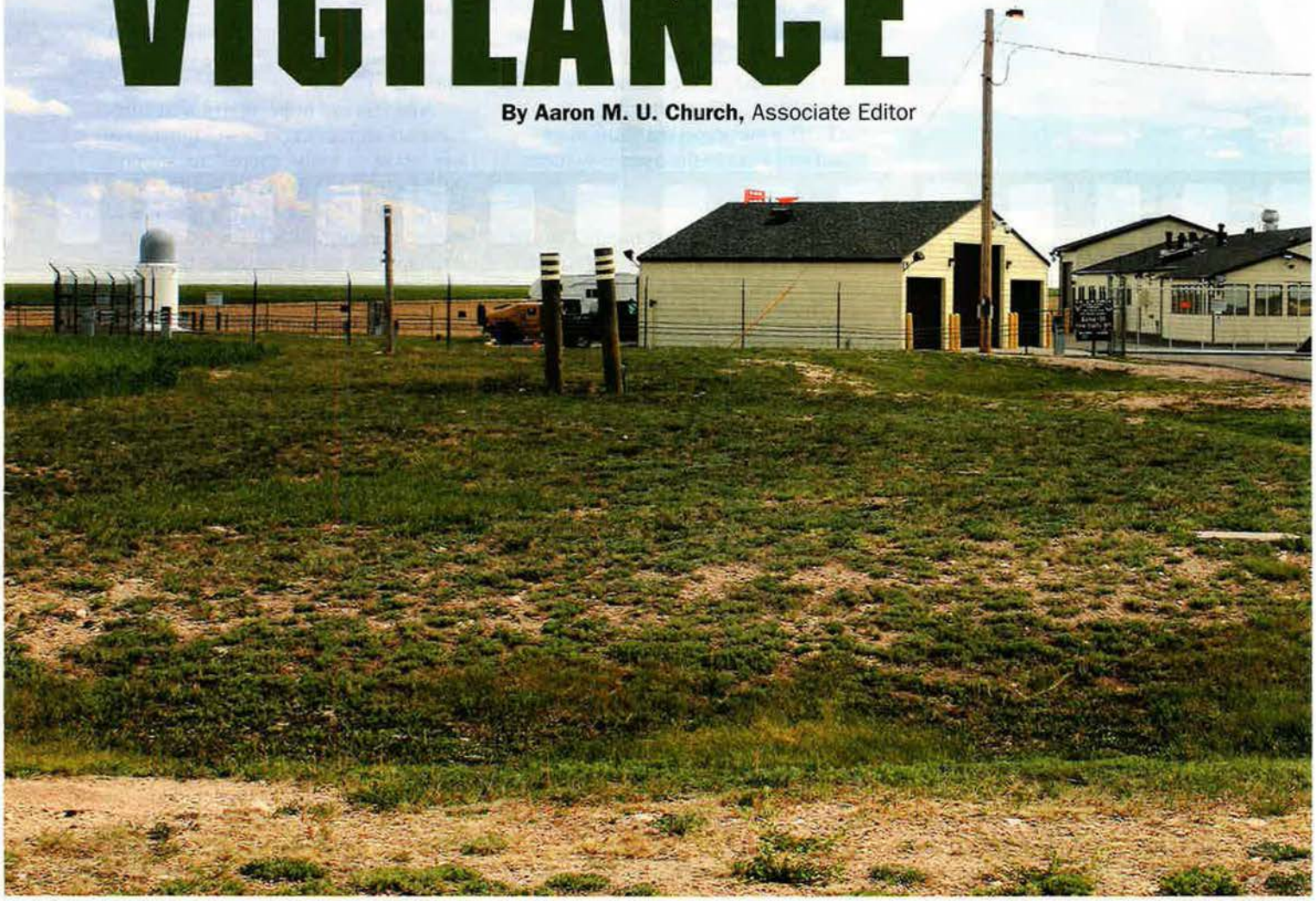
The new aerial port facilities at Bagram—as well as new dormitories and other, more robust structures replacing temporary lodgings that are falling apart—indicate that USAF's mission will continue in Afghanistan beyond the 2014 date, according to Brig. Gen. Thomas H. Deale, commander of the 455th Air Expeditionary Wing at Bagram.

Deale said the new facilities are a combination of a move toward permanency and the fulfillment of contracts let in years past. But based on the strategic agreement signed in May, "we're going to be here in some capacity in support of the Afghans beyond 2014," Deale said. "Bagram has been a central hub for both logistics and operations" in the country almost since Operation Enduring Freedom began, "and I would expect, in some way, shape, or form, Bagram will continue to do that as we progress." ■

Bagram is busy 24/7. Here, a C-130 taxis in as, in the foreground, airmen unload a C-17 at dusk. Crews can manage up to seven "gray tails" a day, but there's usually a backlog.

NUKE FIELD VIGILANCE

By Aaron M. U. Church, Associate Editor



EVERY day, combat missile crews, security forces, maintainers, and support personnel of USAF's 90th Missile Wing at F. E. Warren AFB, Wyo., fan out over 9,600 square miles of missile fields. The wing is responsible for 150 Minuteman IIIs—a third of the Air Force's deployed ICBM force—housed in silos on the plains of Colorado, Nebraska, and Wyoming.

Working in hardened launch control centers buried some 60 feet underground, missile crews stand constant alert, ready to launch their nuclear weapons immediately upon presidential order.

F. E. Warren recently shifted its multiple-warhead ICBMs to single-warhead configuration. However, this changeover barely affected its day-to-day business of keeping the US land-based deterrent reliable, credible, and ready.

Located on the outskirts of Cheyenne, Wyo., Warren accommodates one of USAF's three ICBM wings. The other two are at Minot AFB, N.D., and Malmstrom AFB, Mont. These wings are the only Air Force units on wartime alert at all times. For the men and women of the 90th Missile Wing, assuring the constant security and readiness of a major part of the nation's nuclear deterrent arsenal is a significant achievement.

The size of the 90th's area of responsibility, nearly as large as Vermont, poses major challenges for the operational, support, and security forces. "That's what we have to worry about every single day," explained Col. George R. Farfour, 90th Missile Wing vice commander.

Every 24 hours, a new shift of missileers, facility staff, and security forces set out. They traverse interstate highways and dirt and gravel roads, no matter the weather—howling winds, rain, and even snow—to relieve other crews. "We drive about 7.5 million miles in a year because everything is 'out,'" said Farfour.

Through All Kinds of Weather

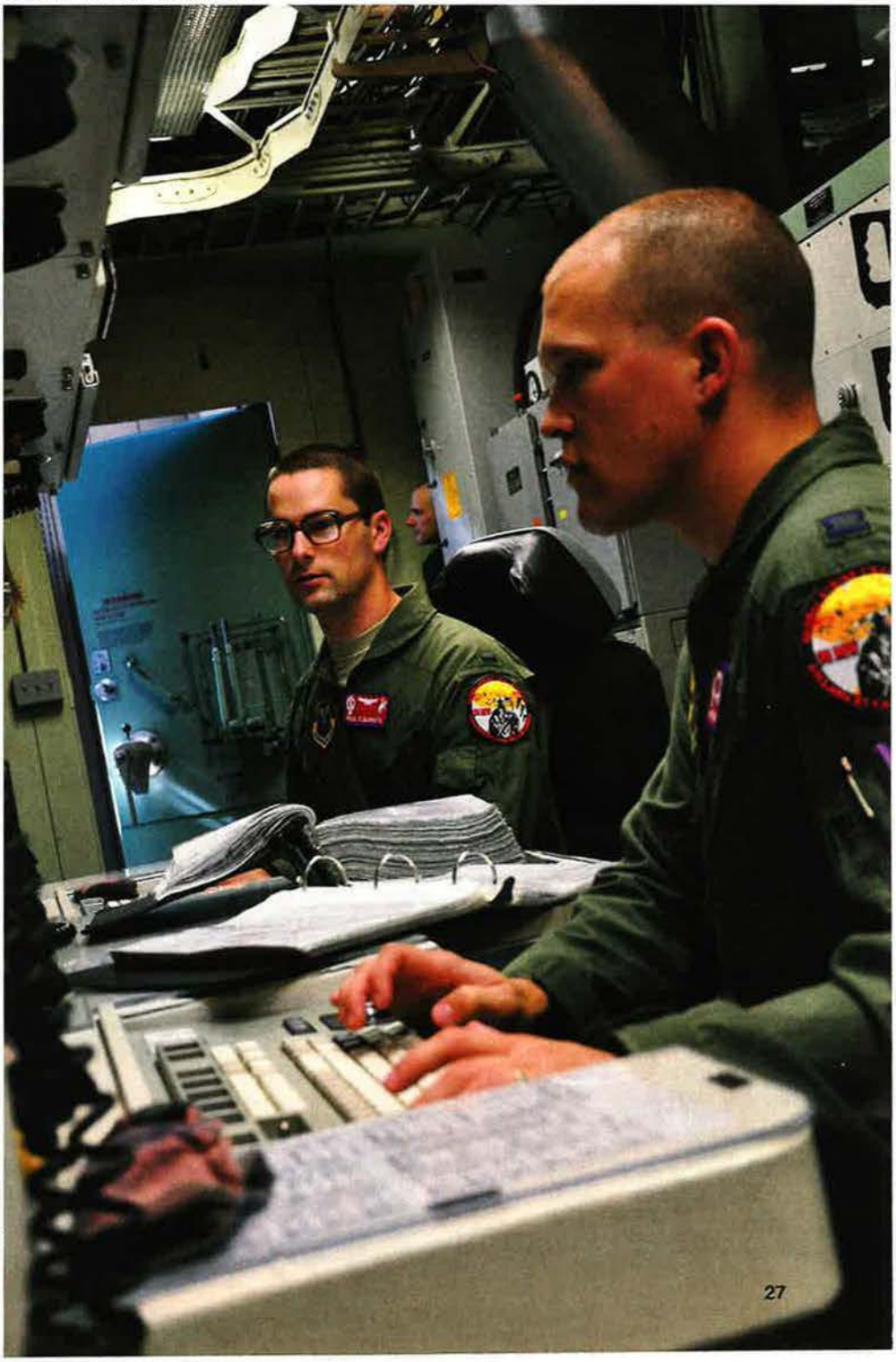
Farfour likened the vast F. E. Warren missile complex to an archipelago of "166 [separate] Air Force bases." He referred to the fact that the complex comprises 150 missile silos and 15 launch control centers, as well as F. E. Warren itself—all of them geographi-

Staff photo by Aaron M. U. Church

Missile Alert Facility Echo-01 is assigned to F. E. Warren AFB, Wyo. The base's missile fields house one-third of USAF's deployed ICBMs.

At Warren Air Force Base, an effective ICBM deterrent requires a nonstop buzz of activity.

First Lt. Paul Comaroto (l) and Capt. Paul Hendrickson train in a Minuteman III launch control simulator.



USAF photo

cally separate bits of operational real estate.

A two-man missile combat crew in an underground capsule runs each LCC. Above the capsule, at the surface, is a supporting missile alert facility. Security forces, a short-order cook, and a facility manager continually staff the MAF.

In all but the most menacing weather, members of an LCC/MAF drive to the assigned alert site. There are, however, other means available. The wing's UH-1N helicopters—usually held for security response needs—can shuttle crews when heavy rains turn the roads into seas of mud or icing and snow drifts make them impassable.

On a good-weather day, it takes crew members two hours by land vehicle to

reach the most remote site, said Lt. Col. Matthew Dillow, commander of F. E. Warren's 321st Missile Squadron. In the normally harsh High Plains winter, it can take considerably longer.

When necessary, an alert crew can be held over at a site for 48 hours. This happened only twice in the last year, in part because the winter was mild, Farfour said.

Each alert cycle begins with a wing-wide mass brief, introduced by Col. Christopher A. Coffelt, the wing commander. On a typical day in May, 1st Lt. Jeremy Stobert, a missile combat crew commander with the 321st Missile Squadron, and 2nd Lt. Christopher Bridges, his deputy, are assigned to Missile Alert Facility Lima-01.

At the surface facility, the alert crew, including the facility manager and the cook, process through security. It is a precisely scripted ritual, requiring each person entering to affirm that he or she is under no duress from an outside force.

Once inside the gate, they proceed to the MAF, essentially a mini-base, with its own electrical generators, water supply, kitchen, beds, and security station. Inside the MAF, the two missile crew members halt at the top of an elevator shaft. At the bottom is a launch capsule. Stobert and Bridges repeat the security routine before entering the secure station at the head of the elevator shaft.

Up to this point, they come under the Air Force Global Strike Command's chain for organizational and training purposes. Once they descend to the capsule, the two lieutenants officially report directly to the head of US Strategic Command, USAF Gen. C. Robert Kehler, who has a direct line to the President.

During the ride on the elevator down to the LCC capsule, Stobert and Bridges each remove the AFGSC patch from a Velcro spot on their flight suits and replace it with a USSTRATCOM patch, symbolically marking the transition of authority.

"They have a unique mission here in the continental United States in that they are supporting combatant command operations day-to-day," said Dillow.

Fail Safes

Dillow noted that the Minuteman III is the only Air Force weapon permanently kept on full-up war footing. Indeed, even AFGSC's nuclear-armed B-2 and B-52 bombers "are not on alert on a day-to-day basis. They can generate to that state, but [only] the ICBMs are ready to do what needs to be done."

At the bottom of the shaft the crew pass through a massive, vault-type doorway into the capsule. To their left lies an engineering plant providing everything needed for self-sufficient operations. In the event of an overhead nuclear detonation, the plant can purge the capsule's air of toxic particles, supply water to the crew, and generate electrical power. These actions could allow the crew to survive and, if ordered to do so, launch a retaliatory strike.

Stobert and Bridges turn to their right through another blast door to enter the control center, where they swap notes with the departing crew. They learn that the preceding 24 hours at Lima-01 had been unusually eventful. A mechanical problem forced the capsule to switch over to its own generator, a diesel unit used to power everything inside.

India-01, one of the squadron's four other LCCs, also lost commercial power overnight. India-01 switched to generator power, but when the power grid resumed operations, the site had failed to switch back. This forced a temporary shutdown of the site to resolve the problem.

"Everything's running fine [at Lima], so no shut-down issue like [at] India," says Stobert.

Normally, each LCC is responsible for 10 ICBMs. In cases like that of India-01, any of Warren's 14 other control centers can instantly take control of India's missiles, ensuring full control. Even if all 15 LCCs were to fail simultaneously, an E-4B airborne command post aircraft can still control missiles from overhead, providing an additional layer of certainty.

Today, Stobert and Bridges are engaged in an annual "code change" of missile hardware. The secret codes needed for the activation of each of the 150 missiles are changed every year as a security precaution. The 321st MS personnel must physically change codes at five LCCs and at 50 Minuteman III launch facilities.

The changeover makes the operations tempo unusually hectic. "We can only do

Staff photos by Aaron M. U. Church

about 10 [code changes] in a day because it involves a team actually going down to the missile," said Dillow. "It's pretty involved."

He explained that for each missile, there are two sets of codes to be changed out, one at the LCC and another at the ICBM. Each of the wing's 150 ICBMs are miles away from the LCC, and the whole process takes a week of cooperation from maintenance teams, missile crews, and security forces.

Once the new missile crew is on alert, Stobert and Bridges are the only two people in the LCC, responsible for 10 nuclear-tipped Minuteman IIIs for the next 24 hours.

The Minuteman III originally contained three nuclear warheads, making it a so-called "MIRV" system; the term MIRV stands for multiple independently targetable reentry vehicles. The 90th Missile Wing's MIRVed missiles were the first to drop to single warhead status.

Minuteman weapons at Minot and Malmstrom are still MIRVed, though they, too, will soon shift over to the single-nuclear-charge configuration.

Boredom is not on the agenda in the capsule. Up and down the chain of command, USSTRATCOM remains in a state of constant exercise—passing coded messages, verifying command procedures, and keeping strong each link, from the President down to the individual LCCs, ready for war at an instant's notice.

The crews receive coded messages that they have to interpret, validate, and

Helos and the New Kids on Alert

Placing a helicopter and a small security response team on 24/7 alert last October was the "first step" toward fielding a full-up Tactical Response Force capable of rapidly responding to security threats at all times, said Lt. Col. Robert S. Mackenzie, commander of F. E. Warren Air Force Base's 37th Helicopter Squadron.

Depending on the helicopter's fuel load and how much equipment the TRF team needs, the UH-1N can only lift about a third of the team, due to payload limits.

"With security, obviously, we want to move as many people as we can. Our game is about numbers—how much capability we can get on the ground," said SMSgt. Jared Skinner, the 90th Security Forces Group TRF superintendent.

He added, "The more people we can get to respond, the more ability we have to either contain or deny" the enemy access.

The TRF is a small part of Warren's 90th Security Forces Group, but it plays a powerful deterrent sub-role, discouraging would-be aggressors from attacking the ICBMs.

With current aircrew manning, the squadron could surge to put three Hueys on alert for about a month. However, over the long term, manpower constraints limit the squadron's alert size.

"It's a big mission shift, because our manning hasn't changed, our aircraft haven't changed, ... so it's an added mission with the same size unit that we had before," said Mackenzie. "The toughest thing is just the manning; ... you're about 100 percent committed in a day," with every crew either up flying, sitting on alert, or just coming off alert, he said in an interview.

Mackenzie said the squadron is using Hueys to their full capacity in the current configuration, but that there are things that can be done to improve the UH-1N as a support platform. In lieu of carrying a full assault team, the command is looking at arming the Hueys with 7.62 mm door guns to augment the team's firepower from the air.

"We can provide a force multiplier there," Skinner pointed out, noting that the helicopter's limitations often mean his teams leave heavier weapons behind. "If we can arm these helicopters, now I have the ability ... to provide suppressive fire to support ... the ground response force that I can carry out there," he added.

Arming the UH-1Ns assigned to missile field security duty isn't a new idea, but with Air Force Global Strike Command's emphasis on constantly improving nuclear security "it looks like we're finally starting to get traction on it," observed Skinner. "That's something we're looking forward to."

In the series of images below, a Tactical Response Force team from the 90th Security Forces Group responds to a simulated takeover of a missile silo.

USAF photo by R. J. Ortez

SrA. Jessica Kulla, 90th Missile Maintenance Squadron, detaches a sling that lowered a post boost control system onto a Minuteman III.

respond correctly to. The crew also has responsibility for troubleshooting the weapon system itself—no small task, considering the complexity of nuclear command and control.

On the rack above the command console is a library of manuals and technical orders covering all aspects of the weapon system, from the capsule where the crew sits to the actual missiles themselves.

"If you have a whole bunch of maintenance or if something is going wrong, that ... can be very stressful if you're trying to figure it out" under strict time limits, Stobert observes.

During any downtime, Stobert instructs Bridges on weapons protocol and systems, studies for monthly exams, or works on a master's degree. However, with an ongoing code-change and maintenance problem, there is little free time on the day's schedule.

Pretty Near Perfect

On slower alerts, either Stobert or Bridges can rest in the bunk at the end of the capsule, as long as one remains at the console.

"If anything significant is going on down there, they have to be awake, and I'll tell you, more often than not, there's something significant going on out there," asserted Dillow. "The tempo can be pretty brutal, frankly, and it's not something that's well understood across the Air Force."

The rigorous and constant evaluation that missileers undergo is testament to the gravity and unforgiving nature of the nuclear mission. Since AFGSC took over and revitalized the nuclear force in 2009, the scrutiny has intensified.

"The need for those exacting high standards—that critical culture of self-assessment where we constantly have to be our own worst critics, ... those things that were the hallmark of Strategic Air Command—had started to erode culturally," Dillow observed. "This is a very important mission area that requires a certain amount of focused attention and I think we get that from Global Strike Command and that's the difference now."

Every month, missileers must post near-perfect passing scores on three exams: on launch orders and validation protocol, technical weapon-system knowledge, and launch codes.

"People are watching everything that you do—scrutinizing," says Stobert. He adds that, if a missileer fails to score 90 percent or higher on certain aspects of the job, "you get restricted on your certification."

Missile combat crews are evaluated every month on their practical skills in a launch control center simulator as well. Between alerts, the crews practice in the simulator, and occasionally "they'll throw in extra testing," especially in anticipation of a code change, notes Stobert.

On top of this, AFGSC mandates that each missileer pass a no-notice operational evaluation annually. In practice, the surprise evaluations take place more frequently, especially since the Air Force stood up Global Strike Command. Some crewmen in the 321st were evaluated three or four times in the last year, according to Stobert. He called it "a fairly new thing."

The missile combat crew may be alone in the capsule, but they are far from alone on alert. In addition to the fixed contingent of security and support personnel topside, the wing's specialized air-mobile rapid assault team—the Tactical Response Force—went on 24-hour alert starting late last year.

"This team is designed as a nuclear capture-recovery team; that is their prime directive," said SMSgt. Jared Skinner, 90th Security Forces Group TRF superintendent.

Armed members are frequently seen in the open side doors of the Huey helicopters flying low over the missile field. This is a daily "show of presence" mission. Unlike in-field security forces posted at the MAFs or guarding the maintenance teams at the launch facilities, the TRF is constantly in motion, adding an element of unpredictability to foil potential intruders.

A crew from the 37th Helicopter Squadron on a mission at Warren. The 37th coordinates closely with the 90th Security Forces Group TRF, lifting teams to anywhere within the vast missile field.

Staff photo by Aaron M. U. Church

"You don't always know where it is, where it's coming from," said Skinner. When sensitive components move on the road, the TRF flies as an "airborne fire team support" providing reconnaissance and top cover to the convoy, explained Skinner.

Defeating an attack is, however, the TRF's main calling and the entire reason for round-the-clock alert. During maintenance operations such as code changes, the launch facilities are at their most vulnerable, with crews working on the ICBMs in their silos.

Each missile site has two entry points: a personnel access hatch through which the maintainers enter the silo and a 110-ton concrete launch closure door over the missile. If any of the missile's components need to be removed, the massive cover must be opened to allow the payload transporter—a purpose-built tractor trailer with a workshop—to be positioned over the silo. Components such as the missile's guidance system, engines, or reentry vehicle can then be winched through the floor of the trailer for field work or transported over the road for rework. A special skirt on the trailer shields the missile from the elements but provides little in the way of security.

