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Journal of the Air Force Association

AIR FORCE

MAGAZINE

Air Superiority

New Thinking on Air Dominance p. 36

Fighting For Access p. 22

The Ascendent F-15 p. 40



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About the cover: Two Air National Guard F-15Cs fly near the Pacific coastline. See "Fighting for Access," p. 22. Photo by Jim Haseltine.



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Do the Right Thing

DEPENDING upon when you wish to begin counting, the Air Force has either been at war for 12 or 23 consecutive years. As the nation focused on defending against external threats and defeating enemy attacks, however, it inadvertently neglected an internal crisis.

The Air Force, and the US military as a whole, has seen an unacceptable increase in sexual assaults. The acceptable number is zero.

Defense Department-wide, reported sexual assaults increased nearly six percent, from 3,192 to 3,374, between Fiscal 2011 and 2012, according to DOD statistics. But because sexual assaults (which range from inappropriate touching to rape) are notoriously under-reported, the Pentagon estimates there were actually 26,000 sex assaults in the ranks last year.

Attacks have occurred pretty much everywhere: at basic military training, at forward fire bases in Afghanistan, and in parking lots near the Pentagon. All of them were inexcusable and horrible. Troops are being attacked by the very people who should be looking out for them, and this cannot continue if the US military is going to maintain a culture of excellence and recruit and retain high-quality personnel.

"We're all outraged and disgusted over these very troubling allegations," said Defense Secretary Chuck Hagel. "Sexual assault is a despicable crime and one of the most serious challenges facing this department."

Up and down the chain of command, military leaders recognize the gravity of this problem. "Providing a safe and professional training environment to our nation's sons and daughters who choose to become airmen is a sacred responsibility," said Gen. Mark A. Welsh III, Air Force Chief of Staff. Airmen shouldn't need to be told any of this.

But DOD's leadership, for its part, clearly made too many assumptions about where it needed to focus its training and educational efforts. A relevant question is posed by Hagel: "It's not good enough to say we have a zero-tolerance policy," he said in May. "How does that translate into changing anything?"

For the Air Force, there have been many recent changes, Welsh noted in June testimony before a Senate panel.

For starters, USAF has moved to "clean up" its work areas by removing offensive or sexual materials. The culture in some offices needed to change. USAF will help this along.

More recently, the Air Force elevated its Sexual Assault Prevention and Response (SAPR) office. Sadly, this move came after Lt. Col. Jeffrey Krusinski, former head of the office, was arrested in May on charges of sexual battery after he allegedly groped a woman in an Arlington, Va., parking lot.

Airmen shouldn't need to be told any of this.

The Air Force moved to significantly upgrade the office. In June, it announced that Maj. Gen. Margaret Woodward would lead an expanded SAPR office. Woodward previously served as USAF's chief of safety, led the NATO air war against Libya, and investigated the sexual misconduct scandal at Air Force basic training. "In very lean times, we're increasing billets by more than 30 here," she pointed out.

Sexual assault is a national issue, and the Air Force draws its airmen from the general population. The service allowed an unacceptable cultural problem to migrate into uniform. This is not an excuse, but it is a reality.

Still, a pair of high-profile sex assault court-martial reversals have generated a firestorm of criticism and led to calls to reform the Uniform Code of Military Justice. Changes may be coming to the UCMJ, but it is important to note that a court-martial is not a civilian trial.

Court-martial "is, first and foremost, a tool of discipline," wrote Col. Andrew S. Williams, 14th Air Force staff judge advocate, in a recent paper. "A court-martial panel is not a true jury," as it has only five members who do not have to be unanimous.

First to come to light was a reversal earlier this year by Lt. Gen. Craig Franklin, commander of 3rd Air Force, who overturned a guilty verdict in a sexual assault case against Lt. Col. James Wilkerson. "I could not in good conscience let stand the finding of guilty," Franklin wrote in a letter explaining his decision.

"Accusations by some that ... I do not take the crime of sexual assault seriously are complete and utter nonsense."

Similarly, in February 2012, Lt. Gen. Susan Helms, commander of 14th Air Force, overturned an aggravated sexual assault verdict. "I made the decision to disapprove the finding of guilty, to dismiss the charge, and to punish Capt. [Matthew] Herrera under Article 15, UCMJ, for the lesser crime of an indecent act," Helms wrote in a memo explaining her decision.

In both reversals, the convening authorities determined that prosecutors failed to prove guilt beyond a reasonable doubt. Both cases lacked physical evidence and featured conflicting testimony among multiple witnesses.


Helms' nomination to become vice commander of Air Force Space Command is now being held by Sen. Claire McCaskill (D-Mo.), who objects to Helms' decision in that case.

Welsh said USAF's responsibility is to ensure "if sexual misconduct occurs, victims are treated with compassionate care, they feel confident to report the incident without fear of retaliation or reprisal, and that alleged perpetrators are given a fair impartial forum and held accountable if proven guilty." Every part of that sequence is important, and Air Force prosecution and conviction rates mirror nationwide norms.