Because of these realities, the ICBM mission demands unusually close cooperation between combat and support roles, and airmen are far more attuned to each other's activities and needs as a result.

"The ... unique thing about this mission area is the synchronization of the maintenance, operations, and security on a day-to-day basis," observed Dillow. "I don't think you would find an A-10 pilot worried too much about flight-line security, but our missile combat crew commanders spend an awful lot of time being very, very focused on the use of security and how that's all synchronized with maintenance."

The TRF practices for the worst case scenario: having to recapture a launch facility overrun by attackers. In the missile fields, 150 different sites have been analyzed for their unique defense needs, Skinner said. The TRF will use whatever force it takes, he added, including "going down and recapturing what is no longer under our control."

Above and Below

The TRF and the 37th Helicopter Squadron provide an example of the kind of tight-knit cooperation between functions within the wing.

"We are joint—two separate units working two separate groups—but we're really a joint unit," noted Lt. Col. Robert S. Mackenzie, squadron commander.

Skinner added, "It's not just like, 'Taxi driver, pull over here.' These guys understand even to some extent what the tactical situation requires on the ground. ... They understand the battlespace from above, just as we would understand it below."

So close is the relationship that helicopters deploy with the TRF to many certifying courses at Camp Guernsey, not far from Warren in Wyoming.

This closeness is apparent in a recent training exercise, when a pair of Hueys skirt the edge of Uniform-01, Warren's full-size training silo. As they land, the TRF hops off just outside the site's border fence.

What they face today is this: A simulated attacker stormed the site while the silo was open for maintenance. The training missile's warhead had been removed and is inside the maintenance transporter. Below, the Minuteman III is still loaded with solid rocket fuel. The attackers have already "killed" the on-site security team and entered the silo through the open access hatch, taking over the ICBM.

Two of the TRF's fire teams run from the helos, fanning out to cover their teammates. Wielding a buzz saw, the TRF breachers make short work of the site's chain-link gate. The team streams through the gap and quickly clears the facility topside, taking up defensive positions inside the wire. Packing mechanical, thermic, and explosive-breaching tools, these teams will use "whatever they need" to cut or blast their way into the hardened facility, explained Skinner.

After sizing up the situation, the TRF team clip a splitter-carabiner with several ropes to the hatch. On a signal, the entire fire team jumps near-instantly into the vertical shaft, fast-roping 40 feet down to the silo below. Stunned by flash-bang grenades, the hostiles are neutralized before they realize what is happening.

All it took was several seconds. The raid was over and the missile was secured. ■

An F-15 takes off, passing two E-3s on the ground at Andersen AFB, Guam, during the 2010 Valiant Shield exercise. Andersen is situated some 1,700 miles from the South China Sea.

Storm Clouds Over the South China Sea

By Richard Halloran

Mistrust, international military buildups, and competing territorial claims bring plenty of tension to a vital waterway that China considers an internal sea.

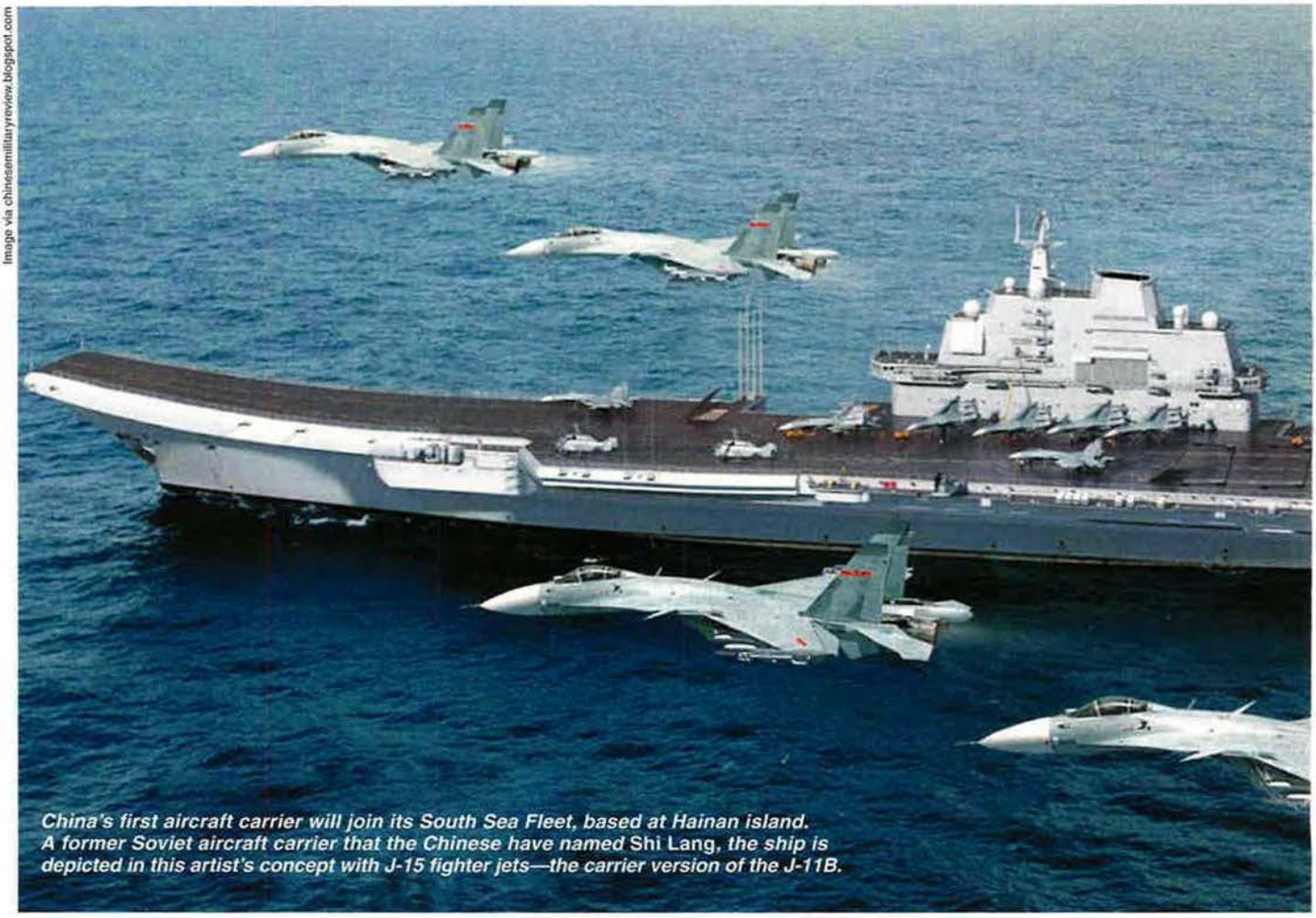
Of all the potential flashpoints that could explode into full-scale hostilities between the United States and the People's Republic of China, one of the most dangerous would be a confrontation in the South China Sea. That channel between the Pacific and Indian Oceans is the site of intense nationalistic, economic, and strategic conflict—and is a murky scene, filled with chances for miscalculation.

The critical issue is access to the sea-lanes in one of the globe's busiest waterways. More than half of the world's shipping passes through the South China Sea every year, more than through the Suez and Panama Canals combined. Some 70,000 ships carrying $5.3 trillion worth of goods moved along those sea-lanes in 2011. Of that, $1.2 trillion

USAF photo by A1C Jeffrey Schultze

Staff map by Zaur Eylanbekov

Image via chinesemilitaryreview.blogspot.com



China's first aircraft carrier will join its South Sea Fleet, based at Hainan island. A former Soviet aircraft carrier that the Chinese have named Shi Lang, *the ship is depicted in this artist's concept with J-15 fighter jets—the carrier version of the J-11B.*

worth was trade that directly affected the US. An estimated 80 percent of China's imported oil for its surging economy comes though the SCS. Altogether, shipping through the sea is essential to the economy of every nation in North America and East Asia, including allies such as Japan and South Korea.

Strategically, free passage through the SCS is vital to US military operations in East and South Asia. American warships frequently sail through the sea on their way from the Pacific Ocean to the Indian Ocean and back. The denial of this sea line of communication would require ships to sail south around Australia, which would add two weeks or more to transit.

The People's Republic of China maintains that it has "indisputable sovereignty" over this sea and therefore can determine who can have access to it. The PRC contends the historical record shows that the SCS has been an internal waterway for centuries. Even when China was ruled by the Kuomintang, or Nationalists, before the communists came to power in 1949, China contended the SCS was Chinese.

AP photo by Bullit Marquez

Protesters hold a rally outside the Chinese Embassy in the Makiti district of Manila, Philippines, during the standoff between Philippine and Chinese vessels at Scarborough Shoal in the South China Sea.

Chinese officials have repeatedly demanded US warships not maneuver in the SCS, particularly when training with Southeast Asian navies. Occasionally, China has harassed US ships, in violation of international maritime rules. China does not recognize the claims of Southeast Asian nations to exclusive economic zones under the United Nations Convention on the Law of the Sea (UNCLOS).

Freedom of Navigation

On the opposite tack, the US and most of the nations around the sea's periphery argue that the SCS is an international waterway through which freedom of navigation is guaranteed by long-standing maritime rules and traditions. US Secretary of State Hillary Rodham Clinton has repeatedly asserted

the US will defend freedom of navigation in the SCS. Similarly, Secretary of Defense Leon E. Panetta has stressed "the United States' enduring commitment to freedom of navigation and ... our support for a common approach to maritime security that is consistent with international law and norms."

The US is not a signatory of the UNCLOS but successive Administrations have stated the US will abide by its provisions.

The People's Liberation Army, which comprises all of China's armed forces, has widened its scope of operations to include the South China Sea. China's South Sea Fleet has become the nation's largest fleet. It has a new base on Hainan island in the northwestern SCS.

At the same time, other Chinese government agencies have asserted jurisdiction in the sea. The Chinese refer to these agencies as the "Nine Dragons"—after a myth about dragons that stir the sea. A research report by the International Crisis Group (ICG) actually listed 11 "dragons," including the PLA Navy, Bureau of Fisheries Administration, China Marine Surveillance, and the Foreign Ministry, plus three local coastal governments and several law enforcement agencies.

"Most of these agencies were originally established to implement domestic policies but now play a foreign policy role," the ICG states. "They have almost no knowledge of the diplomatic landscape and little interest in promoting the national foreign policy agenda. This focus on narrow agency or industry interests often means that their actions have significantly detrimental effects on foreign policy." In addition, the report states, "Certain hardline academics and retired military officers have taken a high-profile role in promoting an assertive handling of territorial and maritime economic disputes."

The potential for confrontation in the SCS is also complicated by the national interests of a dozen nations within a vast triangle centered on the sea and running from Japan south to Australia and west to India. Most of these nations have claims to unmeasured deposits of oil, gas, and minerals under the sea but within their exclusive economic zones. Many of these claims are competing and overlapping. In addition, the SCS is rich in fisheries that provide essential food to nations whose shores are washed by those waters.

Another complication arises from the piracy that persists in the SCS and the straits connecting it with the open oceans,

USAF photo by SrA. Carlin Leslie

USAF Capt. Russ Kirklin refuels his B-52 from a KC-135 in preparation for the US-Australian Exercise Talisman Sabre in 2011. Australia remains an important ally as the US turns its attention toward the western Pacific.

Photo via the Australian Government Department of Defense website

Republic of Singapore F-16s fly in formation over Darwin, Australia, after a sortie for the multinational exercise Pitch Black in 2010. Training included weeks of air combat operations with aircraft from Australia, New Zealand, Thailand, and the US.

despite improved coordination among littoral states in counterpiracy patrols. The International Maritime Bureau's Piracy Reporting Center, which tracks piracy from its base in Kuala Lumpur, Malaysia, reported 58 attacks by pirates in the first half of 2012 alone, 32 of them in Indonesian waters. The bureau noted that many attacks might not be reported because that would cause insurers to raise rates.

Another, more intangible, complication is the legacy of colonialism. Until World War II, except for Japan and Thailand, most of the nations surrounding or near the South China Sea were subject to a colonial power. All became independent after the war but the memories of colonialism are still powerful, and national sovereignty is taken very seriously. This, in turn, often makes nations around the sea reluctant to engage in multilateral operations that they think might impinge on their independence.

Red Lines Drawn

In contrast to the SCS, issues surrounding potential conflicts across the Strait of Taiwan or on the Korean peninsula are fairly straightforward. "The red lines are drawn," said an officer at US Pacific Command, "and we know where they are and the Chinese know where they are." In and around the South China Sea, however, the US shows the flag not through permanent bases but by engagement, exercises, and joint training. These operations are intended to reassure American allies and friends and deter potential adversaries. The number of cooperative military exercises is increasing.

In nearly 150 exercises last year, PACOM and its components not only trained troops and leaders but left few footprints and thus precluded most of the problems that often arise when large numbers of US forces are permanently stationed in foreign lands. The US troops arrive by aircraft or ship, go through their paces with the forces of the host nation, then get back on the airplane or ship and go away.

The threat to the SCS and the potential for a confrontation with China was partly behind the Obama Administration's call for a "pivot to the Pacific"—although the White House, Pentagon, and State Department have insisted that the fresh US emphasis on Asia was not aimed at China. Both in public and inside the Pentagon, the Administration has pledged to give priority to the Asia-Pacific region.

US forces are looking for ways to build trust in the region by sharing intelligence on the SCS with Southeast Asian nations that lack the capacity of US forces. Specifically, Terminal Fury is PACOM's premier exercise to train the commander and staff in crisis planning and executing war plans. This year's drill focused on space, cyber operations, and the SCS. A second operational exercise is Valiant Shield, which trains air and naval leaders to defend island nations in East and Southeast Asia.

Of America's allies and partners, Australia is among the oldest and most steadfast—and has become even more vital as the US focuses on the South China Sea. Among the main USAF exercises in Australia are Pitch Black, which gives aircrews experience in offensive operations in a coalition, Talisman Sabre, which drills airmen in short warning, power projection, and forcible entry operations, and Cope North, which has USAF, Royal Australian Air Force (RAAF), and Japanese Air Self-Defense Force (JASDF) aviators flying together out of Andersen Air Force Base on Guam. The RAAF also has access to air bases in Malaysia from which they fly surveillance missions over the SCS and Indian Ocean.

Looking to the future, PACAF has sent teams to evaluate sites in Australia with the focus on increased rotations of USAF aircraft to bases in the north, namely RAAF Darwin and RAAF Tindal, to enable a more robust training and exercise program with the Australian Defense Force. And PACAF is mulling over the posting of an RAAF liaison officer in Hawaii.

On the Australian side, the Australian Defense Posture Review, done by an independent panel and released in May, recommended that the US be permitted to rotate more bombers, tankers, and surveillance aicraft, including the unmanned Global Hawk, through northern Australian air bases.

Among the other services, the US Marines have started company-sized rotations of 250 troops to Darwin, in northern Australia, and plans to gradually expand these deployments to 2,500 marines at a time.

The Navy plans to make more frequent port calls to Australia and to expand exercises, as Australia's defense review suggested that existing Navy bases on

Australia's west coast could support more US Navy port calls.

The US Army is considering more joint exercises with the Australian Army but will not duplicate what the Marines are doing. "Permanent US military bases will not be established in Australia," the defense review makes plain however.

The US is also expanding defense ties with Singapore, Indonesia, and other regional powers with an eye toward overcoming the tensions in the South China Sea.

Singapore has constructed a pier to service US aircraft carriers and built an operations center compatible with that at PACOM. The city-state has invited the US to deploy up to four littoral combat ships at a naval base there. The first deployment is tentatively scheduled for next spring. Because air space around their country is so limited, Singaporean F-16 pilots train at Luke Air Force Base in Arizona, and other aviators train in Australia.

Much Ado About Nothing

A tense standoff between China and the Philippines over uninhabited rocks in the middle of the SCS began in April and continued into the summer to illuminate the issues stirring that sea and to underscore the risks of miscalculation. It was, said Robert C. Beckman, a Singapore-based scholar specializingin SCS issues, "a classic case of a territorial soverignty dispute." The rocks, known as Scarborough Shoal after a ship wrecked there in the 18th century, are called Panatag by the Philippines and Huangyan by China.

China has issued a legal brief arguing that it "first discovered Huangyan Island, gave it the name, incorporated it into its territory, and exercised jurisdiction over it." The brief says, "In 1279, Chinese astronomer Guo Shoujing conducted a survey of the seas around China under the commission from his Emperor Kublai Khan, and the Huangyan Island was chosen as the point for surveying the South China Sea."

The Philippines' claim doesn't go back quite so far, but does assert that the islands belonged to the Philippines during the 300 years of Spanish rule that ended in 1898. Officials in Manila point to maps drawn in 1734 and 1792 to make their case.

In April, the Philippines tried to arrest Chinese fishermen and vessels for poaching in the Philippine EEZ. China sent three maritime surveillance ships to defend the fisherman and the Philippines responded by dispatching two Coast Guard vessels. The standoff was eased by bad weather, with both the Filipinos and Chinese sailing away. In July, however, the Chinese sent four maritime surveillance ships into the SCS to assert sovereignty over those waters. They confronted a Vietnamese ship they accused of violating Chinese territorial waters and forced it to sail home. A spokesman in Beijing left open the possibility that warships would be deployed in the SCS.

The Philippines, other littoral states, and the US have called for negotiating a peaceful settlement of this and other similar disputes. The Chinese have contended that those are Chinese waters and there is nothing to negotiate. Further, they have demanded that any dialogue over issues in the SCS be bilateral—between China and another Asian nation—because Beijing does not want to be confronted by a unified multilateral proposal for a code of conduct governing use of the SCS.

Lastly, the Chinese have demanded that the US not be included in any discussion of the SCS, asserting that this is an Asian problem. Clinton and Panetta have been equally forceful in stating that vital US national interests are involved in the SCS and that the US expects to be part of the solution even though Washington will not take sides on competing sovereignty claims. ■

USAF photo by SSgt. Lakisha A. Croley

Royal Australian Air Force Cpl. Phil Spencer secures equipment from a USAF C-17 near Williamson Airfield in Queensland, Australia, during Talisman Sabre in 2011. The exercise improves interoperability and combat readiness.

Richard Halloran, formerly a New York Times *foreign correspondent in Asia and military correspondent in Washington, D.C., is a freelance writer based in Honolulu. His most recent article for* Air Force *Magazine, "The US, Taiwan, and China's Long Shadow," appeared in the April issue.*

The Air Force space-launch enterprise tries to contain its rising costs.

A United Launch Alliance Atlas V boosts an NRO payload into orbit at Complex 3, Vandenberg AFB, Calif., in September 2010. USAF has performed 87 successful national security launches in a row.

Launchers and Lamborghinis

By Robert S. Dudney

NRO photo

When it comes to operations, space launch shapes up as a—and perhaps *the*—success story of today's Air Force. USAF has reeled off 87 consecutive flawless rocket launches, each requiring, to quote Gen. William L. Shelton, head of Air Force Space Command, "many simultaneous near-miracles." The Air Force hasn't lost a payload to rocket failure since April 1999 and enjoys an unprecedented win streak of 13 years and counting.

This operational record, though, is only one factor in the overall calculus of success. In another critical area—cost—the picture is different. Critics warn that the rockets used to loft most military satellites are becoming unaffordable. They cite projections that national security launches over the next five years will cost $15 billion.

The specter of rising rocket costs confronts space officers with a dilemma. On one hand, they must act to keep launch expenses from crushing other programs. On the other, as Shelton told a National Space Symposium audience in Colorado Springs, Colo., "We don't want to be found guilty of messing with success." The upshot is turmoil—and a push for change—in the Air Force launch enterprise. Events now unfolding will determine how and from whom USAF will buy its rockets in the future, and whether the current streak of success will endure.

Launch costs are high—from $3,000 to $10,000 per satellite pound. The problem stems in part from the Evolved Expendable Launch Vehicle (EELV) program, comprising Delta IV and Atlas V boosters. These rockets are used for most national security space shots. They are expensive—$180 million apiece, said Shelton. Some put the tab higher. The $180 million figure, for instance, does not factor in a $1-billion-a-year mission assurance fee paid to the United Launch Alliance, a Boeing-Lockheed Martin venture that provides the boosters.

Hand-Bent Plumbing

The prices are escalating. "Left unchecked," Shelton recently reported, the cost of each EELV will go up "somewhere on the order of 40 percent." That increase—$72 million—would raise the cost of an Atlas V to $252 million, said Shelton. The same presumably holds true for the Delta IV. At these rates, Shelton noted, inflation in the space booster industry exceeds even the health care sector. USAF provides most EELV funding, but the National Reconnaissance Office and NASA kick in, too.

What is the cause of this troubling cost growth?

When USAF started the EELV program in the 1990s, it forecast a robust US launch program, both government and commercial. Boeing and Lockheed Martin both bought big quantities of piece parts—engines and other booster components. Because of these economic order purchases, USAF benefitted from artificially low prices on its boosters.

The commercial launch market proved to be a bust, but for many years, the Air Force lived off the pool of cheap components. Now, that pool is drying up. Lower tier suppliers have vanished. Those that are left often cannot find parts, meaning they must be produced at premium prices. Another factor driving cost is old technology, says Shelton, particularly in the case of rocket engines. They are reliable and efficient, but are increasingly expensive to produce.

At a Federal Aviation Administration conference in February, Shelton took special note of upper stage engines. He said the fabrication of each Atlas Centaur and Delta RL10 power plant requires almost 8,000 man hours—more than needed to assemble a hand-built $400,000 Lamborghini luxury sports car. During manufacture, he said, workers hand-bend some 350 plumbing tubes for the combustion chamber and nozzle, using wooden frames as the guide.

Clearly, it's time for change. The Air Force's get-well plan comprises three approaches—contract certainty, competition, and new concepts.

The first area of concentration—as the Lamborghini anecdote attests—will be propulsion. Big rocket engines are the essential elements of spaceflight. The newest in the fleet is the RS68, used in the first stage of the Delta IV; it is almost 20 years old. The RD180 main engines for Atlas V stem from a 1970s Soviet design. RL10 engines date to the 1950s.