In the past five years, of 327 sexual assault findings, the only one to be completely overturned without follow-on disciplinary action was by Franklin. In the cases at BMT, USAF completed 19 courts-martial by mid-June with 18 convictions and one appeal still pending.

The Air Force must keep its attention on this complex problem. Airmen need better and continual training and a sharper focus on their ethical responsibilities. Predators must be prosecuted, airmen must be wingmen, and there is no place for witch hunts. The UCMJ may need updating, but commanders cannot see their authority undermined by politicians who are looking to "do something" about the problem.

Sexual assault is illegal, a threat to the service, and morally reprehensible. With the war in Iraq over and Afghanistan winding down, it is past time to win this war at home. ■



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NORTHROP GRUMMAN

Whither the C-145

I always look forward to receiving the latest iteration of AFA's timely "USAF Almanac" and have relied on it as a trusted source for pertinent facts and figures throughout my Air Force career [May, p. 34]. Having been involved in a distant way with an Air Force special ops unit with a rich combat history, I was sad to read not long ago that they recently sent their MC-130s to the Boneyard, replacing them with a new airlifter identified only as the C-145A. I retired a decade or so ago and am no longer as knowledgeable as I once was, so I looked up the C-145A online. Imagine my surprise when I discovered this airplane to be nothing more than a Polish knockoff of a smallish twin-engine Russian turboprop. In USAF livery no less. Out of curiosity, I checked my new almanac when it came in the mail today only to find the C-145A conspicuous in its absence. Obviously it exists in the US Air Force inventory because I have seen images of it, and the unit in question has released that they soon will be flying it. So is this an intentional editorial omission on *Air Force Magazine's* part or do you not include foreign-built aircraft in the almanac by choice or, just perhaps, are you as ashamed as I am that we are flying this thing? It is bad enough that what was once the greatest air force the world has ever seen supplies new-build combat aircraft to nations that are our friends only when they want to be while our own crews are left to fly into harm's way in airplanes that are significantly older and more tired, but to think that we have reduced ourselves to acquiring and operating something like these one-off Antonovs just so that we will have something to fly, well, it boggles my mind. Please tell me I am wrong.

Col. Robert D. Coffman,
USAF (Ret.)
Rome, Ga.

■ *We did not include the C-145 in our USAF Almanac's "Gallery of Weapons" because although it is being flown by Air Force Special Operations Command and Air Reserve Components, it is not actually in the USAF inventory; it is in the US Special Operations Command inventory.*

AFSOC has, in the past, asked us specifically not to include the nonstandard aviation aircraft that it was flying but did not own.—THE EDITORS

In reviewing my recently received "2013 USAF Almanac," p. 79, I find it humorous that you placed Channel Islands ANG, home of the 146th Airlift Wing, on Catalina Island. The facility is actually on the mainland of California in Ventura County, next door to NAS Point Mugu, Naval Base Ventura County.

Another discrepancy I find is that Fresno Yosemite Airport, home of the 144th Fighter Wing is located farther south in the county of Fresno of the Central Valley of California. Your map-maker appears to have located it in Stanislaus County, two counties north.

Lt. Col. George B. Cardwell III,
USAF (Ret.)
Camarillo, Calif.

I just received my 2013 Almanac in the mail and found a small error on p. 100 ["Gallery of Aircraft," May]. The T-53s that the Air Force Academy now flies do not have any back seats, so accommodations should be "two, side by side" and not include the "plus three passengers." In order to meet contract performance requirements at high altitude in Colorado, Cirrus bid, sold, and delivered the airplanes without any back seats.

Just some trivia to pass along.

Lt. Col. Larry Brown,
USAF (Ret.)
Colorado Springs, Colo.

I am writing regarding the May 2013 issue listing Air Force aces ["Guide to Aces and Heroes," p. 119].

My brother George was credited by Eighth Air Force as a nine airplane ace as a result of four enemy aircraft destroyed on the ground. The magazine staff has told me that, for technical reasons, those four kills were not included in the May issue. Your printing of this letter is the least you can do to correct the list.

It was well known that ground attacks on enemy airfields were far more dangerous than aerial combat. One of my brother's reports describes flying at ground level [and] firing at an aircraft parked under trees. He could have been shot down by soldiers nearby. Unfortunately, I am sure there are other Eighth Air Force aces not named because of less than five air kills. Please do something.

Lt. Col. Robert Vanden-Heuvel,
USAF (Ret.)
Shalimar, Fla.

■ *We must use the official Air Force record for aces that is maintained by the Air Force Historical Research Agency. AFHRA acknowledges, as we do in the introduction to our aces listing, that the World War II Eighth Air Force did provide some data on air-to-ground*

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kills, but other numbered air forces did not. Consequently, the Air Force limits its official recognition of World War II aces to air-to-air victories. —THE EDITORS

Aardvark Add-ons

Thank you for including the F-111 in the "Airpower Classics" [May, p. 144]. Having served as a WSO in the D, E, and F models from 1983 to 1991, I've been waiting for it for some time now. There are a few statements in the article that are incorrect. Mr. Boyne writes, "The F-111 also had an advanced AN/AVQ-26 Pavé Tack electronic system for flight at extremely low level, at night, and in poor weather." The F-111F was the only variant equipped with Pavé Tack, which was an IR imaging system with a laser designator which allowed the F-111F to employ laser guided munitions which is mentioned in the Interesting Facts section about the 1991 Gulf War. The system which allowed all variants of the F-111 to fly at low level at night and in poor weather was the terrain following radar system which could be coupled with the autopilot. I also believe there is some confusion about the ordnance load capability as it is stated that the F-111 was capable of carrying up to 32,500 pounds of nuclear or conventional ordnance. The F-111 weighed in at ~50,000 pounds empty and carried 32,500 pounds of fuel internally, the maximum gross weight for takeoff was 100,000 pounds if I remember correctly so the maximum weight of ordnance would be just shy of 18,000 pounds. One more thing, all of the 20 mm cannons had been removed from all variants of the F-111 before my initial assignment to the F-111D at Cannon Air Force Base in 1983.

Lt. Col. Greg Nowell,
USAF (Ret.)
Stafford, Va.

■ *Reality splits the difference: The F-111's external weapons load was 25,000 pounds.* —THE EDITORS

Yes, Retraction

Reference to the letter in the May issue of *Air Force Magazine* from retired Maj. Gen. Ken Russell on the P-51H ["Letters: No Retraction," p. 12].

The P-51H was built with a retractable tail wheel in the 1944 time frame. A problem did develop with the failure of the tail wheel shock strut piston bearing retaining nut. There were cast aluminum nuts which caused this failure. The machined aluminum nuts fixed this problem. The easy fix was to keep them down. We flew the H model in the 82nd Fighter Group at Manchester,

N.H., in the 1947-49 time frame with negligible problems. I further checked with the P-51 experts at Stallion 51 Corp., Kissimmee, Fla., who have over 15,000 hours in Mustangs and they too verified this information on the H. Further, the P-51H morphed into the F-82. Tail wheels all retractable.

Col. Ray Kleber,
USAF (Ret.)
Goldsboro, N.C.

More Info, Stat

Buried in the back pages of my morning newspapers were these short blurbs of another "accident" that certainly deserves a lot more space than given ["*Air Force World: Three Airmen Die in KC-135 Crash*," June, p. 16]. You and I know the long history of the KC-135 that replaced the KC-97 back in the late '50s. Recent information from various sources reflects some serious aging problems with some of these aircraft and there was no indication of this one's age. I am sure the missing crew members' families were notified in due course as is normal, but we old tanker pilots deserve better than two small blurbs on the back pages of newspapers.

My suggestion: The Discovery Channel on TV carries a super great program called "Air Crash Disasters" in which commercial air crashes are fully covered, including background information on the aircrew and events leading up to the crash. I realize that many military crashes are classified and this would preclude having it aired on TV; however, in cases like this one, the general public is fully aware of much of the background data like the presence of the KC-135s in the Afghanistan area of operations, and the background data on this crash could provide valuable information for other pilots flying the KCs and commercial models of the same basic aircraft. Let's hear about the basics behind the event like crew rest, food diets, time in theater, living standards, pilot times, and experience, etc., not only in this magazine but in the "Air Crash Disasters" program on Discovery Channel.

Also of interest is the fact that "we the people" are all paying for it in the first place so essentially then WE have a need to know the full details.

Lt. Col. Rolland S. Freeman,
USAF (Ret.)
Longboat Key, Fla.

■ *Much of this information can be found in USAF's accident investigation reports. You can find the publically released reports on our website at www.airforcemag.com.* —THE EDITORS



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Our mission is to promote a dominant United States Air Force and a strong national defense and to honor airmen and our Air Force heritage. To accomplish this, we:

Educate the public on the critical need for unmatched aerospace power and a technically superior workforce to ensure US national security.

Advocate for aerospace power and STEM education.

Support the Total Air Force family and promote aerospace education.

Education, Shmeducation

I will tell you how to save USAF millions of dollars, right now, that can be put toward more important operational necessities like defending the United States [*"Moving Into Sequestration," April, p. 52*].

Close Maxwell Air Force Base! I realize bases can't be closed without congressional approval, so let's do the next best thing that will improve operational readiness and save USAF millions of dollars that it can now spend on flight training and operational flying, the real mission of the Air Force. Why are we cutting operational funding when we should be cutting all nonessential support funding for schools like SOS and Air Command and Staff College?

Close and dismantle the Squadron Officer School and the Air Command and Staff College. These schools contribute nothing to operational readiness and never have.