Space Command has begun internal studies to define a new upper stage engine design. It is years away, but the early line is that it will be easier and cheaper to manufacture. As an added benefit, it is expected to be more powerful and thus more reliable than today's overtaxed engines. That might lead to reduced mission assurance measures, which are expensive.

The Air Force is not putting all its chips on technological breakthroughs to lower the cost of launch. In addition, it is now pressing forward with a new "block buy" strategy for acquisition of EELVs. This is expected to produce economic order quantities of parts at all levels of the supply chain, according to Shelton.

"We will contract for a certain number of Delta and Atlas core launch vehicles," he said in early January,

USAF photo by Scott M. Ash

Gen. William Shelton testifies before a House subcommittee on strategic forces. Shelton says mission assurance is AFSPC's No. 1 focus.

87 Consecutive Successful National Security Space Launches

(As of July 1, 2012)

Date	Launch Vehicle	Payload/Mission	Owner
22-May-99	Titan IVB	NRO	NRO
7-Oct-99	Delta II 7925	GPS IIR-03	USAF
23-Nov-99	Atlas IIA	UHF (F10)	USN
12-Dec-99	Titan II	DMSP-15	USAF
21-Jan-00	Atlas IIA	DSCS III (MLV-8)	USAF
3-May-00	Atlas IIA	GOES-11	NOAA
8-May-00	Titan IVB	DSP-20	USAF
11-May-00	Delta II 7925	GPS IIR-04	USAF
16-Jul-00	Delta II 7925	GPS IIR-05	USAF
17-Aug-00	Titan IVB	NROL-11	NRO
21-Sep-00	Titan II	NOAA-L	NOAA
20-Oct-00	Atlas IIA	DSCS IIIB-F-29	USAF
10-Nov-00	Delta II 7925	GPS IIR-06	USAF
6-Dec-00	Atlas IIAS	NROL-10	NRO
30-Jan-01	Delta II 7925	GPS IIR-07	USAF
27-Feb-01	Titan IVB	Milstar II-4	USAF
23-Jul-01	Atlas IIA	GOES-12	NOAA
6-Aug-01	Titan IVB	DSP-21	USAF
8-Sep-01	Atlas IIAS	NROL-13	NRO
5-Oct-01	Titan IVB	NROL-14	NRO
11-Oct-01	Atlas IIAS	NROL-12	NRO
16-Jan-02	Titan IVB	Milstar II-5	USAF
24-Jun-02	Titan II	NOAA-M	NOAA
29-Jan-03	Delta II 7925	GPS IIR-08	USAF
11-Mar-03	Delta IV Medium	DSCS IIIB-27 (A3)	USAF
31-Mar-03	Delta II 7925	GPS IIR-09	USAF
8-Apr-03	Titan IVB	Milstar II-6	USAF
29-Aug-03	Delta IV Medium	DSCS IIIB-06 (B6)	USAF
9-Sep-03	Titan IVB	NROL-19	NRO
18-Oct-03	Titan II	DMSP-16	USAF
2-Dec-03	Atlas IIAS	NROL-18	NRO
18-Dec-03	Atlas IIIB	UHF (F11)	USN
21-Dec-03	Delta II 7925	GPS IIR-10	USAF
14-Feb-04	Titan IVB	DSP-22	USAF
20-Mar-04	Delta II 7925	GPS IIR-11	USAF
23-Jun-04	Delta II 7925	GPS IIR-12	USAF
31-Aug-04	Atlas IIAS	NROL-01	NRO
6-Nov-04	Delta II 7925	GPS IIR-13	USAF
3-Feb-05	Atlas IIIB	NROL-23	NRO
30-Apr-05	Titan IVB	NROL-16	NRO
20-May-05	Delta II 7925	NOAA-N	NOAA
26-Sep-05	Delta II 7925	GPS IIR-14 (M)	USAF
19-Oct-05	Titan IVB	NROL-20	NRO
24-May-06	Delta IV Medium	GOES-13	NOAA
28-Jun-06	Delta IV Medium+	NROL-22	NRO
25-Sep-06	Delta II 7925	GPS IIR-15 (M)	USAF
4-Nov-06	Delta IV Medium	DMSP-17	USAF
17-Nov-06	Delta II 7925	GPS IIR-16 (M)	USAF
14-Dec-06	Delta II 7920	NROL-21	NRO
24-Apr-07	Minotaur I	NFIRE	MDA
15-Jun-07	Atlas V (401)	NROL-30	NRO
11-Oct-07	Atlas V (421)	WGS-01	USAF
17-Oct-07	Delta II 7925	GPS IIR-17 (M)	USAF
11-Nov-07	Delta IV Heavy	DSP-23	USAF
10-Dec-07	Atlas V (401)	NROL-24	USAF
20-Dec-07	Delta II 7925	GPS IIR-18 (M)	USAF
13-Mar-08	Atlas V (411)	NROL-28	NRO
15-Mar-08	Delta II 7925	GPS IIR-19 (M)	USAF
18-Jan-09	Delta IV Heavy	NROL-26	NRO
6-Feb-09	Delta II 7320	NOAA-N'	NOAA
24-Mar-09	Delta II 7925	GPS IIR-20 (M)	USAF
4-Apr-09	Atlas V (421)	WGS-02	USAF
5-May-09	Delta II 7920	STSS ATRR	MDA
27-Jun-09	Delta IV Medium+	GOES-O	NOAA
17-Aug-09	Delta II 7925	GPS IIR(M)-21	USAF
25-Sep-09	Delta II 7920	STSS Demo	MDA
19-Oct-09	Atlas V (401)	DMSP-18	USAF
5-Dec-09	Delta IV Medium+	WGS-03	USAF
4-Mar-10	Delta IV Medium+	GOES-P	NOAA
28-May-10	Delta IV Medium+	GPS IIF-01	USAF
14-Aug-10	Atlas V (531)	AEHF-1	USAF
20-Sep-10	Atlas V (501)	NROL-41	NRO
26-Sep-10	Minotaur IV	SBSS 20-1	USAF
21-Nov-10	Delta IV Heavy	NROL-32	NRO
20-Jan-11	Delta IV Heavy	NROL-49	NRO
6-Feb-11	Minotaur I	NROL-66	NRO
11-Mar-11	Delta IV Medium+	NROL-27	NRO
15-Apr-11	Atlas V (411)	NROL-34	NRO
7-May-11	Atlas V (401)	SBIRS GEO-1	USAF
16-Jul-11	Delta IV Medium+	GPS IIF-02	USAF
28-Oct-11	Delta II 7920	NPOESS-Prep	NOAA
20-Jan-12	Delta IV Medium+	WGS-04	USAF
24-Feb-12	Atlas V (551)	MUOS-1	USN
3-Apr-12	Delta IV Medium+	NROL-25	NRO
4-May-12	Atlas V (531)	AEHF-2	USAF
20-Jun-12	Atlas V	Classified	NRO
29-Jun-12	Delta IV	NROL-15	NRO

ULA photo by Patrick H. Corkery

AEHF = Advanced Extremely High Frequency
ATRR = Advanced Technology Risk Reduction
DMSP = Defense Meteorological Satellite Program
DSCS = Defense Satellite Communications System
DSP = Defense Support Program
GOES = Geostationary Operational Environmental Satellite
GPS = Global Positioning System
MDA = Missile Defense Agency
Milstar = Military Strategic and Tactical Relay
MUOS = Mobile User Objective System
NFIRE = Near Field Infrared Experiment
NOAA = National Oceanic and Atmospheric Administration
NPOESS = National Polar-orbiting Operational Environmental Satellite System
NRO = National Reconnaissance Office
NROL = NRO launch (classified payload)
SBIRS = Space Based Infrared System
SBSS = Space Based Surveillance System
STSS = Space Tracking and Surveillance System
UHF = Ultra High Frequency
USAF = United States Air Force
USN = United States Navy
WGS = Wideband Global SATCOM

The launch that started the streak: A Titan IVB launches a national security payload into orbit on May 22, 1999, from Vandenberg AFB, Calif., in this series of time exposed photographs.

Photo by Brian Lockett via air-and-space.com

"which will in turn allow [ULA] to buy piece parts and raw materials at much lower rates." He added: "This certitude in the business plan for our major launch vehicle provider should produce considerable savings over many years." He estimates those savings could reach the level of "hundreds of millions of dollars."

Specifically, Space Command has asked ULA to fill in a "matrix" square with prices it would charge for varied quantities of space boosters at different rates of production. Down one side of the matrix square would be five annual production rates—six, seven, eight, nine, or 10 rockets. Down another side would be three periods—three, four, or five years.

The production order thus could range from a low of 18 to a high of 50 boosters. USAF will be looking for a "sweet spot" of cost within those data.

Competitor Systems

For its part, ULA says it is doing everything it can do to keep costs down, having applied major cuts to its work force. Even so, it claims the block buy is essential. Speaking at the Colorado Springs event, Daniel J. Collins, ULA's chief operating officer, said that "a block buy will significantly lower the cost of providing many of those launches with the same reliability and capability and flexibility." At the same time, he asserted, "There are plenty of launches for new entrants, to establish themselves, to meet the criteria, and to be a part of this game. We welcome competition."

The Air Force might conclude such a deal within a few months, if Congress goes along with it. In certain quarters, this is a controversial plan. Critics contend that it will damage prospects for other candidates to compete for Air Force launch business.

If ULA manages to lock in a huge number of future national security launches, warn critics, there would be few opportunities left for potential competitors. Thus, the chances of competition—and, presumably, lower cost—would disappear. Far better, say the critics, for the Air Force to immediately move toward open bidding on a per-launch basis.

Recent years have seen the emergence of private companies developing efficient, high-performance engines. One, Blue Origin, conducted a test that saw a full-size space vehicle rise 500 feet into the air and then settle softly

to the ground, within inches of the planned touch-down spot. The potential value for Air Force operations is clear. Another company, SpaceX, has gone even further. It developed a completely new engine, the highly efficient and American-made Merlin 1D. Moreover, the firm has successfully flight-tested an EELV-class competitor, the Falcon 9 booster.

Even more interesting is SpaceX's proposed Falcon Heavy rocket. It will be propelled by a package of three booster cores, with 27 engines firing at the same time. That will provide enough thrust to lift 117,000 pounds of payload—twice that which can be carried by today's biggest EELV. SpaceX is shooting for first flight in 2013.

Many regard this huge booster as a likely defense launch entrant for the near future. Some regard it as a threat to today's current crop of rockets, given what appears to be significantly lower cost. SpaceX officials claim that, if allowed to compete with ULA for launch business, it could save the Pentagon "at least one billion dollars" every year. Also to be watched is the impending debut of Orbital Sciences Corp.'s Antares medium-size rocket, marking the arrival of yet another space vehicle with the potential for EELV use.

The Air Force has not turned its back on these potential competitor systems. Far from it. Shelton said USAF is moving at a measured pace to bring in new entrants. He described competition as a tried-and-true tool for keeping costs in check.

The service has developed a new strategy to use designs from these new entrants once they've shown a level of reliability that gives USAF confidence it can safely use their products for vital and expensive national security payloads.

The immediate point of contention concerns exactly when the Air Force will allow new entrants to bid on medium- and heavy-lift space launches for national security payloads. In October 2011, the Air Force announced a new entrant certification strategy—a risk-based matrix for integrating new entrants. The following month, the service released its detailed plans for qualifying new bidders, titled New Entrant Certification Guide.

Erin C. Conaton, then undersecretary of the Air Force, called this plan "the best balance of ensuring reliable access to space while encouraging competition and innovation in the launch industry" and claimed USAF is "committed to providing a level playing field to all competitors." Without doubt, the USAF view remains that it cannot afford a launch failure. In turn, mission assurance is the highest value, despite its cost. "Clearly, clearly, mission success is our No. 1 focus," Shelton told the National Space Symposium. "We will continue to ensure that mission assurance corners are not cut. Let me say that again: We will continue to ensure mission assurance corners are not cut."

Mission assurance demands highly expensive launch preparations. The awareness of risk drives demands for extensive and expensive launch reviews, by both the Air Force and industry. Examples of how rigorous mission assurance practices have prevented disaster are not hard to find. In March testimony to Congress, Shelton mentioned two:

- MSgt. Michael Claus of USAF's 5th Space Launch Squadron noticed a safety violation in equipment movement. By reporting it, he prevented damage to the Atlas V that was to boost the Navy's Mobile User Objective System satellite.
- SSgt. Paul Lillie of the 4th Space Launch Squadron detected a valve leak on an Atlas V preparing to launch an NRO spy satellite. This prevented the payload from being inserted into an improper orbit.

Space's Bullish Future

"There's been a lot of talk about mission assurance, that maybe we're paying too much for mission assurance, that maybe we can look at mission assurance and dial it back," said Shelton. "Well, there will be tire treads over me on that one, if it comes to pass."

As it grapples to constrain booster costs, the Air Force has embraced new operational concepts to make best use of existing systems. For instance, the service is seeking ways to squeeze more capability out of each blastoff. One idea: multiple-asset launch, the better to take advantage of the lifting power of the current Atlas and Delta rockets.

This first became possible in the mid-1990s, when USAF approved its EELV Secondary Payload Adapter, also known as an "ESPA ring." The adapter allowed the big boosters to launch not only a 15,000-pound primary satellite but also as many as six small, 400-pound secondary satellites—all on the same vehicle.

Today, Air Force Space Command is ready to take matters one step further. It has decided that, when it makes operational sense, it will launch Global Positioning System III satellites two at a time, getting more bang for the launch buck. The Air Force has contracted with both ULA and SpaceX for ideas on how best to execute such dual launches. This "is a great way to save on overall launch costs," Shelton said. "I can see multiple-launch concepts becoming more prevalent in these times of decreasing budgets."

Finally, there is more willingness to recognize that not everything the Air Force launches is a truly critical payload. Shelton said there is room to consider a more relaxed—and less expensive—approach. "We launch a number of experiments, for example, in our space test program, and while we certainly value these experiments, it is clear that they aren't in the same class as some of our satellites such as the Space Based Infrared [System] satellite," said the general. "They may present an opportunity ... to take a little bit more risk."

For all that, space officials acknowledge that such steps will lower costs only at the margin. They say that any improvement is welcome, but fundamental change will require major technological breakthroughs. Toward this end, the Air Force has begun to pursue a number of transformational technologies. They hold the prospect of bringing a wholesale change in the military space business.

Shelton pointed out that, because today's rockets are so expensive, USAF develops very large satellites with many types of capabilities, and builds them for very long service lives. This can also be a disadvantage. "By the time you reach end of life of the satellite on orbit, your sensor and computing technology can be anywhere from 20 to 30 years old," said Shelton. "That's a good 15 to 20 generations out of date." Cheaper launch would open up design trades that could allow more frequent refresh of orbital technologies.

In the end, said Shelton, he is bullish on the future of the service's capabilities. His goal is to make launch affordable, safe, and routine. In that future, he explained, "space launch is no longer an epochal event, but something that's taken for granted much like an airline departure is today." ■

Robert S. Dudney is a former editor in chief of Air Force *Magazine (2002-2010). His most recent article was "Lawrence of Airpower" in the April issue.*

Keeper File

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Hirohito's "Jewel Voice Broadcast"

On Aug. 15, 1945, a Japanese emperor, for the first time ever, spoke to the common people. They heard a scratchy recording of a voice on the radio. It belonged to the Emperor Hirohito (known since his death as Emperor Showa), and he brought bad news: After combat defeats and atomic bombings, Japan was accepting the Allies' call for unconditional surrender. The rescript was recorded on Aug. 14. Die-hard Army fanatics, hearing of it, stormed the palace to destroy the record. Loyalists are said to have smuggled it to safety in a laundry basket. In a masterpiece of understatement, the rescript noted, "The war situation has developed not necessarily to Japan's advantage." Ever after, it has been known as "the Jewel Voice Broadcast."

"Imperial Rescript on the Termination of the War"

H. I. M. Michinomiya Hirohito
(The Emperor Showa)
Radio Address to the Nation
Tokyo
Aug. 15, 1945

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

TO OUR GOOD AND LOYAL SUBJECTS:

After pondering deeply the general trends of the world and the actual conditions obtaining to our empire today, we have decided to effect a settlement of the present situation by resorting to an extraordinary measure.

We have ordered our government to communicate to the governments of the United States, Great Britain, China, and the Soviet Union that our empire accepts the provisions of their Joint Declaration.

To strive for the common prosperity and happiness of all nations as well as the security and well-being of our subjects is the solemn obligation which has been handed down by our imperial ancestors, and which we lay close to heart. Indeed, we declared war on America and Britain out of our sincere desire to ensure Japan's self-preservation and the stabilization of East Asia, it being far from our thought either to infringe upon the sovereignty of other nations or to embark upon territorial aggrandizement.

But now the war has lasted for nearly four years. Despite the best that has been done by everyone—the gallant fighting of the military and naval forces, the diligence and assiduity of our servants of the state, and the devoted service of our 100 million people—the war situation has developed not necessarily to Japan's advantage, while the general trends of the world have all turned against her interest.

Moreover, the enemy has begun to employ a new and most cruel bomb, the power of which to damage is indeed incalculable, taking the toll of many innocent lives.

Should we continue to fight, it would not only result in an ultimate collapse and obliteration of the Japanese nation, but also it would lead to the total extinction of human civilization.

Such being the case, how are we to save the millions of our subjects or to atone ourselves before the hallowed spirits of our imperial ancestors? This is the reason why we have ordered the acceptance of the provisions of the Joint Declaration of the Powers.

We cannot but express the deepest sense of regret to our allied nations of East Asia, who have consistently co-operated with the empire towards the emancipation of East Asia. The thought of those officers and men as well as others who have fallen in the fields of battle, those who died at their posts of duty, or those who met with untimely death and all their bereaved families, pains our heart day and night.

The welfare of the wounded and the war sufferers, and of those who have lost their homes and livelihood, are the objects of our profound solicitude.

The hardships and sufferings to which our nation is to be subjected hereafter will certainly be great. We are keenly aware of the inmost feelings of all you, our subjects.

However, it is according to the dictate of time and fate that we have resolved to pave the way for a grand peace for all the generations to come by enduring the unendurable and suffering what is insufferable.

Having been able to safeguard and maintain the structure of the imperial state, we are always with you, our good and loyal subjects, relying upon your sincerity and integrity. Beware most strictly of any outbursts of emotion which may engender needless complications, or any fraternal contention and strife which may create confusion, lead you astray, and cause you to lose the confidence of the world.

Let the entire nation continue as one family from generation to generation, ever firm in its faith of the imperishableness of its divine land, and mindful of its heavy responsibilities, and the long road before it.

Unite your total strength to be devoted to the construction for the future. Cultivate the ways of rectitude; foster nobility of spirit; and work with resolution so that you may enhance the innate glory of the imperial state and keep pace with the progress of the world.

14th day of the 8th month of the 20th year of Showa. ■

USAF photo

Aberrations in Iraq

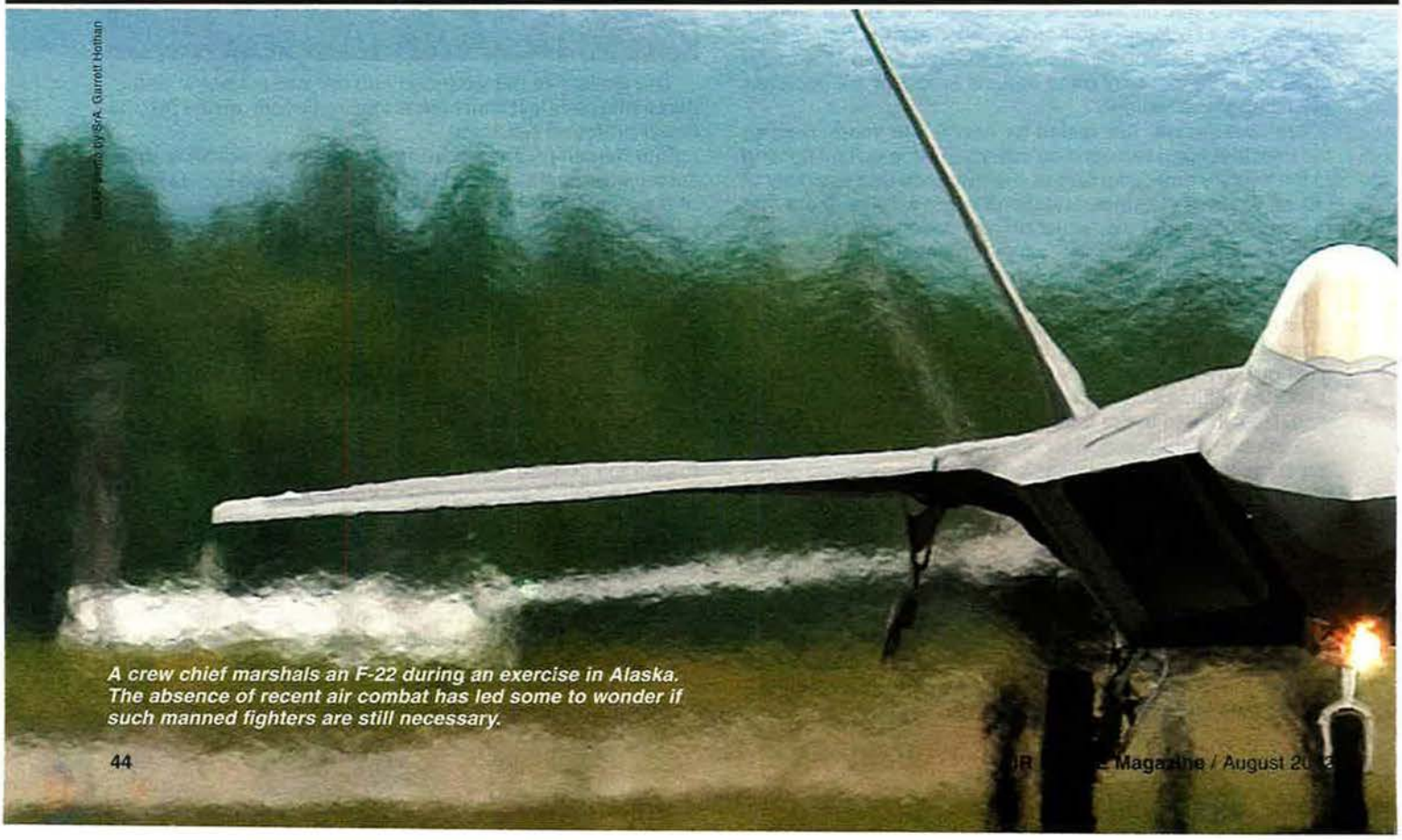


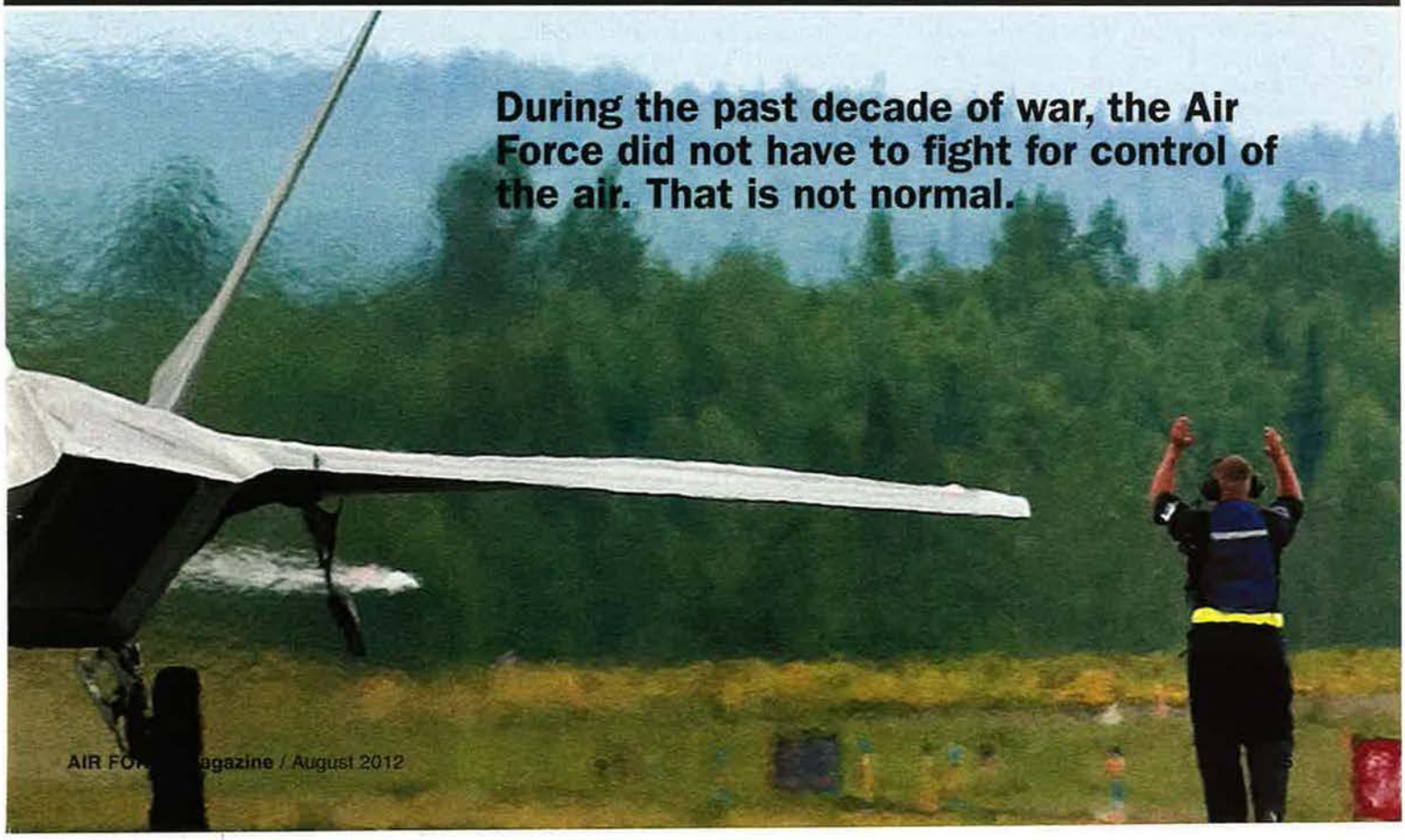
Image posted by SrA. Garrett Hothan

A crew chief marshals an F-22 during an exercise in Alaska. The absence of recent air combat has led some to wonder if such manned fighters are still necessary.

In 1991, USAF fighter aircraft pass oil fires, set by the Iraqi Army in retreating from Kuwait during Operation Desert Storm. USAF fighters downed 37 enemy fighters, with no losses, in that war.

and Afghanistan

By Daniel L. Haulman



During the past decade of war, the Air Force did not have to fight for control of the air. That is not normal.

Aerial combat was a prime feature of US major warfare throughout the 20th century. From 1918, when a US airman scored the first aerial victory, through 1999, US airmen shot down some 17,500 enemy airplanes. These included 624 in World War I, 15,800 in World War II, 894 in Korea, and 137 in Vietnam.

The 1990s wars against Iraq and Serbia were smaller, but US pilots still shot down 48 aircraft—39 Iraqi and nine Serbian aircraft.

At the turn of the century, however, air-to-air combat vanished. The US since 2000 has waged two major wars, one in Iraq and one in Afghanistan, but no pilot became an ace. Indeed, no one notched even a single aerial victory credit.

Airpower played significant roles in both of these recent wars, but fighting for air superiority was not one of them. There were no air battles at all.

The total absence of aerial combat so far in the 21st century has led some to claim that its day is gone forever, that expensive air superiority fighters and highly trained pilots are no longer necessary. This view is almost certainly wrong.

Why has air combat not played a role in the wars in Afghanistan or Iraq? The answer: Those wars were aberrations. War in the future probably will once again require the US to fight for air dominance—and not enjoy it from the beginning.

The first aberration occurred in Afghanistan.

On Oct. 7, 2001, Washington launched Operation Enduring Freedom against the Taliban regime of Afghanistan, the protector of Osama bin Laden and his al Qaeda terror organization. It was a mismatch in the air. The Afghan Air Force was so small that it did not even merit an entry in the annual *Jane's All the World's Aircraft* for the years 1999 to 2002.

Without its own aviation industry, Afghanistan had long depended on other nations, particularly the Soviet Union, for its aircraft. During the 1980s, as Moscow warred against the Afghan people, guerilla fighters became adept at using small surface-to-air missiles against airplanes.

A Plinking Campaign

During the 1990s, the emphasis within Afghanistan was on land combat between various local entities, of which the Taliban was one. What was left of the old Afghan Air Force was divided among the factions vying for control of the country. Spare parts to keep aircraft functioning were in short supply, and flying training was extremely limited.

By 1996, Taliban fighters had conquered all but the far north of the country, but their share of the surviving Afghan Air Force was small and weak. One estimate put the Taliban air force at eight MiG-21s, eight Su-22s, several transports, and about 12 helicopters.

Whatever the true numbers—and the estimates varied wildly—many were simply out of service, and only a handful of pilots remained.

US military planners never once worried about the Afghan aviation arm as aerial opposition. Indeed, the Afghan threat was far less than what US pilots faced every day enforcing the "no-fly" zones over Iraq.

However, those officers planning the Afghan war did have some concern the Taliban might pack aircraft with explosives and fly suicide missions into US military encampments. Thus, when the US struck Afghanistan, its military leaders were determined from the outset to establish uncontested control of the air.

Among the 31 targets hit on the first night of the air war were Taliban airfields and aircraft. Air bases known to be harboring MiG-21 and Su-22 airplanes were Shindand AB and Mukurin AB. They were put out of commission.

Afghan air defenses were largely destroyed on that first night. Even so, for seven consecutive days after the first night, US airmen took part in an "aircraft plinking" campaign, the goal of which was to destroy, finally and to a certainty, every last enemy military aircraft and helicopter in Afghanistan.

The Pentagon did not officially announce the death of the Taliban air force until Oct. 25. In reality, the Afghan air arm had ceased to exist weeks earlier.

No Taliban aircraft got airborne to contest the coalition onslaught. In fact, no Taliban aircraft got airborne at any time in the entire campaign. US pilots had no opportunity to shoot down enemy airplanes. The Taliban had few to begin with. What few they did have were crushed within hours, even minutes.

Destruction of what little existed of the Taliban air defenses was so complete the United States was able to employ, at a very early stage in the campaign, slow-moving and low-flying helicopters, transports, gunships, and remotely piloted vehicles. These aircraft would have been too vulnerable to use in this fashion had the enemy possessed or retained an air force of even minimal effectiveness.

The second aberration came 17 months later, in Iraq.

President Bush launched a war to topple the despotic and dangerous regime of Saddam Hussein, who had for years threatened his neighbors and who had defied United Nations inspectors seeking evidence of the manufacture of weapons of mass destruction.

Pilots of USAF aircraft entering Iraqi airspace at the opening of Operation Iraqi Freedom on March 19, 2003, could not be sure the Iraqi Air Force would be as impotent as the Afghan Air Force had been. After all, 12 years earlier, the Iraqi Air Force had been one of the most powerful in the entire region.

Iraq's air arm had fought well during the brutal 1980-88 Iran-Iraq War. Early in the decade of the 1990s it was one of the largest air forces in Southwest Asia, with well over 700 fixed wing combat aircraft. Iraq had purchased new and capable fighter aircraft, including MiG-29s from the Soviet Union and Mirage F1s

DOD photo

Then-Col. Gary North runs a preflight check in an F-16 in 1999. The green star represents an Iraqi MiG-25 he shot down in 1992 during Operation Southern Watch. USAF's enforcement of the two no-fly zones restricted Iraqi Air Force operations.

AERIAL VICTORY KILL RATIOS 1917-2012

Conflict and time frame	AAS, AAF, or USAF aerial victories	Enemy aerial victories over AAS, AAF, or USAF	Kill ratio (US victories to enemy victories)
World War I (1917-1918)	624	357	1.75-1
World War II (1941-1945)	15,800	3,949	4-1
Korean War (1950-1953)	894	147	6-1
Vietnam War (1964-1973)	137	74	1.85-1
First Gulf War (1991-1993)	39	0	39-0
Bosnia (1994)	4	0	4-0
Kosovo (1999)	5	0	5-0
Afghanistan (2001-2012)	0	0	-
Iraq (2003-2012)	0	0	-

Air Force kill ratios have varied widely in various wars. Since the difficulty experienced in the Vietnam War, however, USAF has racked up 48 aerial victories with no losses.

from France. Baghdad had improved its air bases, increasing the size and number of runways and taxiways and constructing hundreds of hardened aircraft shelters.

That rather formidable Iraqi Air Force, however, ran into a buzzsaw. It was called the United States Air Force.

In Operation Desert Storm—the Gulf War that unfolded between Jan. 17 and Feb. 28, 1991—USAF pilots shot down 37 Iraqi aircraft—32 airplanes and five helicopters. USAF and coalition aircraft also destroyed 254 additional Iraqi aircraft on the ground. Aircraft such as F-111s and F-117s, armed with laser and television guided bombs, destroyed 141 Iraqi aircraft in their shelters and another 113 in the open.

Counting airplanes that were flown in desperation to Iran, Baghdad lost 407 fixed wing airplanes—more than half its prewar force.

The effect was devastating and long-lasting. The once-powerful Iraqi air arm went into a long disintegration as a true fighting force—a fact that became only too apparent 12 years later.

In the 2003 war, not one Iraqi warplane attacked the US and coalition forces advancing on the ground toward Baghdad. Complete aerial supremacy contributed to the quick victory that toppled the regime of Saddam and placed US and coalition military forces in the enemy capital in less than one month.

Desert Strike

Even earlier, during the 1990s, the US was aware of the drastically weakened condition of the Iraqi Air Force. During those years, the US and its coalition partners enforced no-fly zones over northern and southern Iraq.

Saddam rarely launched aircraft to challenge United States aircraft patrolling the UN-sanctioned no-fly zones over Iraq. Some cases, however, did arise.

At the end of 1992 and beginning of 1993, American F-16 pilots using advanced medium-range air-to-air missiles shot down two more Iraqi airplanes when they mounted challenges.

In 1996, Iraqi troops advanced under the northern no-fly zone and seized the Kurdish city of Irbil. In response, the US opened Operation Desert Strike. During that operation, USAF B-52s launched 13 cruise missiles against Iraqi military targets, including air defense and radar installations.

American military personnel unearth an Iraqi MiG-25 in 2003 at Al Taqqadum AB near Baghdad during Operation Iraqi Freedom. The Iraqi military buried several fighter aircraft to prevent their destruction by coalition forces.

DOD photo

DOD photo

The remains of a MiG-21 decay in a field near Bagram Airfield, Afghanistan. In planning for Operation Enduring Freedom, USAF didn't have to worry about the threat from the Afghan aviation arm.

Another result of the Iraqi offensive in the northern no-fly zone was the extension of the southern no-fly zone northward from 32 degrees north to 33 degrees north latitude. This further restricted the space where the Iraqi Air Force could operate or train.

Iraqi flights were restricted also by another factor. During the late 1980s, Saddam had sent 19 of his Soviet-made combat aircraft to Yugoslavia for refurbishing but was not able to get them back because of United Nations imposed economic sanctions on Iraq after its invasion of Kuwait. In September 1995, the UN Security Council had voted to extend sanctions against Iraq that had been in place for five years. As a result, worn-out Iraqi airplane parts could not be easily replaced, resulting in fewer operational warplanes.

Fearing attempted coups, the Iraqi dictator periodically purged his military leadership, including some of the high-ranking officers in the Iraqi Air Force. Saddam wanted Iraq's military to be led by those unquestionably loyal to him. As a result, the Iraqi Air Force lacked the leadership it needed to revive itself.

Saddam's refusal in late 1998 to allow UN inspectors to continue their work in Iraq prompted another set of US and allied air attacks on Iraq. During Operation Desert Fox, the United States and Britain bombed Tallil Air Base and destroyed several Iraqi remotely piloted aircraft that had been converted from trainers, presumably to deliver chemical or biological weapons.

All of these factors further weakened the tattered remnant of the Iraqi Air Force that had survived the Gulf War. And that remnant wasn't much; in 2002, the Iraqi inventory totaled 267 aircraft, only 124 of them fighters, some small fraction of which were even combat-ready.

The Most Expensive

When the United States invaded Iraq in 2003, the Iraqi Air Force did not show up. It failed to generate a single sortie. Allied air and ground forces operated without any opposition in the air.

This striking absence of Iraqi Air Force opposition allowed the US Air Force to use its relatively vulnerable aircraft—A-10s and AC-130 gunships, for instance—without much fear they would be shot down.

In the years since the start of the Afghan and Iraq wars, technological advances have made it possible for remotely piloted aircraft to detect and destroy enemy forces on the ground, even if those targets are moving. Pilots on the ground in Nevada have performed air strikes against enemy targets on the other side of the world in Afghanistan and Iraq.

These capabilities tempt some to believe manned fighters are no longer necessary.

However, remotely piloted aircraft are relatively slow and easy to shoot down. They are no match for faster, better armed, and more durable manned fighters that would be more likely to shoot them down than the other way around.

Future wars might well involve opponents with much more powerful air forces than those of Afghanistan and Iraq. Former enemies such as China and Russia, for example, are currently developing fifth generation fighter aircraft with stealth technology.

Air forces with such technology might challenge US control of the skies over battlefields. The skies themselves would be battlefields, with fighter aircraft clashing for control of the air.

If the enemy ever gained air superiority, the dynamic of combat would change immediately. Control of the air is the sine qua non of victory in modern warfare. A powerful enemy fighter force, if not countered by a powerful US fighter force, would destroy other allied aircraft such as transports, helicopters, ISR aircraft, and remotely piloted aircraft.

In terms of national policy objectives, modern fighter aircraft are extremely expensive. The lack of modern fighter aircraft, when war comes, would be even more expensive. ■

DOD photo

An aerial view of an Iraqi field in 2005 shows derelict MiG-27s and a MiG-25. In Iraqi Freedom, no Iraqi warplanes attacked coalition forces advancing to Baghdad.

Daniel L. Haulman is a historian at the Air Force Historical Research Agency. He is the author of three books, including One Hundred Years of Flight: USAF Chronology of Significant Air and Space Events, 1903-2002. *He also has contributed to numerous Air Force publications. His most recent article for* Air Force *Magazine, "Footholds for the Fighting Force," appeared in February 2006.*

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Zero Deterrent?

By Mark Schneider

The Global Zero commission proposes radical cuts to the US nuclear deterrent, including total elimination of all ICBMs.

In May, a prominent commission led by retired Marine Corps Gen. James E. Cartwright issued a report outlining a number of proposals that would slash nuclear weapons and profoundly affect nuclear deterrence.

It was Cartwright's role as chairman of the Global Zero US Nuclear Policy Commission that made this report noteworthy. The general had recently retired as vice chairman of the Joint Chiefs of Staff and previously oversaw the US nuclear deterrent as commander of US Strategic Command.

Cartwright was joined in the report by former Ambassador Richard R. Burt, former Sen. Charles T. Hagel (R-Neb.), former Ambassador to the United Nations Thomas R. Pickering, and retired Marine Corps Gen. John. J. Sheehan.

The report's findings were promptly rejected by Gen. Norton A. Schwartz, Air Force Chief of Staff, who said, "I don't agree with his assessment or the study."

The Global Zero report proposes the US:

- Eliminate all ICBMs.
- Eliminate all tactical nuclear weapons.
- Eliminate the nuclear cruise missile inventory.
- Retire the B-2 bomber decades before its service life is reached.
- Dismantle or convert all B-52 bombers to carry only conventional munitions.
- Eliminate four of the 14 Trident submarines and download the rest to 45 warheads per boat.

Ultimately, the Global Zero report suggests the US cut its nuclear force to 900 total warheads, only half of which would be available for use at any time. The "de-alerted" remainder could be restored to operational status only weeks or months after a decision to regenerate them. Overall, the proposals would reduce the current US strategic nuclear inventory by more than 75 percent in terms of available warheads.

Similar recommendations have been made before by various arms control or anti-nuclear groups but never with the endorsement of a recent top-level former general with a nuclear portfolio such as Cartwright's.

The US government has long supported the goal of totally eliminating nuclear weapons but only in the context of general and complete disarmament. During the 1980s, President Reagan linked the elimination of nuclear weapons with the deployment of extremely effective missile defenses.

Robert M. Gates in 2008, as Secretary of Defense, said, "Three Presidents I worked for during the Cold War—Jimmy Carter, Ronald Reagan, and George H.W. Bush—genuinely wanted to eliminate all nuclear weapons and said so publicly. ... But all have come up against the reality that as long as others have nuclear weapons, we must maintain some level of these weapons ourselves."

For his part, President Obama has endorsed the goal and recognized its long-term nature.

"The United States will take concrete steps toward a world without nuclear weapons. ... We will reduce the role of nuclear weapons in our national security strategy and urge others to do the same," Obama said in an April 2009 Prague speech about nuclear weapons, before immediately adding, "Make no mistake: As long as these weapons exist, the United States will maintain a safe, secure, and effective arsenal to deter any adversary and guarantee that defense to our allies."

"I'm not naïve," the President said. "This goal will not be reached quickly—perhaps not in my lifetime."

The recommendations of the Global Zero panel differ from those of the 2009 strategic posture commission, which urged reductions but didn't push a specific number of nuclear warheads. It also recommended the nuclear triad be maintained for the immediate future and supported its modernization. That panel called for a nuclear stockpile that is "safe, secure, and reliable and whose threatened use in military conflict would be credible" but cautioned that conditions favorable to a worldwide abolition of nuclear weapons "are not present today, and their creation would require a fundamental transformation of the world political order."

The Global Zero report, on the other hand, comes close to the rejection of extended nuclear deterrence and presents the notion of the US nuclear umbrella as an old-fashioned "20th century" concept.

DOD photo by Mass Comm. Spec. 1st Class Chad J. McNeeley

Retired Gen. James Cartwright, here on active duty, led US Strategic Command, making his position as chairman of the Global Zero nuclear policy commission surprising.

NATO clearly does not endorse a zero option. The NATO 2012 Heads of State and Government Summit statement, issued only a few days after the Global Zero report's publication, said, "NATO is committed to maintaining an appropriate mix of nuclear, conventional, and missile defense capabilities for deterrence and defense to fulfill its commitments as set out in the strategic concept."

NATO went on to observe that "missile defense can complement the role of nuclear weapons in deterrence; it cannot substitute for them."

Further, NATO's statement on the results of its Deterrence and Defense Posture Review reads, "Nuclear weapons are a core component of NATO's overall capabilities for deterrence and defense alongside conventional and missile defense forces."

Putting it more bluntly, the ministers said, "As long as nuclear weapons exist, NATO will remain a nuclear alliance."

Differing World Views

Asserting that "security is mainly a state of mind, not a physical condition," the Global Zero panel instead argues that nuclear forces can be cut deeply because "several hundred experts" surveyed by the Council on Foreign Relations do not believe Russia threatens the US.

Both Russia and China are extensively modernizing their nuclear forces, and both have announced the intent to expand their nuclear forces from existing levels. Moreover, both make nuclear threats; Russia's are particularly blatant and emanate from the highest levels of the Russian government.

While he was President of Russia in 2007 and 2008, Vladimir Putin—who has again assumed the title—made four separate threats to target US allies and friends. Another threat, directed toward missile defense sites in Europe, came from then-President Dmitry Medvedev.

Overall, Russian Presidents, Chiefs of the General Staff, commanders of the Strategic Missile Forces, and generals representing the Defense Ministry have made about 15 separate threats to either target missile defense facilities or make a pre-emptive nuclear attack. In fact, just a few days before the publication of the Global Zero report, Chief of the Russian General Staff Gen. Nikolai Makarov overtly threatened a pre-emptive—and implicitly nuclear—attack against NATO states.