In fairness, War College and National Security Management have value for senior officers transitioning from "operational" to "strategic" roles and assignments, i.e., O-5 to O-6 and above. This is still necessary training for our senior leaders, but even these functions could be combined with the Navy or Army War Colleges. All that

is needed are three tracks, one each for USAF, USN, and USA. Thankfully the Navy has no equivalent to SOS and Air Command and Staff. If these two courses for senior officers are combined with Navy or Army war colleges, Maxwell has little use left.

Before I proceed further, this letter in no way is meant to disparage the many fine men and women of Maxwell Air Force Base who work hard every day and do their best at their assignments. We just can't afford that much money spent on support functions, especially now.

I have no idea how many millions of dollars are spent on SOS and Command and Staff either by correspondence or in residence but we obviously can't afford the schools when entire squadrons of aircraft have to stand down for lack of funds. Completing correspondence courses and then repeating the same courses in residence is a ridiculous waste of money.

The Air Force has not considered the increased manning that they must have in order to send our officers to these schools. If you consider a 20-year career, for every 16 aviators removed from the cockpit for 15 months (combined time in residence for both schools), you need a 17th. For example, when 16 pilots spend 15 months each

at these schools, the total time spent is 240 months or the equivalent of a 20-year career. That is where the extra officer comes in to replace months lost to nonoperational schools. That is a 9.4 percent increase needed in manning just to send these people to Maxwell. The figure is actually slightly worse than 9.4 percent when you consider the 17th officer must also waste 15 months of his or her career. That is huge and doesn't even consider the cost of the schools, the personnel it takes to operate them, and the facilities. Over years, this could add up to hundreds of millions of dollars in increased manning and infrastructure costs.

I am sure this letter won't sit well with some, but I challenge anyone who has attended these schools to tell me they are worth potentially hundreds of millions towards our operational readiness in defense of our country.

Save money, maintain the same operational readiness, and lower required manning more than nine percent by axing these schools. Closing them is a fiscal and operational no-brainer.

Please close these schools or make them voluntary only by correspondence.

Lt. Col. Charles Frazier,
USAF (Ret.)
Merritt Island, Fla.



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Air Force Association

Focus on the “no fail” nuclear mission; Keeping the Total Force in the loop; Donley’s sobering conclusion

DONLEY’S ASSESSMENT

The Air Force needs to stay focused on its nuclear expertise, continue to push overall modernization, and find a way to heal the relationship between the Active, Guard, and Reserve, former Air Force Secretary Michael B. Donley urged in his final interview with this publication.

Donley, who stepped down June 21 after the longest tenure of any Air Force Secretary—five years—acknowledged it will continue to be a challenge to keep the Air Force focused on the “no fail” nuclear mission in the years to come.

“There’s some aspects of our enterprise that are aging and need modernization,” Donley said of USAF’s nuclear force, which includes B-2 bombers, B-52 bombers armed with air launched cruise missiles, and ICBMs. Some of that modernization, however, is hindered “by the uncertainty at the strategic level about the size ... [and] shape of the force, and it’s also facing pressure ... because of the budget situation.”

The Air Force’s nuclear force, Donley said, represents “a relatively small part” of service resources—“about five percent”—but it needs disproportionate funding because the various pieces are all due for replacement or modification. The Minuteman ICBM is getting an upgrade, the cruise missile force requires replacement, and USAF is pursuing a new bomber that will pick up some of the nuclear role.

These are “significant modernization challenges,” Donley said, but “it’s a national-level mission” the Air Force can’t ignore. It’s important “the institution stays focused on this mission and recognizes the importance [and] funds it at appropriate levels,” he said.

Donley took over in the summer of 2008, shortly after then-Secretary Michael W. Wynne and then-Chief of Staff Gen. T. Michael Moseley were ousted by then-Defense Secretary Robert M. Gates in part for their continued support of the F-22 fighter that Gates wanted to kill. Gates, however, put the nuclear weapons material handling mistakes on Wynne and Moseley’s watch as the reason for their ouster.

Donley said, “I don’t know or believe that the situation was manufactured,” but the marching orders for him and Chief of Staff Gen. Norton A. Schwartz when they came in was to deal with complacency in the nuclear mission.

“The first order of business” was to assemble all the studies and reports done on the Air Force’s nuclear mission in the wake of incidents of carelessness and “determine a way forward,” Donley said. With the end of the Cold War and a steady decline in the size of the nuclear arsenal, the mission had become something of a backwater for the service that seemed not to offer a career path to top leadership. That has been addressed, Donley said, but will continue to need attention as the New START potentially drives even further reductions in the nuclear enterprise.

“We’ve found ways” to reassign people within the nuclear field and select them for staff positions at DOD and Air Force headquarters, Donley said. Pilots can move about in the flying career field, and security forces have opportunities in other parts of the force. “Missile folks have worked across the space and acquisition” career fields, as well, so “I think there are continuing opportunities for men and women who serve in the nuclear enterprise,” he said.



USAF photo by Scott M. Ash

Heal the Total Force, said Donley.

FINDING THE TOTAL FORCE BALANCE

Donley said there is “potential that the Total Air Force will get smaller” as a result of continuing budget constraints and uncertainties about whether the sequester will continue into Fiscal 2014. He noted that “the current Active Duty force is as small as it has been since we were created in 1947,” so it’s “more important than ever” that the Active, Guard, and Reserve “get more closely integrated.”

That’s been tough since USAF’s Fiscal 2013 budget proposal called for larger cuts in the Guard and Reserve than in the Active force. The ensuing rift with the state Guard units and governors highlighted problems in how USAF leaders keep the reserve components in the loop about changes.

“We’re continually in the process of finding where that right balance is” in the size and missions of the three components, Donley said. Given the tightness of budgets, “there are already some constraints on marginal capacity or capability areas that are very finely balanced already” and may not allow for as big a role for some components as they’d like.

“It’s too soon to [say] how it all balances out,” Donley said of the future for the Guard and Reserve. “Part of it’s driven by strategy—what the Air Force will be asked to do in the future.” Active forces typically provide the bulk of overseas presence, and “we see a continuing demand for Air Force capabilities ... [and] a continuing overseas presence,” Donley said. These forces are needed in the US Central Command area post-FY ‘14,” and there will be “some presence in the [Persian] Gulf, some continuing presence in Europe although that is down substantially.”

Donley established a Total Force Task Force to examine the relative roles and makeup of the Active and Air Reserve Components, and “I think we’re on a good track now” to resolving the issues, he said. Future directions should “take advantage of what have been successful associations” between Active and ARC elements and “understand how to refine and fine-tune them.” The task force will discover where those associations work or don’t, and why, he said.

What is clear, though, is that “100 percent Active will not work and 100 percent reserve component will not work,” Donley said. The trick will be to find the “tolerance level” in various missions for the best mix of the two. There will still be areas where the Guard and Reserve will have most, if not all of the capability—aerospace control alert, aerial firefighting, or aerial spray were examples he mentioned—and the ARC will not simply become a piecemeal supplement for Active Duty personnel.

The task force, Donley noted, may be made permanent, because the relationship will continually need rebalancing.

“There’s no end point to it,” he said. “We have a good, strong base in relationships that just need to be continually refined.”

THE LONG ARM OF SEQUESTRATION

There will be some Air Force “presence” in Afghanistan after 2014, Donley said, but the exact nature of that has not yet been determined. Plans for the sequencing of units going to Afghanistan has been determined through the end of calendar 2014, he added, but after that, everything is uncertain because of the sequester. At that point, USAF might have to start tapping some of the units that stood down this spring and summer because there was no funding to operate them.

“We’ll provide combat power to the combatant commanders who need it”—those forward deployed and on the Korean peninsula, he said. That will work through the end of 2014, but after that, all bets are off.

“If sequestration ... drifts into Fiscal ’14, we’ll have some significant adjustments to consider, from a planning point of view,” he said. In other venues, Donley has said that if readiness remains a top priority, then modernization accounts likely would be raided to pay for it—something he wouldn’t want to do.

“Perpetuating this lowest state of readiness”—Donley noted he has used the term “readiness crisis”—“with a lack of funding for flying units is not a position we want to be in. We want to get out of this.”

He doesn’t dwell on whether the termination of the F-22 was a good or bad thing, despite the rise of potential fifth generation aircraft competitors in China and Russia and the severe funding problems at home.

“When General Schwartz and I arrived, the dollars were gone out of the Air Force budget,” Donley pointed out, so the decision was made and there were “plenty of modernization challenges in front of us.” His emphasis has been on managing the F-22’s other issues—the oxygen system being one—and continuing to upgrade the system so that it remains “the world’s finest fighter.” That said, however, he’s made it a priority to remain focused on “the need to begin to move to fifth generation capabilities and to stay firm on our commitment to the F-35.”

The restructure of the F-35 program needed to be done, he said, but “we’re through that work,” and the program is now “in a pretty good place” and mature enough that the Air Force has begun a training program for its operational F-35 pilots. The Air Force also has begun to make some basing decisions, he added. “Trying to move faster would not be a good alternative,” but neither would slowing down the program, Donley maintained. “Our challenge, really, and for the [Joint Program Office], has been to manage through the concurrency issues as best we can.”

He added, “We’re the only air force in the world that has this capability. And we are fielding F-35, so I think that’s the larger picture that I think we need to stay focused on.”

USAF’S BIG STICK

The recent deployment of F-22s to South Korea and B-2 bomber overflights of the peninsula seemed to lead to a rapid de-escalation of the crisis with North Korea in May. Did this



USAF photo by MSgt. Kevin J. Gruenewald

The presence of F-22s and a B-2 dampened the North Korean hot zone.

success signal a boost for the Air Force in the current round of budget talks and roles and missions debates?