In 2009, the US Strategic Commission pointed out, "Some US allies located closer to Russia ... are fearful of Russia and its tactical nuclear forces. ... The need to reassure US allies and also to hedge against a possible turn for the worse in Russia (or China) points to the fact that the US nuclear posture must be designed to address a very broad set of US objectives, including not just deterrence of enemies in time of crisis and war, but also assurance of our allies and dissuasion of potential adversaries."

The Global Zero report describes a targeting strategy that can't be accomplished by its force recommendations. The panel suggested the US direct its strategic weapons toward the following targets:

- Russia: Weapons of mass destruction (325 warheads, including two-on-one strikes against every missile silo), leadership command posts (110 warheads), and war-supporting industry (136 warheads). Eighty warheads would cover Moscow alone.
- China: WMD (85 warheads, including two-on-one strikes against every missile silo), leadership command posts (33 warheads), and war-supporting industry (136 warheads).
- North Korea, Iran, Syria: Each country would be covered by 40 warheads.

This is presumably the best warhead allocation that Cartwright, who oversaw US targeting for several years, could devise for such a small force. Still, it is far more comprehensive than what could be achieved with the inventories the Global Zero panel proposed. The report states that 900 warheads would be retained, yet assigns targets for at least 945 of them. Of the 900, only 450 would be deployed; the remainder would be "reserve warheads." Of those, most would be available in "weeks to months."

Under the Global Zero proposals, day-to-day deterrence would come exclusively from submarine-launched ballistic missiles. The Trident submarines would be uploaded from 360 to 720 warheads, but the panel also assumes unrealistic Trident submarine availability (six submarines at sea day-to-day out of 10 retained). Of today's 14 Trident submarines, only four or five are at sea at any given time. With a reduced force of 10 submarines, realistically the Global Zero force would be able to call on only 135 to 180 survivable Trident warheads—against a targeting strategy requiring 945.

Similarly, the panel calls for 18 B-2 bombers on nuclear alert with the ability to maintain 100 percent generated alert for extended periods.

Too Reserved

Global Zero's "reserve warheads" are not an operational force, but rather what the Bush Administration called a "responsive capability" or what the Clinton and the Obama Administrations referred to as an "upload hedge."

Meanwhile, the Global Zero nuclear delivery force would be vulnerable to a small-scale surprise nuclear attack because of the elimination of the ICBM force.

Even the deployed force would be vastly different from the deployed warheads described in the 1994, 2001, and 2010 Nuclear Posture Reviews. The Global Zero report states, "The deployed forces of 450 warheads would be de-alerted and require a small number of days (24 to 72 hours) to become launch ready." The Nuclear Posture Reviews of the Clinton, Bush, and Obama Administrations, however, unanimously rejected de-alerting.

This smaller, less-ready force will be tasked with deterring or defeating a difficult and toughening set of targets.

Cartwright's targeting plan discusses target coverage rather than damage expectancy, which is arguably more relevant to deterrence. The plan ignores the fact that both Russia and China have announced their intent to deploy missile defenses. Unlike US missile defense plans, aimed at defending against Iran and North Korea, the Russian and Chinese plans are aimed at defending against the United States. Both Russia and China are also improving their air defenses.

Makarov has said that Russia intends to create a nationwide missile defense system that is "impenetrable." Russia plans 10 battalions of S-500 missiles, designed to intercept strategic ballistic missiles by 2020. At a minimum, this appears to be at least 10 times as many strategic ballistic missile interceptors as currently planned by the US, and deployments are almost certain to continue after 2020. The S-500 will reportedly also be nuclear-armed. The commander of the Russian surface-to-air missile troops has said, "The task of destroying intercontinental ballistic missiles will be set for the Russian Air Force starting from 2015."

China's announced commitment to missile defense was reiterated in the 2010 defense White Paper which linked missile defense to its broader strategy of "active defense."

The People's Liberation Army Air Force, the White Paper noted, "is working to ensure the development of a combat force structure that focuses on air strikes, air and missile defense, and strategic projection, to improve its leadership and command system and build up an informationized, networked base support system." Although it has successfully tested a missile defense

interceptor, China is well behind Russia in missile defense but will probably have a nationwide missile defense system deployed by the late 2020s.

Despite this, the Global Zero proposal allocates no warheads for defense suppression and decimates many of the weapons most effective against enemy defenses. The eliminated ICBMs are the only element of the US missile force that reportedly have missile defense countermeasures. Vastly reduced warheads may not be able to overwhelm an adversary's defenses. The proposal also eliminates the US nuclear cruise missile force, which could be used to evade ballistic missile defenses and increase the number of attackers an adversary's air defenses must cope with.

In the case of a surprise nuclear attack against US allies, even on a regional basis, the US would—deliberately—have no technical ability to respond until 24 to 72 hours after the attacks began. Adoption of such a policy would likely generate considerable concern among some US allies.

Indeed, less than two weeks after the North Korean nuclear test in 2006, the government of South Korea demanded and received assurances of immediate support from the US, including continuation of the extended deterrence offered by the US nuclear umbrella.

The warhead totals allocated to targets in Iran, Syria, and North Korea under the Global Zero report appear to be round numbers related to reduced warhead availability rather than any real deterrence or war plan. The number assigned to each—40—seems unrelated to the potential actual number of nuclear targets in these states.

US allies recognize the value of a strong nuclear deterrent. NATO declared, "The supreme guarantee of the security of the allies is provided by the strategic nuclear forces of the Alliance, particularly those of the United States; the independent strategic nuclear forces of the United Kingdom and France, which have a deterrent role of their own, contribute to the overall deterrence and security of the allies."

Convincing American allies to accept a situation in which the US can't respond in kind to a nuclear attack for one to three days is likely to be a hard sell. US strategic missile defense wasn't designed against the current Russian and Chinese strategic missile threat and the US has repeatedly stated it has essentially no capability against them.

Over the last decade, the number of threat missiles has increased about four times as fast as the US has increased its inventory of mobile interceptors that can be forward deployed to protect its allies and forces abroad from theater attack. As NATO asserted in its nuclear security statements, missile defenses are badly needed but are no substitute for nuclear deterrence.

Global Zero asserts conventional forces and missile defenses may "offer a far superior option for deterring and defeating a regional aggressor, arguing that "precision guided conventional munitions hold at risk nearly the entire spectrum of potential targets."

However, few conventional weapons are available that can inflict damage on a scale proportionate to even a small nuclear weapon.

"You can't replace nuclear weapons today with conventional capability," said Greg Weaver, USSTRATCOM's deputy director for plans and policy. That's because "they don't have the same effects on targets," he said at a February symposium.

Idealistic Assumptions

For example, during Operation Allied Force, the US was unable to inflict significant damage on Serbia's underground airfield in Pristina with conventional weapons. In the context of that conflict, the failure wasn't crucial to the outcome but could have been if Serbia had been sheltering WMD in the facility. Conventional weapons are probably inadequate for destruction of nuclear facilities buried deep underground (China's "underground great wall," for example) and hard and deeply buried facilities for command and control, particularly when built in hard rock. According to the National Academy of Sciences, there are 10,000 such targets, mainly associated with adversarial states. Many of those targets are associated with WMDs.

Another problem is that conventional weapons, bases, and many satellites are not hardened against electromagnetic pulse (EMP) and may not function in a nuclear battlefield. Conventional missiles, for example, would be ineffective against nuclear-armed air defense missiles.

Russia reportedly has 700 nuclear air defense weapons that have the potential to impair the guidance systems of cruise missiles not hardened against nuclear effects. Beyond this is the nuclear EMP threat, which all nuclear-armed adversaries can exploit. William R. Graham, chairman of the congressional EMP commission, stated that if nuclear EMP was directed against US theater forces, "Depending on the yield of the [nuclear] weapon, the height at which the weapon was detonated, and the degree of EMP hardening enjoyed by US and allied systems, such degradation could range from a nuisance to a major hindrance in the employment of electronic systems throughout the theater."

In a 2011 report, the Defense Science Board concluded the survivability of theater conventional forces against nuclear EMP is, at best, unknown. Moreover, nuclear attacks directed against Global Positioning System satellites would likely negate the precision capability of the conventional munitions that depend on GPS guidance. There are also other ways that an adversary—particularly a peer or near-peer competitor—can degrade the effectiveness of GPS guided weapons.

Ultimately, an effort to counter nuclear attack with conventional weapons would be fighting a yield disparity of up to one million-to-one.

Fighting a powerful adversary using nuclear weapons with only conventional weapons would be extremely expensive and almost certain to fail. Even in the best case outcome, the number of US casualties could be staggering. In 2010, then-chief of USSTRATCOM, Gen. Kevin P. Chilton, warned, "We have to be careful when we start talking about one-for-one substitutions of conventional weapons for nuclear weapons," because "the nuclear weapon has a deterrent factor that far exceeds a conventional threat."

The most recent US nuclear weapons strategies posit numbers of nuclear weapons dependent on the overall threat, including Russia and China, and take into account unpredictability about future threats and the need for flexible, adaptable, and proportionate responses. No Administration in the recent nuclear age has been willing to adopt a nuclear strategy based on idealistic assumptions, which seem to be the basis of the Global Zero proposals.

The United States has for 25 years drawn down its nuclear inventories in a steady and careful manner—while also supporting the triad and a credible deterrent. These reductions are ongoing, as the nation is still moving toward its New START nuclear force limits.

This careful approach to nuclear force reduction has effectively served US interests since the end of the Cold War and does not depend on wishful thinking or idealistic assumptions. ■

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SUPPORT THROUGH THE COMBINED FEDERAL CAMPAIGN

RPAs FOR ALL

By Rebecca Grant

Department of Homeland Security photo

Here: A Hermes-450 remotely piloted aircraft owned by US Customs and Border Protection takes off on a mission. Below: A sequence of video stills from 2008 shows a Russian MiG-29 as it shoots down a Hermes-450 belonging to Georgia.

Video stills via Georgian Ministry of Interior

USAF doesn't have

Late on April 20, 2008, a remotely piloted Georgian aircraft was patrolling that nation's border when a Russian MiG-29 appeared. The fighter, using an air-to-air missile, blasted the Israeli-made Hermes-450 out of the sky.

Russia had been aiding two breakaway Georgian regions in their war against Tbilisi. The shootdown deprived Georgian forces of important aerial capabilities against the rebels.

The MiG-29 was not the first fighter to down an RPA. On the eve of the Iraq War of 2003, an Iraqi aircraft destroyed a USAF Predator. An Israeli F-16 shot down a Hezbollah RPA over the Bay of Haifa in 2006.

Still, the 2008 incident was notable because it suggested that the "counter-RPA" mission was becoming routine in the tussle for air superiority. Indeed, neutralizing an enemy's RPAs is becoming a critical task. Battles against drones are likely to pose challenges to air, sea, and land forces in years ahead.

Today, the US Air Force is starting to build counter-RPA strategies. "We all recognize that RPAs are important to foreign nations and nonstate actors," said Lt. Gen. Larry D. James, deputy chief of staff for ISR. "It's an area where we want to use our capabilities [as well as] deny adversaries the ability to use their RPAs."

Operations to counter drones date to World War II. In June 1944, Nazi

a monopoly on remotely piloted capabilities.

Germany began launching dreaded V-1 buzz bombs at London, forcing Royal Air Force officers to develop tactics for shooting them down with Tempest, Mosquito, Spitfire, and Mustang fighters. Special proximity fuzes on anti-aircraft artillery helped, too. The RAF destroyed 1,771 of the weapons.

In the postwar years, the Soviet Union and China tried to develop their own drones for offensive use, but they never became more than curiosities. Limitations on guidance and performance kept early RPAs subordinate to manned aircraft. Iraq and a few others also made attempts. For the most part, though, development of RPAs bumped along slowly until fairly recently.

By the 2000s, many of the technical barriers to reliable RPAs had dissolved. Lighter and cheaper cameras allowed designers to put effective payloads on small RPAs. Many potential adversary RPAs still rely on line-of-sight data links for control, but the availability of GPS signals made it possible to add preprogrammed routes for autonomous flight.

As a result, dozens of nations are at work on short-range RPAs. Iran is a prime example. Development programs begun in the 1980s bore fruit recently. The Iranian Ababil has a 10-foot wingspan, range of 150 miles, and endurance of 90 minutes.

RPA work has now split into two developmental streams.

The dominant one centers on low-altitude battlefield surveillance. Dozens of nations operate RPAs such as the ill-fated Georgian one. In the other stream, China and a few other nations are developing high-altitude, long-endurance RPAs with theater potential. The current crop of adversary RPAs also includes many designs geared toward significant high-end capability in long-range surveillance, signals intelligence, and all the other desirable qualities pioneered by the US.

The Left Hook

These developments virtually assure that adversary RPAs will pose a growing challenge for joint air operations.

It is true that few of these RPAs will be technical peers of American systems. However, the RPA mission rarely requires highly advanced technology.

Iran, for example, claims its new Shaparak RPA can fly for more than three hours at 15,000 feet with a 17-pound payload. Such RPAs are viewed by regional militaries and rogue states alike as a possible means for striking against technologically superior forces and landing disruptive blows.

As the skies fill with such RPAs, US and other allied airmen will first face the challenge of clearing the airspace.

Israel's Air Force got a taste of the mission during the 2006 war with Iranian-supplied Hezbollah forces based in Lebanon. Hezbollah forces attempted to scout Israeli targets with an Iranian-made Ababil RPA. They did not succeed. Israeli forces spotted the Hezbollah RPA and sent out an F-16C, which shot down the drone with a Python 5 air-to-air missile.

Undaunted, Hezbollah has acquired as many as a dozen replacement Ababils from Iran.

Border surveillance RPAs—like the one shot down over Georgia—are becoming standard equipment around the world. Their surveillance powers will provide at least a sporadic opportunity to detect movement around borders. That will make it hard for US forces to blind adversary nations, as the coalition did with Iraq in 1991.

In that war, the coalition mounted a major "left hook" swing of ground forces on the Saudi border, as coalition air forces masked the move. In the future, a handful of RPAs could detect the maneuver.

Future battles probably won't be limited to chasing one or two RPAs across the sky. Instead, air forces may be forced to engage multiple RPAs.

That's the scenario that emerged in Black Dart, a major US venue for experimenting with counters to adversary RPAs.

In the mid-2000s, the Air Force Research Lab at Wright-Patterson AFB, Ohio, participated in the Defense Intelligence Agency's Black Dart project. Its goal at that time was to experiment with asymmetric attack threats that could be posed by an adversary's use of commercial off-the-shelf technologies.

Photo via chinesemilitaryreview.blogspot.com

China's ASN-209s are tactical, medium-altitude RPAs. China has worked hard to catch up in the unmanned air game. Experts worry about "swarms" of small, light RPAs being used to harass ground troops or being used as "crop dusters" to deliver chemicals or bioagents.

Soon, however, Black Dart grew into an air battle test. In November 2010, a US Joint Forces Command unit at Nellis AFB, Nev., hosted a variation of Black Dart, dubbed Blue Knight. Blue Knight set up an environment in which USAF would fend off "red" adversary RPAs. Participants included aircraft as varied as the F-22 fighter and Predator RPA. The goal: Determine how joint forces could work together to detect, identify, track, and defeat adversary unmanned systems.

In 2011, Black Dart was moved to the Navy missile range at Point Mugu, Calif. Forty-seven RPAs flew 120 sorties during the exercise that year.

The United States will need more and better exercises to keep up with the growing threat, according to Army Maj. Darin L. Gaub, a planner on the 1st Infantry Division staff who has worked extensively on development of RPA applications and tactics.

Gaub, writing in *Armed Forces Journal* last December, criticized Black Dart for its predictable scenarios. "Opposing-force operators are often junior, with limited or even no experience with their systems," he wrote, "and are therefore unable to replicate the full range of potential adversary tactics."

Some planners fear the US may one day encounter a swarm of enemy RPAs over friendly ground forces. Guy Ben-Ari of the Center for Strategic and International Studies in Washington, D.C., once vividly described the swarm tactic.

"Unmanned aerial vehicles could be used asymmetrically, in ways we haven't even imagined," he told *Popular Mechanics* in 2009. "You could have something that's two generations behind our drones, but they're swarming with hundreds of UAVs at the same time or being used as 'crop dusters' to deliver chemicals or bioagents."

Soaring Dragon

One 2009 Air Force planning document touched on that possibility. Swarm capability, it said, begins when a single pilot directs "the actions of many multimission aircraft creating a focused, relentless, and scaled attack."

Other services agree. The US Army's 2010 RPA roadmap found "most states are also advancing their own UAVs and counter-UAV capabilities."

In a battlefield setting, adversary RPAs could focus on surveillance, harassment, and small, targeted strikes. Very small munitions packages, carried by lightweight RPAs, could be effective against dispersed ground forces conducting stability operations. In every case, recovery and reuse of RPAs will probably dominate adversary tactics.

Enemies still need to show that they can build sufficient numbers of beyond-line-of-sight RPAs with redundant controls. Low-flying enemy RPAs will be as vulnerable as American types. Thus, the ideal swarm tactic probably can't be executed until the participating RPAs reach higher levels of autonomy.

There also are many questions at the operational level. Low-end adversaries might use RPA swarms for harassment of bases or ground forces. High-end adversary RPA swarms will have much more difficult targets such as naval strike groups.

Still, the potential for RPA attacks is real in the near term. "The results of Black Dart and other counter-UAV exercises should be disseminated and incorporated at all levels in DoD," recommended Gaub. "Units training for deployment must understand what lessons come out of exercises such as Black Dart."

Some forecasters assign to RPAs various starring roles in high-end conflict.

China is hard at work on a range of RPAs. Unsurprisingly, many of their designs bear a striking resemblance to aircraft in the US Air Force inventory. In the past, China copied both the Firebee and the Pioneer. China's answer to the Predator is nicknamed "Pterodactyl."

A new concern is a Chinese RPA known by several names, one of which is Soaring Dragon. When it went on display at the Zuhai air show in 2006, this RPA struck many as resembling the Air Force's Global Hawk. It reportedly conducted high-speed taxi tests in 2008 and flew in November 2009.

Experts estimate the Soaring Dragon may have a service ceiling of 57,000 feet and a speed of about 470 mph. Its range may be limited to the Asia-Pacific region, but in that environment, it can accomplish a great deal.

Photo via chinesemilitaryreview.blogspot.com

China's Soaring Dragon bears a striking resemblance to USAF's Global Hawk. In the past, China has openly copied other USAF drones, including the Firebee and the Pioneer.

A prime use for Chinese RPAs could be to search for precise locations on US and other allied naval vessels, for example. In a crisis, airmen in the Pacific may have to hunt and chase RPAs such as Soaring Dragon in order to defend the airspace and gain air superiority. That job almost certainly would fall to top-end air superiority fighters such as the F-22 and F-15.

The prospect is not far-fetched. In June 2011, a P-3 Orion flown by the Japanese Maritime Self-Defense Force over the East China Sea observed a group of 11 Chinese warships passing Okinawa on a homeward course. Suddenly the P-3 crew spotted a Chinese RPA in flight over one of the Chinese frigates. It was the first evidence of integrated warship-RPA operations. The RPA appeared to be about 15 feet long with a camera ball slung under its nose.

Propaganda, posturing, precision attack, and surveillance all are potential missions for these RPAs. The proliferation of RPAs at the low and high end has reached a point where taking steps to counter adversary RPAs is already becoming part of the routine for the air component.

Dealing with threats from enemy RPAs means going back to the basics in air superiority. "It's just another platform," explained James, the USAF head of ISR. "Why is an RPA different from a piloted aircraft? It's not a different mission."

Step 1 is sorting and characterizing the threats. In the Black Dart exercises, fighters had trouble seeing and identifying "red" RPAs. Intelligence agencies will have their hands full in keeping track of new types of adversary RPAs and providing that information for targeting purposes. Building the enemy RPA order of battle will be a vital task.

The next step is to ensure aircraft crews can identify enemy RPAs by type. Part of that job will fall to manned fighters. "The F-35 Joint Strike Fighter, for example, should carry a signature library for its radar that will allow it to spot and identify most classes of UAVs," suggested Gaub.

Photo by Piotr Butowski

One of Russia's entries into the RPA sector, Yakovlev Pchela, on its launcher. A short-range tactical aircraft, its primary use is battlefield surveillance.

If fighters encounter enemy RPAs, they can shoot them down with missiles or guns. Moreover, USAF remotely piloted aircraft could be used to counter RPAs, too. That's what the Predator was attempting to do a decade ago when it was shot down by an Iraqi MiG.

Swarming RPAs

Air defense against enemy RPAs will depend to a large extent on a flexible and technically capable fighter force structure adapted to this additional task. US fighters in the Asia-Pacific region need the latest in links, intelligence-gathering systems, and weapons for the mission.

Enemy RPAs also can be attacked from the ground or at sea. Some years ago, the Defense Advanced Research Projects Agency began evaluating exotic tools for defending against smaller air systems. One such concept was RAP-CAP, which stood for the Rapid Capture and Disablement of RPAs. Press reports described RAP-CAP as a gun-launched projectile using an infrared proximity sensor to burst out foam and netting around the RPA. Conductive carbon could disable the RPA's communications.

Many experts believe laser weapons could be effective against swarming RPAs. Fast-firing solid-state lasers carried on surface vehicles or aircraft could target numerous RPAs at once as long as they were soft enough to be vulnerable to the laser's output power. For example, Boeing's Laser Avenger shot down a target RPA with a six-foot wingspan during tests in 2009.

In 2010, the Navy splashed four target RPAs using a Phalanx close-in weapon system modified to fire a solid-state laser system with an output of 32 kilowatts.

"One of the Navy's problems is that the bad guys have UAVs now; they can give away ships' positions," Raytheon's Michael W. Booen told the press after the test. "The targets came in over the ocean, and it was a good day for lasers, bad day for drones."

The Office of Naval Research plans to mount solid-state lasers on operational surface combatant ships within the next few years in part to handle swarm attacks from remotely piloted aircraft.

At the higher end of combat, the Patriot air defense missile system and its successors will have to incorporate an ability to detect, discriminate, and target small enemy RPAs.