“I think this was a very effective demonstration of what airpower can do on short notice,” Donley asserted. The “flexibility” of the stealth aircraft—across multiple time zones and areas of responsibility—sent messages “to both allies and potential allies” and showed what the nation and USAF “can do when necessary to demonstrate resolve and send a deterrent message.” As for a budget boost, Donley said the operation showed off the need for long-range strike, which “was recognized in the strategic guidance a couple of years ago.”

Donley said the start-and-stop of the new bomber program over the last decade was not surprising.

“We actually have a pretty poor record on bomber programs,” he said. Pointing to the terminations of the B-70 and B-1—the latter eventually restarted but with a limited buy—and the truncation of the B-2 program, Donley said bombers, though a critical capability, have usually represented risky technology. Failure to rein in cost early enough meant the aircraft couldn’t be bought in needed numbers.

The Next Generation Bomber canceled by Gates in 2009 was felled by cost and complexity, Donley said. When it was canceled, the Air Force “really took a significant deep breath and a long look at what we needed to reconsider” in reconstituting the program such that it would be acceptable to Pentagon leaders. That, in turn, drove USAF to pursue a program with “a lot less risk, ... more mature technologies,” and “inserted cost as a variable.” Requirements were established early, “so that we made trade-offs in range and payload ... and tried to take a family-of-systems approach so that we weren’t attempting to build an aircraft that was destined to be something we could not afford.” Collectively, these steps convinced Gates to give the restructured program the green light.

A “sobering conclusion” from his tenure, Donley said, is that “the progress we make is not guaranteed to last forever.” He’s pleased the F-35, the new bomber, and the KC-46 tanker all made significant headway on his watch, but “none of the things I think I got ‘done’ are done,” he observed. “Getting the tanker on stable footing was important to the Air Force, but we’re not building tankers, yet,” he said, noting that even after a program has some momentum, it can still be stopped.

He made himself a list of some 25 major programs or actions that have marked his tenure.

“I don’t know that I’d call them great victories, but they’re things that happened, that we had to address in the last five years, and probably 80 percent of that is stuff we didn’t plan on ... and you have to address,” he said, such as the air campaign in Libya.

“It’s continuing work, and really, the leadership that occupies these positions are just stewards for a particular period of time,” Donley insisted. ■

Civilian Furloughs Begin

Beginning on July 8, most Defense Department civilian personnel will face as many as 11 days of furloughs for the remainder of the fiscal year, announced Defense Secretary Chuck Hagel.

Speaking to DOD employees during a town hall meeting in Alexandria, Va., Hagel said he based this decision on "fairness" to employees after conducting an "extensive review" of all available options. "I have made this decision very reluctantly because I know that furloughs will disrupt lives and impact DOD operations," he said in a statement released after the May 14 meeting. "I recognize the significant hardship this places on you and your families."

Employees will be asked to take one furlough day per week, or two per pay period. Some "essential" civilian personnel will be exempt, such as those on temporary assignment to a combat zone, said Hagel. He told the town hall it's possible officials might be able to reduce the total number of furlough days after they get "through the front end." However, he did not make any promises.

Initially, Pentagon officials anticipated that most of DOD's 800,000 civilian employees around the country would have to stay home for up to 22 days through September. Pentagon officials have said the 11 furlough days would save an estimated \$1.8 billion.

Breedlove Now the SACEUR

Gen. Philip M. Breedlove became NATO's Supreme Allied Commander, Europe, during a ceremony at Supreme Headquarters Allied Powers Europe in Belgium on May 13. Breedlove, who previously oversaw Air Force units in Europe, succeeded Adm. James G. Stavridis, who had held the position since summer 2009.

"As I take command today, I am humbled by the great company I am joining, intrigued by the challenges we will face together, and inspired by the recent achievements of soldiers, sailors, airmen, and marines from across this incredible Alliance," said Breedlove. "As SACEUR, my first and enduring priority will be to ensure that NATO remains vigilant and prepared

to meet the challenges and threats of the future with agile, capable, and interoperable military forces."

Breedlove is the 17th American officer and third Air Force general to hold the SACEUR post since its inception in 1951. In an earlier ceremony in Stuttgart, Germany, he also took charge of US European Command.

Preferred Sites for KC-46A

McConnell AFB, Kan., is the preferred location for the first Active Duty-led KC-46A main operating base, announced Air Force officials in May. Altus AFB, Okla., is the preferred place to host the KC-46A formal training unit, while Pease Intl. Tradeport ANG, N.H., is the preferred site for the first Air National Guard KC-46A main operating base.

"The Air Force chose these locations using operational analysis, results of site surveys, and military judgment factors," said Timothy K. Bridges, the service's deputy assistant secretary for installations. Before the Air Force can render final decisions, it must complete the environmental impact studies launched in April at all of the candidate locations, he said.