The Air Force almost certainly will have to be deeply involved in the theater air defense architecture bringing all these systems together. The threat will only get more advanced with time. ■

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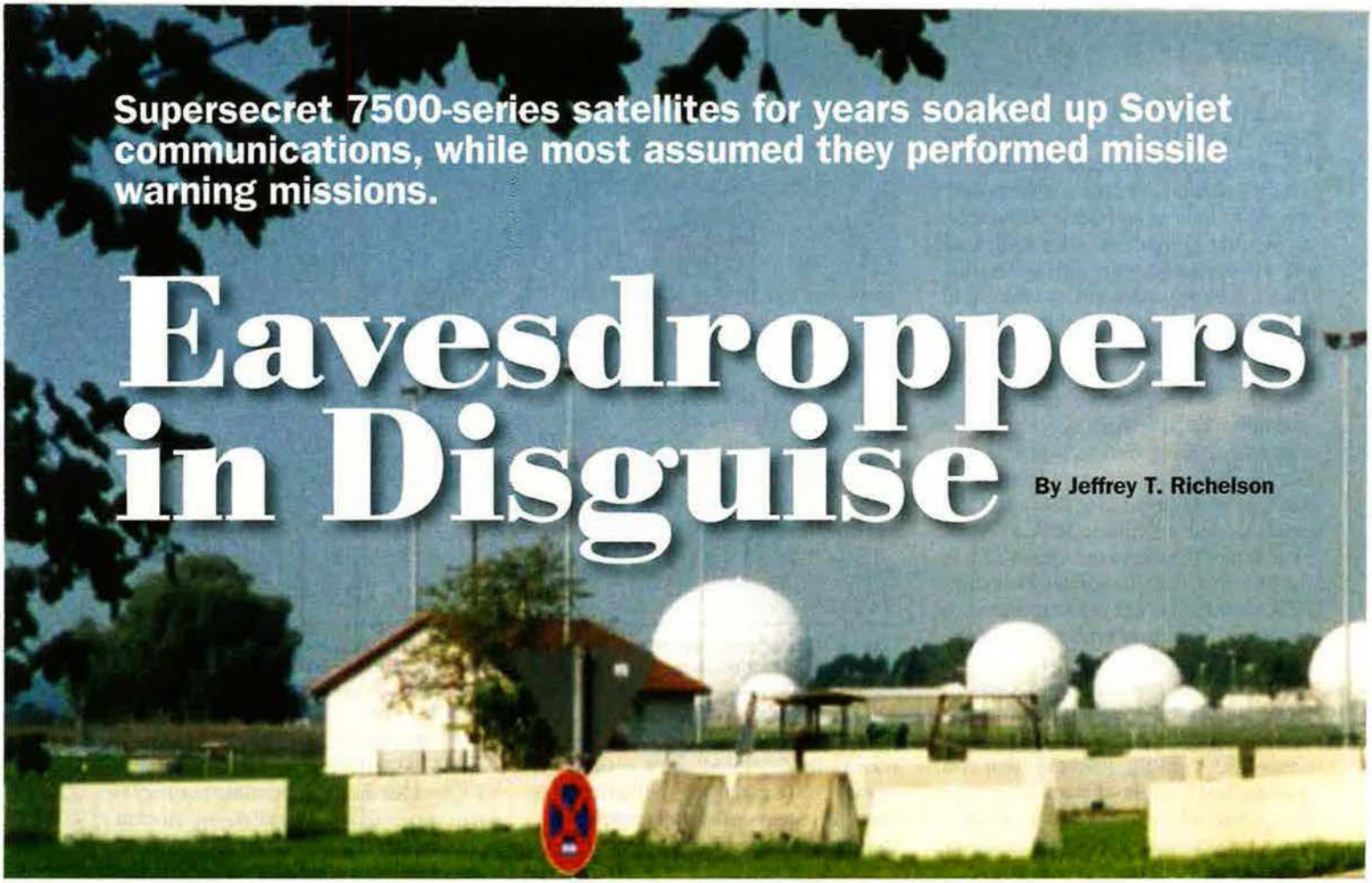

Supersecret 7500-series satellites for years soaked up Soviet communications, while most assumed they performed missile warning missions.

Eavesdroppers in Disguise

By Jeffrey T. Richelson

The Aug. 7, 1968, issue of the *New York Times* carried an article with the intriguing title, "A Secret Payload Is Orbited by the US." John Noble Wilford reported that the previous day, an Atlas-Agena D rocket "shot into Earth orbit ... a supersecret payload that may include new military surveillance sensors." He noted the Air Force would acknowledge an "experimental payload" had been launched from Cape Kennedy, Fla., but nothing more. In addition, Noble wrote that some reporters had been discouraged from asking questions by officials involved in the launch.

An Air Force index of missile launchings noted "it was the first closed launch from the Cape since 1963" and that "newsmen assigned various unofficial designations of their own to the payload."

What the newsmen and other observers had in common was the belief the secret payload was an infrared warning satellite designed to detect Soviet and other nations' missile launches.

Philip J. Klass, in his 1971 book, *Secret Sentries in Space,* identified the satellite orbited that day as an "Advanced Midas" early warning satellite in geosynchronous orbit. He also disclosed that another was launched on April 12, 1969. Subsequently, other writers would identify those satellites as Program 949 early warning spacecraft—an identification that would stick for several decades. While they were correct that there was a Program 949 involving the development of early warning spacecraft, the satellites orbited in August 1968 and April 1969 were not products of that program—or missile warning satellites of any kind.

They had a very different mission.

The August 1968 and April 1969 launches were one product of the secret conflict between the Air Force's Office of Special Projects (Program A of the National Reconnaissance Office) and the CIA over high-altitude space-based eavesdropping. This conflict also was of great interest to the National Security Agency.

In the early years of the NRO the battle was particularly intense. Between August 1963 and September 1965 the two major protagonists were Albert Wheelon—who headed the CIA's Directorate of Science and Technology and supervised the CIA component of the NRO (Program B)—and Undersecretary of the Air Force and NRO Director Brockway McMillan. One aspect of the conflict concerned future imagery programs, but the battle over space signals intelligence—involving the CIA, NSA, NRO headquarters, and Program A—was "more obscure, but just as fierce," according to Thomas R. Johnson's official history of the NSA.

In 1963, Wheelon proposed the CIA develop and operate a geosynchronous satellite whose primary function would be to intercept Soviet missile telemetry, although communications intelligence would eventually become a significant part of its mission. The proposal would become the basis for the Rhyolite project, whose first spacecraft would arrive in geosynchronous orbit in June 1970.

Wheelon's proposal helped spur NRO headquarters and the Air Force element of the NRO to push for a different kind of geosynchronous eavesdropper. Communications intelligence (Comint) would be its main mission. As early as 1962, a national intelligence estimate noted the continued Soviet expansion of both landline and microwave links for air defense communications.

Unlike Soviet high-frequency communications that bounced off the atmosphere and into waiting antennas at a variety of US and allied ground stations around the world, microwave communications leaked out into space. What was needed was a space-based system that could gather up the signals when they passed through the atmosphere. According to a former CIA official, NSA was "very much in favor

Canyon satellites sent intercepted Soviet communications to Bad Aibling, West Germany, seen here. The base had a detachment of Canyon personnel.

Photo via wikipedia

of getting Soviet traffic" and had "very little interest in telemetry."

The Air Force had already explored the use of the low Earth orbiting satellites for communications intelligence, with Comint piggybacked onto satellites used to intercept Soviet radar signals. But such satellites were of limited utility as communication intercept platforms because they were over particular emitters for only brief periods of time, resulting in only snatches of conversations being intercepted. It was like being on an escalator and trying to eavesdrop on a conversation on the escalator going in the opposite direction. What was needed was a satellite in geosynchronous orbit, whose antennas could continuously scoop up the communications from a particular source—everything from hello to goodbye.

Program A and its main contractor, Lockheed, managed to develop a system that did just that. The program producing the Aug. 6, 1968, payload and its successors bore the classified code name Canyon and the unclassified designation Project 827.

Serendipitous Deception

Helping to keep Canyon's mission secret was the presumption that geosynchronous satellites were too far from Earth to be effective eavesdropping platforms. Less than a decade earlier, a 1959 issue of the NSA's classified *NSA Technical Journal* included an article titled "Comint Satellites—A Space Problem." The author, whose identity remains classified, reported on an NSA study on the feasibility of intercepting communications from space. "There are many target communications signals that might be considered for collection from a satellite at an altitude of a few hundred miles," the author wrote.

However, when it came to satellites at several thousand miles or "the popularized 24-hour satellite hovering at 22,240 miles," they operated at distances that were "just too great for present intercept techniques." The author went on to explain that only "one part out of 10 trillion ... of the power transmitted is available for collection. The rest is gone forever."

In addition, Air Force work on development of a missile launch detection satellite, an officially classified but publicly known effort, diverted attention from the use of geosynchronous orbit for the even more highly classified Canyon effort. Thus, in October 1973, by which time four Defense Support Program (DSP) missile warning satellites had been orbited, the Air Force, CIA, and NRO produced a short study focused on "NRP Security Via 'White' Programs"—NRP being an

Canyon was lofted into space by an Atlas-Agena such as this one, launching from Pad 14 at Cape Canaveral, Fla.

NASA photo

abbreviation for the National Reconnaissance Program. The study observed that "there have evolved several planned or fortuitous relationships" between NRO and "white" Air Force programs, and "all Cape Kennedy launches of DSP and NRO satellites have been reported by the media as 'warning satellite' launches."

This meant that all the Canyon satellites, launched from Cape Kennedy had, since the first DSP launch in November 1970, been reported as early warning DSP launches.

Though the initial DSP launch occurred after the first three Canyon launches, in 1966 the Air Force had established Program 949 as the follow-on to the Midas early warning effort—which led to the assumption that Canyon launches in 1968, 1969, and 1970 were products of that effort. But while the 949 program led to an early warning satellite, it did not do so until the first DSP satellite was launched. None of the envisioned 949 test satellites were ever built, much less orbited.

It would only be decades later that the true mission of those launches would become clear.

The first Canyon satellite, designated 7501—7500 for the program, 01 for the mission number—was poised to deliver the communications intelligence NSA wanted when something went very wrong.

The spacecraft arrived in its proper orbit, with a 20,256-mile perigee and 24,335-mile apogee and 10.2-degree inclination. Thus, the satellite traced a figure eight while rising above the equator and then falling below it as it moved between its highest and lowest altitudes. But in maneuvering the satellite, a ground controller made a critical error that sent the bird into an uncontrollable spin, turning it into a highly classified, expensive piece of space junk.

The failure of 7501 left American signals intelligence personnel in at least four locations—at the Pentagon, in Los Angeles (headquarters for the Air Force Office of Special Projects), at Fort Meade, Md. (home of NSA), and in Bad Aibling, West Germany—gravely disappointed.

Between the arrival in 1952 of the Army Security Agency's 328th Communications Reconnaissance Company and its closure in 2004, Bad Aibling would host a number of different eavesdropping missions—including the interception of Soviet satellite communications, the monitoring of high-frequency communications from the Soviet Union and Eastern Europe, and the receipt of data from unmanned intercept sites in Cyprus and Oman.

An explosion seconds after launch in August 1998 destroyed the last of the 7500-series satellites.

Over those years, the composition of personnel at the base would also change. An official history of the station noted that during the 1950s and first half of the 1960s Department of Defense civilians—NSA personnel—"were rarely seen, except as visitors." That "began to change in the late 1960s, [for] DOD civilians were required to provide technical expertise and leadership in support of the station's mission." The late 1960s was the beginning of the Canyon launch effort, and along with DOD civilians, the station became home for the Lockheed employees who were responsible for manning the consoles used to operate the satellites.

The Canyon contingent at Bad Aibling had an unclassified designation—Project Wildbore—although as was the case with Project 827, what Wildbore referred to was highly classified. But first they would have to wait for a working satellite before their highly classified activities could begin.

Fortunately for the Wildbore contingent not only did the next two launches place their satellites in orbit, there were no fatal mistakes on the ground. Soviet communications traffic started to arrive in large quantities at their Bavarian ground station—courtesy of the satellite's 30-foot-diameter mesh antenna. Tapes of the intercepts would be taken to Munich and then flown to Fort Meade.

Not that everything went smoothly. Communication between the satellite and ground station would cut out on occasion, or a satellite would simply stop working. The fourth launch, on Dec. 4, 1971, failed to place satellite 7504 in orbit. According to Matthew M. Aid, author of *The Secret Sentry,* a book on the National Security Agency, Canyon had "every teething problem" a new system could experience.

The next—and last—three Canyon launches on Dec. 20, 1972, June 18, 1975, and May 23, 1977, all placed their spacecraft in the proper orbit and experienced fewer problems than earlier spacecraft. Along with the intermittently working 7502 and 7503, they delivered "very high value Comint data," according to the former CIA official.

This data wasn't restricted to intercepts of Soviet air defense and other microwave communications. The very-high-frequency communications of Arab nations, including those to and from surface-to-air missile sites, were sucked up by Canyon antennas. Thus, it is likely that Canyon contributed to the intense US intelligence effort during the Yom Kippur War of 1973.

Those antennas might have also been of assistance to American pilots engaged in

the Vietnam air war, since they intercepted the ultra-high-frequency communications of the North Vietnamese Army, including those between firing batteries and regimental headquarters. Those intercepts could have proved particularly useful during the December 1972 air offensive against Hanoi and Haiphong, which began on Dec. 18 with 129 B-52 sorties.

Before it was over there were 729 B-52 sorties. They faced at least two obstacles: the massive barrages of SAMs fired by the NVA personnel and a work stoppage, at two bases in the area, by radio intercept operators whose target was North Vietnamese air defense activities. Canyon was also useful in monitoring the China-North Vietnam border during the Christmas offensive, given the fears that attacks might serve as a catalyst for further Chinese support to North Vietnam.

Canyon may also have been one of the sources of Comint on the extensive Chinese military exercises in the fall and winter of 1970-1971, in which "every military region participated to some degree" and involving "some of the most extensive exercise activity ever reflected in Comint," according to a Defense Intelligence Agency report.

Prime Betrayal

It was not until 1990 that Canyon's existence and mission were revealed in the media, well after the program had ended in 1983. But word of the program's existence and mission arrived at KGB headquarters at least eight years before that, in 1975. The Soviets then took countermeasures to reduce the take from the satellite eavesdroppers.

Once Canyon spacecraft began sending back intercepts the volume of material continued to grow, involving thousands of intercepted messages each week and far exceeding the capability of NSA to process and exploit. It was two years before some of the intercepts were processed. A solution to the problem was found in the cooperation of two key Sigint allies, Britain and Canada, that had not been previously told of the program's existence. They both learned of the program and received an offer at the same time: Assist with translating the Russian-language messages and receive access to the product. Both allies agreed, one result being that virtually every Russian-language instructor assigned to Canadian signals intelligence training classes was pulled out of class and sent to headquarters during 1971 and 1972.

Unfortunately, for the security of the program, one of the members of the British Sigint agency, the Government Communications Headquarters (GCHQ), who learned of the eavesdropping effort, was Geoffrey Arthur Prime.

Over the years of his government service, Prime developed a mild fondness for the Soviet regime that turned into complete sympathy and led to betrayal. In January 1968, while an airman in the RAF, Prime made contact with a Soviet officer, letting Soviet intelligence know he wanted to hear from them. His request was passed not to the KGB's Foreign Directorate but to representatives of its Third Chief Directorate, responsible for security in the armed forces and low-level espionage against Western troops stationed in Germany. But what mattered most was that Prime became a Soviet asset, code-named Rowlands. At the KGB's urging, he obtained a position with GCHQ and in September 1968 began working at the London Processing Group (LPG), which translated and transcribed Russian and other foreign language intercepts.

At what point Prime learned specifically of the Canyon program is not clear. In March 1976, he arrived at GCHQ headquarters at Cheltenham to become a linguist in the agency's "Special Sigint" Division, which handled Soviet traffic. At that time he was given a Byeman clearance, necessary to receive details about satellite reconnaissance programs. Of course, in revealing to the Soviets what he had been working on during his years at the LPG, it is possible that he allowed the Soviets to deduce the existence of an intercept program targeting the specific communications links monitored by Canyon.

In September 1977, overwhelmed by pressure, Prime quit GCHQ, took jobs as a taxi driver and salesman, and broke off contact with the KGB. His espionage career was discovered in 1982, but only after he was arrested for molesting young girls. That arrest ensured he could do no further damage to the US and British Comint efforts, but all sorts of great damage was already done.

Five years before the Canyon operations ceased and Project Wildbore ended, Canyon had already spawned a successor, originally code-named Chalet. In June 1978, the first satellite from the successor program reached geosynchronous orbit. The lineage from Canyon to Chalet was so strong that the numerical designation for the first Chalet was 7508.

Beltmann/Corbis photo

Geoffrey Prime's role as a spy was not discovered for several years after he lost his nerve and quit supplying information to the Soviet Union.

That first Chalet had similar orbital parameters to the Canyon satellites, but there was one significant difference. Rather than the ground station being located at Bad Aibling, data from the new satellites would be transmitted to the massive Menwith Hill ground station in the United Kingdom. Like Bad Aibling, it had a number of missions.

By the next launch, in October 1979, Chalet had become Vortex, and the spacecraft had been modified to allow it to intercept missile telemetry in addition to communications. Eventually a three-satellite constellation would permit extensive targeting of the Soviet Union, the Middle East, and Asia. The satellites would vacuum up the communications of Soviet missile and nuclear research and development and testing sites, Israeli and Arab communications (plus Iraqi communications during Operations Desert Shield and Desert Storm), and an assortment of Chinese communications.

In 1998, a launch explosion prevented the last of the 7500 series satellites from reaching orbit.

By that time another—still classified—successor program, with first launch in 1994, had placed several eavesdropping satellites in orbit. Even these satellites could trace their origin to the decision to develop a geosynchronous spacecraft whose primary mission was communications intelligence—the decision to build Canyon. ■

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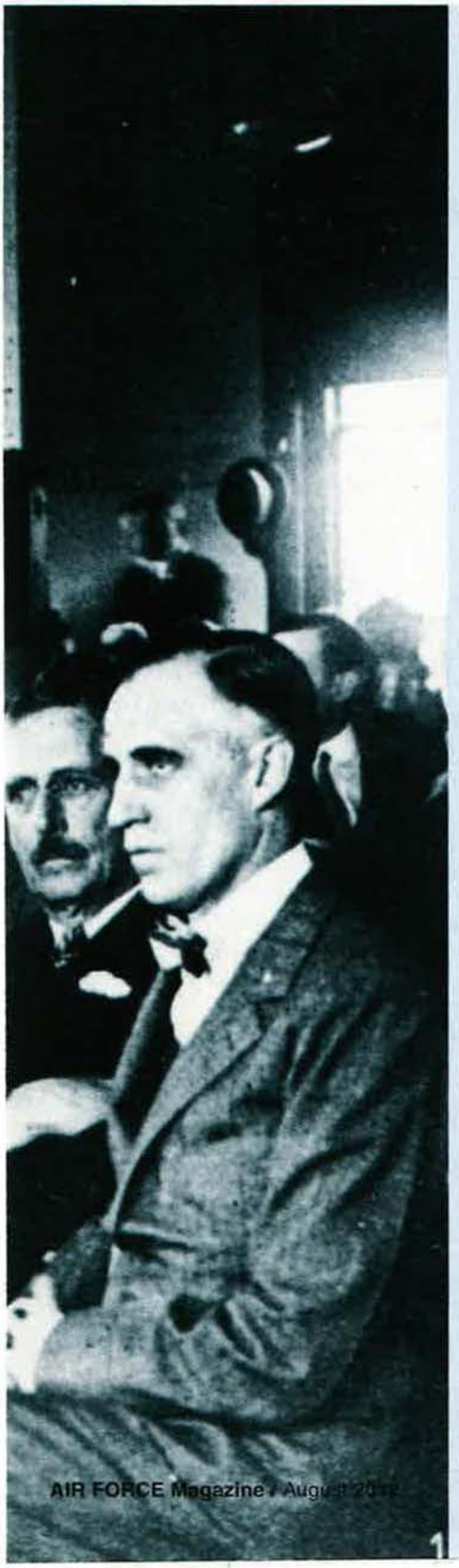
The Billy Mitchell Court-Martial

By John T. Correll

In the Army's view, the issue was insubordination, not the validity of Mitchell's claims.



By 1925, Billy Mitchell had alienated almost everybody in the War Department and Navy Department, to say nothing of President Calvin Coolidge. Strident in his advocacy of airpower, Mitchell did not hesitate to lash out when he disagreed with his superiors, which was often. "The General Staff knows as much about the air as a hog does about skating," he said.

William Mitchell (no middle name) came to fame as the combat leader of American air forces in France in World War I. He was promoted to the temporary grade of brigadier general and kept his star after the war because of his assignment as assistant chief of the Army Air Service.

When Mitchell's bombers sank the surplus German battleship *Ostfriesland* in a July 1921 demonstration, it was a strong blow for airpower. It was also a huge embarrassment for the Navy, which had said he couldn't do it. Mitchell's traditionalist boss, Army Chief Gen. John J. Pershing, sided with the Navy in dismissing the significance of the demonstration.

Mitchell continued his all-out public campaign for airpower. He said the world stood on the threshold of an "aeronautical era" and that military airpower, independent of ground and sea forces, should be the first line of defense.

He was popular with the public and the press and had some supporters in Congress. He had a strong following among younger officers, and even a few moles in the Navy. The generals and admirals wanted to be rid of him.

Thus when his term as assistant air chief expired in March 1925, he was not reappointed. He was assigned to Fort Sam Houston in San Antonio as aviation officer for the Army's Eighth Corps Area, reverting to his permanent grade of colonel. It was an important job in a significant command, but Mitchell felt he had been demoted and sent to the boondocks. The airmen in Texas still called him "General."

Two Navy aircraft mishaps soon caused Mitchell's temper to boil over in even more spectacular fashion than usual. The worst of the accidents was the breakup of the Navy dirigible *Shenandoah* over Ava, Ohio, Sept. 3. The airship was on a publicity junket, due to pass over 27 cities at times announced in advance to please politicians and their constituents. Over Ohio, *Shenandoah* ran into a line squall of intense thunderstorms but did not divert around it, remaining on course for a state fair the next day.

Gripped by the storm, the airship pitched up to 6,300 feet, plunged to 3,200 feet, and was thrown back up to 6,200 feet. The keel broke and the airship was torn into three parts. The front section fell a mile to the ground, killing the skipper, Lt. Cmdr. Zachary Lansdowne, and 13 other crew members. Part of the ship was able to maneuver as a free balloon and landed, saving 27 lives.

The *Shenandoah* tragedy followed the news that a Navy PN-9 seaplane on a demonstration flight to Hawaii had gone down in the Pacific because of engine failure. Another aircraft on the flight was forced to land in the water 200 miles short of Hawaii when it ran out of fuel.

Rocket From San Antonio

What enraged Mitchell as much as anything was the public reaction of Secretary of the Navy Curtis D. Wilbur, who said the accidents illustrated limitations of airpower. "Some people," said Wilbur, "make extravagant claims for aviation. Great things have been achieved. From our experience, how-

Billy Mitchell (standing) and his wife (to his left, seated) react during a tense moment during the six-week-long trial.

Photo via Library of Congress

Mitchell (standing left) listens as the charges against him are read. The prosecution opened and closed its case in one day, but it wouldn't be a short trial after all.

ever, I am convinced that the Atlantic and the Pacific are still the greatest bulwarks against any air invasion of the United States." Wilbur said the PN-9 incident showed how difficult it was to cross 2,100 miles of ocean without carrying bombs, much less to cross with 1,000-pound bombs.

In San Antonio Sept. 5, Mitchell called in the press and gave them a 5,000-word statement. "These accidents are the direct result of the incompetency, criminal negligence, and almost treasonable administration of the national defense by the Navy and War Departments," he said.

"All aviation policies, schemes, and systems are dictated by nonflying officers of the Army or Navy who know practically nothing about it," he said. "The lives of the airmen are being used merely as pawns in their hands. ... Officers and agents sent by the War and Navy Departments to Congress have almost always given incomplete, misleading, or false information about aeronautics."

Mitchell said *Shenandoah*, overweight in its structure and with low reserve buoyancy, had been sent on a propaganda mission without adequate safeguards. He then moved on to general criticism of Army and Navy aviation programs.

He wasn't finished.

Four days later, he called the reporters back and said, "If the department does not like the statement I made, let them take disciplinary action as they see fit, according to their judgment, court-martial or no court-martial. ... The investigation that is needed is of the War and Navy Departments and their conduct in the disgraceful administration of aviation."

Summoned to Washington to explain himself, Mitchell was greeted at the train station by cheering supporters and an American Legion fife and drum corps.

Orders From Coolidge

President Coolidge was Mitchell's direct opposite in personality. A dour man of few words, he was satisfied to be known as "Silent Cal." He made his national reputation by putting down a police strike in Boston in 1919 when he was governor of Massachusetts.

The War Department inspector general recommended that Mitchell be tried by court-martial. The charges were not made by Mitchell's military superior but rather by the Secretary of War at the direction of the President.

Coolidge did not accuse Mitchell directly in public. That might have been seen as prejudicing the outcome of the trial. However, there was no doubt who Coolidge was talking about when he spoke to the American Legion convention in early October.

"Any organization of men in the military service bent on inflaming the public mind for the purpose of forcing government action through the pressure of public opinion is an exceedingly dangerous undertaking and precedent," Coolidge said. "It is for the civil authority to determine what appropriations shall be granted, what appointments shall be made, and what rules shall be adopted for the conduct of its armed forces. ... Whenever the military power starts dictating to the civil authority by whatever means adopted, the liberties of the country are beginning to end."

Mitchell was charged under the 96th Article of War, the catch-all general article that covered "disorders and neglects to the prejudice of good order and discipline [and] all conduct of a nature to bring discredit upon the military service." Mitchell ridiculed Article 96, saying, "Officers are tried under it for kicking a horse."

The Army held Mitchell's statements were prejudicial to good order and discipline, insubordinate, "contemptuous and disrespectful," and intended to discredit the War Department and Navy Department. With the Sept. 5 and 9 statements counted separately, it added up to eight specifications to the charge.

Coolidge, hoping to tamp down the controversy and divert attention from the Mitchell court-martial, appointed a board, headed by New York banker Dwight W. Morrow, to look into the military aviation issue.

Curtain Up

The court-martial began Oct. 28 in the Emery Building, an old red brick warehouse, at the foot of Capitol Hill in downtown Washington. Five hundred people, including 40 reporters and newsreel cameramen, lined the streets to see Colonel Mitchell and Mrs. Mitchell arrive.

Twelve senior generals, handpicked by the Army and the War Department, were appointed to the court. One of them, destined for greater things, was Mitchell's boyhood friend from Milwaukee, Douglas MacArthur. In addition, there was a "law member" of the court, Col. Blanton C. Winship, a legal officer assigned to assist and rule on legal questions.

Mitchell promptly challenged three of the generals off the court, including Maj. Gen. Charles P. Summerall, a future Army Chief of Staff who was to have been president of the court. The ousted generals were not replaced, as

only six members were required for a trial. Maj. Gen. Robert L. Howze took over as president.

Mitchell's defense team was led by Rep. Frank R. Reid (R-Ill.), a first rate lawyer who met Mitchell at House Aircraft Committee hearings. He called members of the court "you men" and "you people," but the generals took it in stride. The prosecutor was the trial judge advocate, Col. Sherman Moreland, fully competent but no match for Reid in flash and dash.

Photos from the trial show members of the court with old-style high military collars. Mitchell wore his collar folded down in the more modern fashion favored by airmen, who claimed that high collars chafed their necks while flying.

The prosecution introduced its evidence the morning of Nov. 2 and rested its case that afternoon. Moreland called witnesses who established that Mitchell made the two statements and gave them to the press. In the Army's view, this was prima facie breach of good order and discipline and sufficient for conviction.

It wasn't nearly over, though. Next day, Reid announced that he wanted to call 73 witnesses for the defense and asked for thousands of Army documents. He intended to argue the validity of what Mitchell had said. Moreland objected. All that mattered was Mitchell had made the statements. The substance of what he said counted only for mitigation and extenuation, if that.

However, the court did not rule against the evidence Reid wanted to present. Under the glare of public and press attention, Mitchell was given leeway that he would not have gotten under other circumstances. Reid and Mitchell had effectively converted the court-martial into a public debate about airpower. The trial would continue for six more weeks.

Gullion Evens the Odds

Reid introduced a parade of witnesses who gave evidence about equipment, training, misleading military assessments to Congress, Army disregard of advice from air officers, and endangerment of pilots from orders by nonflying superiors. He established that in the past seven years, Mitchell had made 163 recommendations to improve the air service, nearly all of them ignored or disapproved.

A surprise witness was Margaret Lansdowne, widow of the *Shenandoah* commander. She testified the Navy tried to influence her statement to the board of inquiry, wanting her to say that her husband had been willing and ready to make the flight. She told the inquiry and the Mitchell court that her husband had regarded the flight as political and had flown it under protest, believing the timing was dangerous because of the weather risk. She produced a copy of a letter from Lansdowne to the Chief of Naval Operations asking for a delay until thunderstorm season had passed.

Among those testifying for Mitchell were World War I ace Eddie Rickenbacker and Congressman Fiorello La Guardia. "Billy Mitchell is not being judged by his peers," La Guardia said. "He is being judged by nine dog robbers of the general staff." Two little-known majors, Henry H. "Hap" Arnold and Carl A. Spaatz, appeared for Mitchell as well. Even the court was momentarily star struck when famed humorist Will Rogers, a friend of Mitchell's, attended a session of the trial.

Mitchell was the runaway favorite of the public, but the weeks of airpower testimony made less of an impression on the members of the court, who understood better than the civilians did the meaning of an Article 96 charge.

To shore up the prosecution, Maj. Allen W. Gullion was added as an assistant trial judge advocate Nov. 17. A West Pointer and a former infantry officer, Gullion was regarded as one of the best and most aggressive prosecutors in the Army. The attack on Mitchell and the defense witnesses sharpened as Gullion took on a big share of the questioning.

The trial reached its dramatic peak in late November when Gullion cross-examined Mitchell. He elicited acknowledgments from Mitchell that a considerable part of his statements were opinion rather than fact and that he relied on the newspapers for some of his information, especially about the Navy. Gullion tried to force Mitchell to admit that he had accused officers of long and honorable standing of treason and criminal actions. Mitchell said his words had been directed at a system rather than against an individual or individuals, but Gullion had scored his point with the senior officers on the court.

The prosecution called a succession of rebuttal witnesses. Mitchell debunkers were not difficult to find. As the trial ground on, the Morrow Board made its report, basically accepting the arguments of the traditionalists over those of the airmen. No radical changes were necessary. The nation was safe from air attack. The Army and Navy air arms should stay where they were.

Summing up for the prosecution on the last day of the court-martial, Gullion pulled out all the stops.

"It is sufficient if the record shows that the conduct is to the prejudice and of a nature to discredit," he said. "The statements of Sept. 5 and 9 speak

Photo via Library of Congress

Margaret Lansdowne, widow of the skipper of* Shenandoah, *told the court the Navy tried to influence her testimony. The generals seated at the table are (l-r): Ewing Booth, Frank McCoy, Benjamin Poore, and Douglas MacArthur.

for themselves in that regard. But can there be any doubt that the discipline of our Army will be ruined if the accused, in the expressive vernacular of the doughboy, is allowed to get away with it? Every trooper in Fort Huachuca, as he smokes his cigarette with his bunkie after mess, is talking about this case. If the accused is not dismissed, the good trooper will be dismayed and the malcontent and sorehead will be encouraged in his own insubordination."

(A fascinating footnote to the story is that one of Gullion's grandsons, Gen. Thomas S. Moorman Jr., became vice chief of staff of the Air Force from 1994 to 1997.)

Mitchell Leaves the Army

After deliberating for three hours on the afternoon of Dec. 17, the court found Mitchell guilty on the charge and all specifications. It suspended him from rank, command, and duty, with the forfeiture of all pay and allowances for five years.

The votes were never revealed but Howze, the president of the court, said it was a split decision. It was widely believed that MacArthur had voted to acquit, but according to most historical sources, that was never confirmed. In his memoirs, MacArthur was cryptic on the subject, saying, "I did what I could in his behalf."

In November 1945, Sen. Alexander Wiley (R-Wis.)—who was trying to get Mitchell promoted posthumously to major general—wrote to MacArthur, saying, "It was my understanding that yours was the one vote against the court-martial's verdict which cashiered Billy Mitchell." MacArthur replied, "Your recollection of my part in his trial is entirely correct. It was fully known to him, and he never ceased to express his gratitude for my attitude. ... He was a rare genius in his profession and contributed much to aviation history."

Coolidge approved the conviction Jan. 25, 1926, saying that Mitchell "employed expressions which cannot be construed otherwise than as breathing defiance toward his military superiors."

However, Coolidge recognized that the sentence left Mitchell in an impossible situation. It kept him in service, which prevented him from obtaining private employment, but took away his pay, so he had no means of support. Coolidge reduced the punishment to forfeiture of half of Mitchell's monthly pay. The free-spending Mitchell could not get by on half pay. The net effect was to force Mitchell to resign from the Army, which he did on Feb. 1.

Allen Gullion (pictured as a major general) was a fierce and relentless prosecutor.

Pershing, now retired, observed, "There seems to be a Bolshevik bug in the air." With Mitchell gone, the Army cracked down on dissent. Arnold, an activist on Mitchell's behalf, was exiled to Fort Riley, Kan., a cavalry post, where he became commander of an observation squadron.

Some airmen concurred in Mitchell's conviction. Benjamin D. Foulois, who had despised Mitchell since their time in France in World War I, said, "A civilian could say things like that but not an officer on active duty who had obligated himself by his commissioning oath to an unswerving course of loyalty to his civilian and military superiors."

In his memoirs, Arnold acknowledged as much. "No matter what was said about 'Airpower being on trial'—as it was, at times even in the eyes of the prosecution—the thing for which Mitchell was really being tried he was guilty of, and except for Billy, everybody knew it," Arnold said. "We all knew there was no other way—in accordance with the Army code, Billy had it coming."

Reconsiderations

Mitchell continued to speak, write, and advocate for airpower. He died in 1936, but as his disciples, including Arnold and Spaatz, moved into positions of authority, he was openly acknowledged as an Air Force hero.

When the Air Force Association was formed in 1946, Mitchell became AFA's hero, too. And when the Air Force gained its independence from the Army in 1947, the cover of the association's journal, *Air Force* Magazine, proclaimed it "The Day Billy Mitchell Dreamed Of."

Mitchell was celebrated in 1955 in a Warner Brothers movie, "The Court-Martial of Billy Mitchell," which was longer on enthusiasm than on historical accuracy. Only Hollywood would have chosen Gary Cooper, an actor noted for not talking much, to play Mitchell. Rod Steiger was cast as Gullion.

In 1956, William Mitchell Jr., with AFA acting as his agent, petitioned the Air Force Board for Correction of Military Records to overturn the verdict of the court-martial. The board heard the case in 1957, but the results were not disclosed until the final review in 1958.

By a vote of four-to-one, the board recommended the findings and sentence of the court-martial be declared null and void. "The conclusion is inescapable in the board's opinion that Mitchell was tried for his views rather than a violation of Article 96," the proceedings report said.

Secretary of the Air Force James H. Douglas Jr. could not agree. He recognized that many of Mitchell's beliefs had been vindicated by history but that "while on active duty and subject to the discipline of military service, he characterized the administration of the War and Navy Departments as incompetent, criminally negligent, and almost treasonable." Mitchell's statements in September 1925 substantiated the charges against him. "Subsequent confirmation of the correctness of certain views he expressed cannot affect the propriety or impropriety under the 96th Article of expressions which he employed." The verdict stood.

The Mitchell issue was supposedly settled, but popped up again in a different form in 2004. The Fiscal 2005 Defense Authorization bill authorized the promotion of Billy Mitchell to major general, effective as of the date of his death in 1936. Neither the Pentagon nor the White House took any action as a result of the authorization, and the matter is again at rest—at least, so far. ■

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributor. His most recent article, "The Moon Squadrons," appeared in the July issue.*

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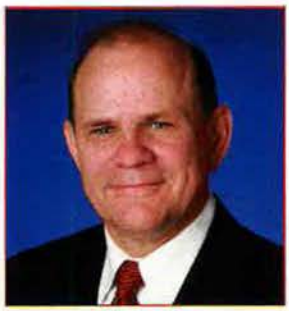

Van Cleef

The Air Force Association Nominating Committee met on April 21 and selected candidates to send forward for five national officer positions and three elective National Director positions on the Board of Directors. The committee comprises three most recent past Chairmen of the Board, one person selected by each of the two Vice Chairmen of the Board, two persons representing each geographic area, and one person each representing the Total Air Force, Air Force veterans, and aerospace industry constituencies. The slate will be presented to the delegates at the National Convention in Washington, D.C., in September.

Chairman of the Board

George K. Muellner, Huntington Beach, Calif., nominated for a first one-year term. He is a Life Member and has served as a National Director, a member of the Compensation Committee, and a member of the Aerospace Education Council. He is currently the Vice Chairman of the Board for Aerospace Education. He is a past recipient of the AFA Theodore von Karman Award. Muellner retired from Boeing in 2008, as president of Advanced Systems, with previous positions as VP-GM of Air Force Systems and as president of Phantom Works. He served for 31 years in the Air Force, retiring as a lieutenant general, as Principal Deputy for the Office of the Assistant Secretary of the Air Force for Acquisition. Key Air Force assignments included Program Executive Officer for the Joint Strike Fighter program and Deputy Chief of Staff for Requirements, Air Combat Command. Muellner spent most of his career as a fighter pilot, fighter weapons instructor, test pilot, and commander. He flew combat missions in Vietnam and commanded the JSTARS deployment during Operation Desert Storm. He is Past President of the American Institute of Aeronautics and Astronautics. He holds a bachelor's degree in engineering from the University of Illinois; master's degrees in engineering from the University of Southern California and from California State University; and an M.B.A. from Auburn University. He currently consults in the aerospace industry, is a Director on several boards, and serves as a Fellow of the Scientific Advisory Board.

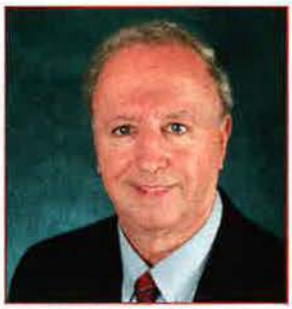
Vice Chairman Field Operations

David A. Dietsch, Arlington, Tex., nominated for a first one-year term. A Life Member active in AFA since 1992, he has served as Executive Vice President of the Lubbock Chapter, President of the Fort Worth Chapter, Texas State President, and Texoma Region President. He is currently Vice President for the state of Texas for Industrial Relations and Government Relations. He co-founded and became the first Chairman of the Board of the AFA Texas Aerospace Education Foundation. Dietsch has served at the national level on the Constitution Committee, Membership Committee, and Nominating Committee. He is currently on the Field Council. He has been AFA Texas Member of the Year twice and has received the AFA Texas Claire Chennault Patriotism Award. He also received the AFA Medal of Merit and three AFA Exceptional Service Awards. Dietsch served for 27 years in USAF in aircraft maintenance and logistics positions. Following retirement in 1992, he managed the aircraft maintenance contract workforce at two USAF flying training wings. He received a bachelor's degree in American Diplomacy and Foreign Affairs from Miami University in Ohio and a master's degree in Public Administration from Golden Gate University. He graduated from the resident courses of Squadron Officer School, Armed Forces Staff College, and Air War College and completed the Lockheed Advanced Management Institute and the W. Edwards Demming Quality Management Institute. He serves on the local Salvation Army Management Committee and is a part-time consultant.

Scott P. Van Cleef, Fincastle, Va., nominated for a first one-year term. He is a Life Member and currently is the Central East Region President. He was President of Virginia's Roanoke Chapter when it was named AFA Medium-size Chapter of the Year for 2005 and winner of an AFA Unit Exceptional Service Award in 2006. He was the State President when Virginia was named the Outstanding State Organization of the Year for 2008. He has held several other chapter and state

Nominees

White



Garland

Vernamonti

positions and served on the AFA Board of Directors, 2008-11. He served on the afa21 Internal Review Group in 2005 and afa21 Field Structure Team in 2006. He was also a member of the Field Council and Strategic Planning Committee, which he chaired for two years. Van Cleef was Virginia's Member of the Year in 2004 and 2010 and recipient of the Central East Region President's Award, AFA's Medal of Merit, Exceptional Service Award, and Chairman's Citation. Van Cleef served for more than 29 years in USAF, primarily as a fighter pilot. He commanded an F-16 squadron, was vice commander of an F-16 training wing, and commander of a fighter wing. He is a self-employed maker of fine furniture, chapter officer in MOAA, Civil Air Patrol senior member, and serves on the board of directors for the Virginia Museum of Transportation.

Vice Chairman Aerospace Education

Jerry E. White, Colorado Springs, Colo., nominated for a first one-year term. He is a Life Member, member of the Thunderbird Society and Gold Wings Society, and has served for several years on the Aerospace Education Foundation and AFA Boards. He was Chair and Co-Chair of the Development Committee. He served one year as an appointed member of the AFA Executive Committee. He currently serves on the Aerospace Education Council. He was active in the combining of AEF and AFA organizations and boards. White served for 37 years, active and reserve, in USAF, retiring as a major general. His Air Force career had been primarily in space and development. He is the co-author of the Air Force Academy's primary text on astrodynamics. As a former Air Force Academy faculty member, he remains engaged with the academy and technical education. White has extensive experience in leadership of nonprofit organizations, with 18 years as CEO and Board Chair of a large nonprofit (4,500 employees). He was Chair of an association of several hundred nonprofits. He was a member of the congressionally mandated Reserve Forces Policy Board. He holds degrees from the University of Washington and AFIT and a Ph.D. from Purdue University. White chaired the Rhodes Scholarship Colorado Selection Committee for three years. He is currently President Emeritus and Chairman Emeritus of an interdenominational Christian ministry.

National Secretary

Edward W. Garland, San Antonio, nominated for a second one-year term. A Life Member, he has been active in AFA since 1987 and has served as the Alamo Chapter President, Texas State President, Texoma Region President, and National Director. He has served on the Constitution, Membership, and Development Committees and on the Field and Aerospace Education Councils. His awards include Member of the Year for the Alamo Chapter, both Civilian and Military Member of the Year for AFA Texas, the AFA Medal of Merit, Exceptional Service Award, and the Presidential Citation. Garland's military career included nearly 30 years of active duty and Reserve assignments as a pilot, flight instructor, operational staff member, and commander of the 433rd Airlift Wing. In his civilian career, he worked as an Air Force civilian employee in numerous engineering and senior management positions. He is currently a Senior Development and Cockpit Integration Engineer for a small business supporting the Air Force on several aircraft projects. Garland has a bachelor's degree in electrical engineering from Tulane University, a master's degree in systems management from St. Mary's University, and is a distinguished graduate from both ACSC and AWC.

National Treasurer

Leonard R. Vernamonti, Clinton, Miss., nominated for a third one-year term. An AFA member since 1964 and a Life Member since 1984, he has served as a Chapter, State, and Region President and was on the Board of Directors. He has been active at the national level since 1989, having served on the afa21 Field Structure Team, Field Council, and Constitution and Nominating Committees. He was Chairman of the Audit Committee and is currently Chairman of the Finance Committee. He has received the Exceptional Service Award and two Medals of Merit. Vernamonti's more than 40-year military and civilian professional careers have focused on management and finance. He was the Comptroller for all USAF ballistic

2012-13 AFA Nominees


Grider


Petrina


Vogel


Ruebrook

missile programs and President, CEO, and CFO of a nonprofit with an operating budget twice that of AFA. He currently serves as a Senior Consultant to the aerospace industry, specializing in strategic planning, acquisition, and budget and cost analysis. Vernamonti has a bachelor's degree in economics from the Air Force Academy and a master's degree in systems engineering from the University of Florida. He is a graduate of the National War College and the Industrial College of the Armed Forces.