McConnell prevailed as top choice over Fairchild AFB, Wash., and Grand Forks AFB, N.D. Pease emerged as the MOB 2 top candidate over Forbes Field, Kan.; JB McGuire-Dix-Lakehurst, N.J.; Pittsburgh Arpt./ARS, Pa., and Rickenbacker ANGB, Ohio.

Among the reasons cited, McConnell "has the lowest military construction costs," Altus requires "less Active Duty manpower" to stand up the training operation, and Pease has a "highly successful existing Active Duty association," stated the release.

New Air Force Chief Scientist

Mica R. Endsley became the Air Force's chief scientist on June 3, replacing Mark T. Maybury, who had held the post since October 2010, according to a service release.

"I deeply respect the challenges and sacrifices that all of our airmen, at every level, make daily in service to our nation," said Endsley, who is the Air Force's first female chief scientist.

USAF photo by MSgt. Ben Bickler



"To be asked to join them and do what I can to support them was simply an opportunity I could not pass up."

Endsley has been president of SA Technologies in Marietta, Ga., which specializes in cognitive engineering and situation awareness innovation. She has also served on the Air Force Scientific Advisory Board.

"I'm confident she'll continue a proud legacy of chief scientists who use innovation and strong leadership to keep

our Air Force the world's finest," said Chief of Staff Gen. Mark A. Welsh III of Endsley.

AFRC's New Command Chief

Lt. Gen. James F. Jackson, head of Air Force Reserve Command, selected CMSgt. Cameron B. Kirksey to be AFRC's next command chief. Kirksey had served as command chief of AFRC's 482nd Fighter Wing at Homestead ARB, Fla., since June

2011. He will replace CMSgt. Kathleen R. Buckner, who resigned in April for personal reasons. She had held the post since December 2011.

"I look forward to being the eyes, ears, and voice of our enlisted ranks to General Jackson, and I want every airman who is a part [of] AFRC to know that I am extremely honored to serve them as their senior enlisted leader," said Kirksey.

A native of Silas, Ala., he enlisted in the Air Force Reserve in March 1988.



06.11.2013

A1C Everardo Torres scans an airfield for potential threats as night falls in Jalalabad, Afghanistan, while equipment and personnel transfer from a C-130. Torres is a security forces Fly-away Security Team (FAST) member. FAST personnel fly on missions when a location requires an extra measure of security or to protect the aircraft and air crew from hostile fire or potential security breaches.

F-35 IOC Dates

The Air Force intends to declare initial operational capability for the F-35A strike fighter sometime between August and December 2016, meaning the aircraft will be ready for initial real-world operations, service officials told Congress.

That's when the first F-35A operational squadron will have 12 to 24 aircraft in place and sufficient airmen will be trained to fly and maintain them, stated a Pentagon report issued to lawmakers on May 31. At IOC, the F-35As will be capable of conducting basic close air support, interdiction, and limited suppression and destruction of enemy air defense operations in a contested environment, stated the report.

Also, at IOC, the Air Force variant of the F-35 will utilize Block 3i software. While the F-35As in that configuration will be adequate for threats of 2016, the report stated that "the Air Force will require the enhanced lethality and survivability inherent in Blocks 3F and beyond" to meet requirements in later years.

The Marine Corps, on the other hand, anticipates declaring IOC for its F-35B variant between July 2015 and December 2015. That is when the first F-35B operational unit will have adequate pilots and maintenance crews in place and will be equipped with 10 to 16 aircraft in the Block 2B software configuration making the aircraft capable of close air support, offensive and defensive counterair, air interdiction, assault support escort, and armed reconnaissance.

The same report stated the Navy projects its carrier-based F-35C will be ready for combat by February 2019. It also said the F-35C will reach IOC between August 2018 and February 2019.

His background is in the logistics career field, specializing in fuels management.

Retraining for Responders

Defense Secretary Chuck Hagel directed all sexual assault prevention and response (SAPR) personnel and military recruiters to be retrained, recertified, and rescreened. His directive, announced by Pentagon spokesman George E. Little on May 14, came after revelations that an Army NCO serving as a SAPR coordinator at Fort Hood, Tex., is facing allegations of sexual misconduct. This followed a case earlier in May of an Air Force SAPR officer assigned to the Pentagon who was arrested on charges of sexual battery.

"I cannot convey strongly enough his frustration, anger, and disappointment over these troubling allegations and the breakdown in discipline and standards they imply," said Little of Hagel's reaction to the case with the Army sergeant first class. The soldier is accused of pandering, abusive sexual contact, assault, and maltreatment of

ANG photo by SSGT. Leelan Buehrer



Might as Well Jump: Army paratroopers jump from a C-17 over Malamute Drop Zone at JB Elmendorf-Richardson, Alaska, during Operation Spartan Reach, a mass tactical airborne training event. USAF C-17s and a C-130 dropped more than 1,400 paratroopers in addition to heavy equipment, including two 105 mm howitzers.