The Nominating Committee submits three names—William R. Grider, Gilbert E. Petrina Jr., and James Kurt Vogel—for National Director at Large. Two will be elected.

National Director at Large

William R. Grider, Indianapolis, nominated for a three-year term. Grider has been an AFA member since 1994 and Community Partner for the past 15 years. He has served AFA and Grissom Air Reserve Base with passion and dedication. He served as Grissom Memorial Chapter President from 2000 to 2002 and has again held that position for the past two years. He has served two terms as Indiana State President, from 2002 to 2004 and again from 2009 to 2010. Currently, Grider serves as Great Lakes Region President. He actively participates as an airpower advocate and has given several presentations throughout the Midwest for several years. Grider has practiced general dentistry for 30 years and is Owner and President of two dental centers. He received a bachelor's degree and D.D.S. from Indiana University and has taken M.B.A. courses at Butler University. Over the past 30 years, he has served on numerous civic and nonprofit boards as well as volunteering his time and talent for worthy causes.

Gilbert E. Petrina Jr., Williamsburg, Va., nominated for a three-year term. He is a Life Member and has served as an Under-40 National Director, National Director, and member of the Membership Committee, Long-Range Planning Committee, and Junior Officer Advisory Council. He has been Chapter President for both the Ark-La-Tex Chapter and the Earl D. Clark Jr. Chapter. His national awards include the AFA Medal of Merit and AFA Exceptional Service Award. He served for 21 years in the Air Force, retiring from the Advanced Programs Division in the Air Combat Command Requirements Directorate. He flew in combat in Operation Iraqi Freedom and deployed to Afghanistan, where he built the J-3 Air Operations Branch for Headquarters, US Forces-Afghanistan. He has more than 3,000 flying hours in the B-2, B-52, T-37, and T-38. He is currently the President of a consulting company he formed in 2010. Petrina holds a bachelor's degree in electrical engineering from the Air Force Academy, a master's degree in industrial and organizational psychology from Louisiana Tech University, and a master of airpower art and science degree from the School of Advanced Air and Space Studies, Maxwell AFB, Ala.

James Kurt Vogel, Alexandria, Va., nominated for a three-year term. He is the Special Advisor to the Director, Air National Guard. He was previously the Director, J-5 International Affairs, National Guard Bureau, in Arlington, Va., where he developed, managed, and provided oversight for international activities for the National Guard. Vogel was previously the Deputy Director of Air, Space, and Information Operations for the Air National Guard at the National Guard Bureau. Vogel entered the Air Force through ROTC from the University of Cincinnati, where he earned a bachelor's degree in business administration in 1985. A veteran of Operations Just Cause, Desert Storm, and Deny Flight, Vogel logged 300 hours of combat and combat support time. He is a Command Pilot with more than 3,000 flying hours in KC-135 and C-40 aircraft.

National Director West

Nora Ruebrook, Honolulu, is nominated for a three-year term. She is a Life Member and has served on AFA's National Finance Committee, National Strategic Planning Committee, and AdHoc Congressional Committee. She is currently Far West Region Vice President for Leadership Development. She is a Past President of AFA Hawaii, which includes Guam. Ruebrook is a member of the Thunderbird Society and Legacy Society. She has received the AFA Medal of Merit and the Exceptional Service Award. She serves on the National Board of Directors of the Navy League of the United States. She has been involved with the national governance of numerous organizations such as American Society of Military Comptrollers, Armed Forces Communications and Electronics Association, Association for the Advancement of Artificial Intelligence, Association of Old Crows-Electronic Warfare and Information Operations, Association of the United States Army, Institute of Electrical and Electronics Engineers, International Association for Counter-terrorism and Security Professionals, National Classification Management Society, National Contract Management Association, National Defense Industrial Association, National Defense University Foundation, National Military Intelligence Association, and the US Naval Institute. Ruebrook is the CEO of a company supporting the cyber, ISR, and R&D communities. ■

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

Golden State Gathering

The **Palm Springs Chapter** hosted the California State Conference in May.

Events kicked off with an evening reception on Thursday, May 10, at the Palm Springs Hilton Hotel. Afterward the guests strolled through the Palm Springs VillageFest, a Thursday-night street fair with arts, crafts, food, and entertainment.

The next morning's golf outing earmarked proceeds for the AFA California state education foundation. Later on, convention-goers toured the Palm Springs Air Museum, which bills itself as home to one of the largest collections of flyable World War II aircraft.

The convention got down to AFA business the next day, with workshops, a luncheon focused on AFA member awards, and an evening banquet featuring military award winners.

AFA National Chairman of the Board S. Sanford Schlitt addressed the luncheon, and AFA's Vice Chairman of the Board for Aerospace Education, George K. Muellner, was guest speaker for the evening awards banquet.

In elections, the conventioneers voted in as state president Lee M. Barnby of the **Robert H. Goddard Chapter;** as state VP Martin W. Ledwitz of the **San Gabriel Chaper;** and Nancy J. Driscoll from the **Bob Hope Chapter** as treasurer.

At the California State Convention, AFA Board Chairman Sandy Schlitt (right) and California State President Rex Moen (left) present an Outstanding Sustained Performance Award to Martin Ledwitz, state Area 3 president and a San Gabriel Chapter member.

Laid to Rest

On Armed Forces Day in Farmingdale, N.Y., **Iron Gate Chapter** members joined several funeral homes and a host of local agencies and veterans organizations to lay to rest the unclaimed remains of area veterans.

The cremated remains of 56 veterans and six dependents had been in the care of 14 Long Island funeral homes for years.

Several of the vets had served in World War I. One had served in the Spanish-American War and had died in 1913. Families of these veterans had moved away, died, or lost touch, leaving the remains unclaimed. The funeral directors—organized by Iron Gate Chapter members Beth Costello and Kevin Costello—recently decided to band together and provide a formal tribute to and final resting place for these vets' cremains.

The mass inurnment took place at the Department of Veterans Affairs Long Island National Cemetery on May 19.

From each funeral home, hearses first gathered at a muster area and formed a procession, led by police and fire department escorts. The sight caused people on the street to stop and render signs of respect, a local news account reported. Local elected officials. Patriot Guard motorcycle escorts, Boy Scouts, first-responders, and a local choir took part in various stages of the ceremony.

Each veteran's urn was placed in a columbarium, with an engraved stone for each niche.

The audience at the tribute numbered in the hundreds and included New York State President Maxine Rauch and Iron Gate Chapter President Frank T. Hayes.

Big Sign for the Winners

When the **Lt. Col. B. D. "Buzz" Wagner Chapter** in Pennsylvania learned this spring that two state-level CyberPatriot competition winning teams came from its Johnstown area, Chapter Secretary Robert C. Rutledge took action.

He tracked down the two teams' coaches and asked them what their students might like as a memento for their wins in the cyber security competition for high schoolers.

The coaches suggested banners: oversize signs to mount on the walls. So Rutledge collected images of the logos for each high school, for CyberPatriot, and for AFA and ordered two banners.

In his other role as state president, Rutledge joined Chapter President William B. Burns and Chapter Treasurer James M. Kirkstadt at an evening awards ceremony at Windber Area High School in Windber, Pa. They presented the CyberPatriot team with their banner, reading: First Runner-up, Open Division, Pennsylvania State.

At the podium, Rutledge described the cyber defense competition to the audience. Dressed up in shirts and ties, team members Ben Crow, Zack Mattis, Josh Maurizio, and Brett Wargo stepped onto the school auditorium's stage to

More photos at http://www.airforce-magazine.com, in "AFA National Report"

William Burns (right), president of Pennsylvania's Lt. Col. B. D. "Buzz" Wagner Chapter, and Chapter Treasurer James Kirkstadt (left) present Windber Area High School's CyberPatriot team with a banner to commemorate their state-level achievement.

accept the banner. Behind them on the stage sat all the seniors in their graduation gowns.

To the Bishop McCort High School CyberPatriot Team in Johnstown, Rutledge presented a banner that said: Third Place, Open Division, Pennsylvania State.

Team members Michael Barron, Krista Alt, Lisa Vatavuk, and Haoyun Liang accepted the chapter's gift.

The students were "very excited ... that the team actually received something," Rutledge commented. He pointed out that the banners cost some $30 each, "not all that expensive for the chapter to do."

Role Reversal

Usually, it's an AFA chapter that presents an award, but in Ohio, University of Cincinnati students reversed the roles when they gave the **Gen. Joseph W. Ralston Chapter** an AFA Silver Wings award.

At an April meeting, Ralston Chapter President Robert L. Brewster accepted a James A. McDonnell Outstanding AFA Chapter Award from AFROTC cadet Jeremy J. Dunbar, an area commander for the Arnold Air Society and also a chapter member. Dunbar made the presentation on behalf of the university's Silver Wings organization, which is affiliated with the AAS.

According to their manual, the Silver Wings college-level professional service organization awards the McDonnell honor to an AFA chapter that helps a SW chapter reach its goals. It is named after an AFA headquarters liaison who, before his retirement in 2000, fostered ties between the association, cadets at the high school and college level, and their support organizations.

Asked why his chapter received the award, Brewster said three activities stand out.

The chapter donates funds to help the students carry out an Air Force military ball each spring. Second, it donates to a football game tailgate party for freshmen students in the fall. Brewster mans the grill at this event, slapping down hamburgers, hotdogs, and sausages called metts—Cincinnati shorthand for the pork-based mettwurst.

At a Memorial Day ceremony in Richmond, Va., Richmond Chapter President Harper Alford (left) and Leigh Wade Chapter President Gary Metzinger (right) present an AFA wreath.

Third, Silver Wings and AAS volunteers help the chapter co-host a Super Bowl party for residents of Cincinnati's Veterans Affairs Medical Center. The visitors provide soft drinks and snacks for the patients during the game, and 14 pizzas donated by another supporter arrive at halftime. Brewster said the VA residents go for the pizza with gusto. "They don't get that at the hospital," he explained.

Even more appreciated are the Silver Wings students themselves. Brewster said they listen to the vets' "war stories," and "the patients just really enjoy the attention they get."

Symposium and Salute

In Virginia, the **Langley Chapter** car-

ried out at least four major activities in the course of two days in May.

The chapter hosted the seventh annual Combat Air Forces Airpower Symposium at Joint Base Langley-Eustis on May 16 and helped celebrate the Salute to Air Combat Command and Team Langley the next day.

This year, the symposium covered "Securing the High Ground: Dominant Combat Airpower for America."

Chapter President Jimmy W. Ruth wrote that it provided "an outstanding opportunity to strengthen government-to-industry relationships, fostered an excellent exchange of information with senior leaders, and provided information to industry on future CAF business opportunities."

The head of Air Combat Command, Gen. G. Michael Hostage III, was symposium keynote speaker. Following his remarks came a panel discussion by CAF leaders: Gen. Donald J. Hoffman, from Air Force Materiel Command; Gen. Gary L. North, the Pacific Air Forces commander; Gen. Edward A. Rice Jr., head of Air Education and Training Command; Gen. Mark A. Welsh III, head of US Air Forces in Europe; Lt.

AFA Conventions

Sept. 15-16	**AFA National Convention,** National Harbor, Md.
Sept. 17-19	**AFA Air & Space Conference,** National Harbor, Md.

Reunions

reunions@afa.org

5th Bombardment Gp, USAAF, (WWII). Sept. 20-23 in San Diego. **Contact:** Dag Larsen (949-725-6460) (omalarsen@aol.com).

317th Troop Carrier Veterans Group. Oct. 11-14 in Columbus, GA. **Contact:** Jim Timmons, 758 221st St., Pasadena, MD 21122 (410-255-2735) (jimt0708@aol.com).

365th Fighter-Bomber Gp. Sept. 27-29 in Pigeon Forge, TN. **Contacts:** Don Barnes (408-859-7088) (don@cellarideas.com) or Di Williams (951-677-6321) (di.williams1@verizon.net).

384th Bomb Gp, 8th AF (WWII). Oct. 18-21 at the Hyatt Regency in San Antonio. **Contact:** Carol Alfter (937-306-2142) (falfter@att.net).

774th Tactical Airlift. Oct. 5-6 in Abilene, TX. **Contact:** W. C. Robinson (806-470-7034) (webmaster@774TAS.net).

IFR Assn, boomers. Oct. 15-19 at the Silver Legacy Hotel in Reno, NV. **Contacts:** Judge Brown (209-358-2898) (mangual831@yahoo.com) or Jorge Mangual (478-953-6539).

UPT Class 71-01, Laredo, TX. Oct. 18-22 in Las Vegas. **Contacts:** Phil Duval (831-479-7282) (pduval4335@hotmail.com) or John Powers (253-350-5029) (johnandbernpowers@gmail.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.

Gen. James M. Kowalski, commander of Air Force Global Strike Command; and Brig. Gen. Derek P. Rydholm, Air Force Reserve Command's director of air, space, and information operations.

Other ACC officials presented briefings and took part in panel discussions on topics such as air superiority, global integrated ISR, and personnel recovery.

The chapter later held a reception at the Langley Club.

The chapter hosted the annual morale-boosting Salute to ACC and Team Langley the next morning, beginning with a golf tournament at the Langley Eaglewood Golf Course.

At the Salute Dinner held that evening at the Langley Bayside Commonwealth Center, the chapter donated $1,600 to ACC and Team Langley to help fund programs supporting airmen.

More Chapter News

■ In California in March, the Monterey Bay Area Chapter officially changed its name to the **Stan Hryn Monterey Bay Chapter.** Stanley J. Hryn served in USAF from 1942 to 1954 and reached the rank of technical sergeant. He joined AFA in 1948, starting out as treasurer of what was then called the Fresno Squadron, one of AFA's original charter chapters. Through the decades he has served as California state secretary, Northern California VP, state president, state board chairman, and veterans affairs chairman. In 1959 he organized the Monterey chapter, reported Chapter Communications VP 1st Lt. Erin C. Mires. Hryn served as chapter president for 13 years. The chapter marked the name change with a ceremony held during the California AFA Area 1 meeting in Seaside, Calif.

■ **Hawaii Chapter** representatives took part in the Memorial Day ceremony that the mayor of Honolulu hosts every year at the National Memorial Cemetery of the Pacific. Col. Sam C. Barrett, 15th Wing commander at Joint Base Pearl Harbor-Hickam; CMSgt. Robert W. Rodewald, the wing's command chief; Chapter President John F. Murphy Jr.; Executive VP Newton H. Wong; and Far West Region Leadership VP Nora Ruebrook attended the event at the cemetery known informally as Punchbowl. As did other organizations, the AFAers laid a wreath, with the cemetery's Honolulu Memorial as the backdrop. (TV viewers would recognize this location because the memorial's iconic statue appears in the opening credits of the show "Hawaii Five-O.")

■ In Wyoming, **Cheyenne Cowboy Chapter** President Irene G. Johnigan and Rocky Mountain Region President Gayle White from Colorado presented the State Teacher of the Year award at the annual AFA Armed Forces Day Banquet in Cheyenne. Michelle Powers, a first-grade teacher at the city's Pioneer Park Elementary School, received the award during the gathering. The chapter hosts it for 90th Missile Wing airmen from F. E. Warren Air Force Base. It took place at the Holiday Inn and featured Maj. Gen. C. Donald Alston, 20th Air Force commander, as guest speaker.

■ Susan Loricchio, AFA New Jersey and also the **Shooting Star Chapter** Government Affairs VP, represented the association at a Memorial Day ceremony aboard the former aircraft carrier *Intrepid,* now a museum on New York City's west side. Special guests that day included US Rep. Carolyn B. Maloney (D), US Fleet Forces Commander Adm. John C. Harvey, and the city's police commissioner Raymond W. Kelly.

Col. George M. Livers, 1920-2012

Retired USAF Col. George M. Livers, a former AFA Tennessee State President, died June 19 in Memphis, Tenn. He was 92 years old.

Born in Martinsburg, W.Va., he joined the Army Air Corps for World War II and served for 30 years, flying in three combat theaters, including Korea and Vietnam. After retiring from the Air Force in 1971, he worked for the Mississippi-Arkansas-Tennessee Council of Governments. ■

Artwork by Zaur Eylanbekov

Nimrod

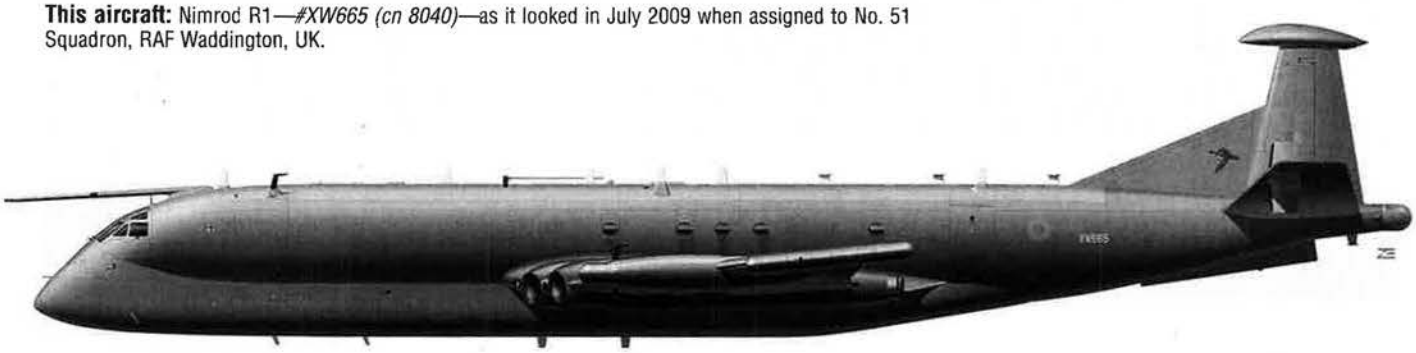
The Royal Air Force's Nimrod might be the most underrated warplane ever. This Hawker Siddeley maritime patrol system served brilliantly in the 1982 Falklands War and subsequent wars in the Balkans, Iraq, Afghanistan, and Libya. Nimrod was in service for some 40 years, taking part in anti-submarine warfare, anti-surface attack, search and rescue, and electronic intelligence gathering.

Nimrod was a direct descendant of the de Havilland Comet, the world's first jet airliner, and was named for the great hunter of Biblical lore. In fact, the first two RAF aircraft were unfinished Comets. It had a bizarre appearance, with huge lobes attached to front and rear and an array of antennae placed on the fuselage. For all that, it was well-noted for its reliability, pleasant flying characteristics, and adaptability to new challenges. The RAF considered acquiring an airborne early warning variant of the Nimrod—the AEW.3, which was canceled in favor of the Boeing E-3 Sentry, as well as an upgraded maritime patrol variant, the MRA.4, which fell prey to the most recent round of defence cuts.

The Nimrod required close cooperation between crew members. On most missions, the tactical navigator—rather than the aircraft commander—controlled speed, direction, and equipment deployment. The last operational Nimrod—an R1 signals intelligence variant—was kept in service past planned retirement in order to take part in Operation Ellamy, code name for the 2011 British operations in Libya. When Ellamy ended, so did the career of the Nimrod.

—Walter J. Boyne

This aircraft: Nimrod R1—*#XW665 (cn 8040)*—as it looked in July 2009 when assigned to No. 51 Squadron, RAF Waddington, UK.



In Brief

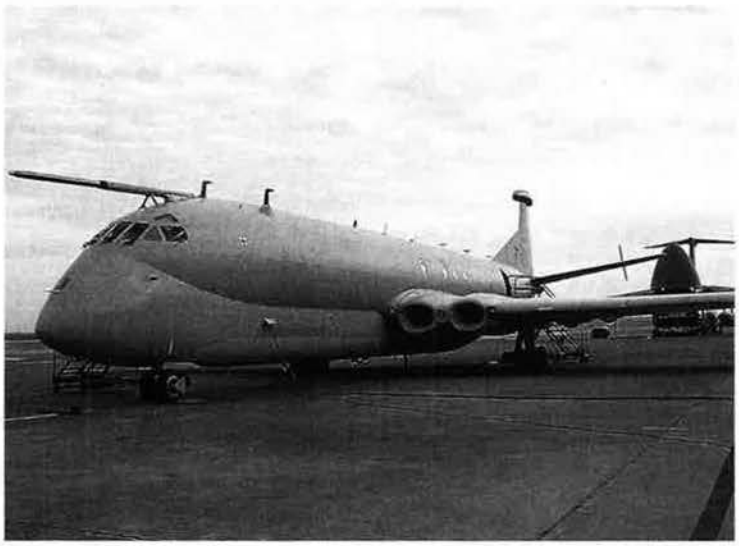
Designed, built by Hawker Siddeley ★ first flight May 23, 1967 ★ number built 49 ★ air crew of five (two pilots, two navigators, one flight engineer) ★ mission crew up to 12. **Specific to Nimrod MR2:** four Rolls Royce Spey turbofan engines ★ internal load up to 20,000 lb of bombs, depth charges, mines, torpedoes ★ armament air-to-air, air-to-surface missiles ★ max speed 575 mph ★ cruise speed 490 mph ★ max range 5,100 mi ★ weight (loaded) 192,000 lb ★ span 114 ft 10 in ★ length 126 ft 9 in ★ height 31 ft.

Famous Fliers

Notables: Noel Anthony, Lloyd Barrett, Brian Burridge, David Emmerson, Andy Neil, Billy Speight, Art Stacey. **Test pilots:** John Cunningham, Jimmy Harrison.

Interesting Facts

First jet-powered maritime patrol aircraft ★ flew 111 missions in Falklands War, some lasting 19 hours ★ had unusual ability to climb on single engine ★ received vital air-refueling capability before Falklands operations ★ assisted in destruction of 16 Iraqi patrol boats in 2003 Iraq War ★ used only two engines at low altitudes ★ suffered five crashes in more than 40 years of operation ★ saw extensive action in humanitarian operations ★ boasted longest bomb bay of any NATO aircraft.



USAF photo by TSgt. Anna Hayman

A Royal Air Force MR-2 Nimrod reconnaissance aircraft on the tarmac at Incirlik AB, Turkey, in 2002.

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