Warrior Spirit

The Air Force came away from the 2013 Warrior Games with 30 medals: three gold, 11 silver, and 16 bronze. This total nearly doubled the service's medal count from last year.

The six-day event, which took place at the Air Force Academy and the Olympic Training Center in Colorado Springs, Colo., wrapped up on May 16. It drew 260 athletes, including 50 from the Air Force. The Warrior Games are "designed to introduce injured service members and veterans to paralympic sport competition and encourage them to stay physically active when they return to their local communities," states the US Paralympics website.

Military personnel and veterans with combat-related injuries, noncombat-related injuries, and those with what's known as "invisible" wounds are eligible to compete in the Warrior Games.

Triathlete and first-time Warrior Games competitor Air Force Capt. Mitchell Kieffer won the title of the Ultimate Champion for his performance in five competitions: the 50-meter freestyle swim, 10-meter prone air rifle shooting, a 100-meter sprint, cycling, and shot put. He won the silver medal in the rifle shooting. This was the first time an airman won the Ultimate Champion title.

Kieffer suffers from traumatic brain injury and compression fractures in his back from injuries sustained in Afghanistan in 2010.

"It's almost euphoric just to be connected to so many great people, and I feel everyone is better than myself," he said. "It's a very exciting honor just to be here."

Athletes at the all-services paralympics games competed in seven different sports: archery, cycling, shooting, sitting volleyball, swimming, track and field, and wheelchair basketball.

One of the reasons why the Warrior Games is so popular is because athletes view it as a form of therapy. TSgt. Axel Gaud-Torres signed up for the games because he and his wife knew it would be good for him. Gaud-Torres suffers from post-traumatic stress disorder and residual pains from injuries sustained from an explosion in Iraq eight years ago. He competed in archery, rifle shooting, and sitting volleyball.

Every time he steps onto the shooting field, "it's like I'm back before everything happened, before I even deployed," he said. "It's so peaceful when I'm out there on the line. ...It's just me and the target and perfect peace and harmony."

The Defense Department partners with the US Olympics Committee Paralympics Military Program each year to host the Warrior Games. This year was the fourth year of the games.

—June L. Kim

strikes in Afghanistan and Pakistan would come down as the United States disengages from combat in Afghanistan, but vigorous oversight of such operations outside of combat zones has been the norm with Congress.

"Not only did Congress authorize the use of force, it is briefed on every strike that America takes," said Obama. The use of standoff air strikes is in lieu of the riskier option of putting US troops on the ground in a sovereign nation, which could incur immense backlash, he noted.

The President also urged Congress to revisit the post-9/11 authorization on the use of military force. After more than 10 years of war, "we must define the nature and scope of this struggle," he said, since the nation cannot sustain a continual war footing.

Today, Obama said, al Qaeda is largely dismantled, but the threat from affiliate organizations still remains.

North Korea's Missile Launches

North Korea launched short-range ballistic missiles off its coast for three consecutive days in late May, according to press reports. North Korean officials declared the launches of the six short-range missiles to the east and north of its territorial waters over that span a part of regular military exercises, reported Bloomberg.

The official North Korean news agency accused the United States and South Korea of "brigandish sophism" for criticizing the launches and cited recent joint US-South Korean exercises as far greater provocations, reported the *New York Times*. South Korean officials said the launches raised tensions on the peninsula.

Pentagon Press Secretary George E. Little said while North Korea's rhetoric has calmed—compared to recent months—any activities such as launches "could be construed" as provocative and concern US officials. He noted that the short-range launches do not necessarily violate North Korea's international obligations, but that the United States and its allies would monitor developments closely.

Women in Combat

Each of the four services submitted implementation plans to Defense Secretary Chuck Hagel detailing how to integrate women into combat roles, Pentagon spokesman Navy Lt. Cmdr. Nathan Christensen told *Air Force Magazine*. Christensen said DOD is "conducting a thorough review" of the plans, received on May 15, and anticipates submitting its proposal to Congress later this summer.

"It would be inappropriate to discuss the content of those recommendations or

subordinates, according to a May 15 Pentagon release.

"Sexual assault is a crime, and will be treated as such," said Little. "Secretary Hagel is looking urgently at every course of action to stamp out this deplorable conduct and ensure that those individuals up and down the chain of command who tolerate or engage in this behavior are appropriately held accountable."

Obama Defends RPA Strikes

President Barack Obama defended his Administration's use of remotely piloted aircraft to target terrorists, saying this counterterror method has saved American lives, is proportional, and legal.

In remarks at the National Defense University in Washington, D.C., on May 23, Obama said the number of these

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Getting Back on Track

Almost two months after missile crew members from the 91st Operations Group at Minot AFB, N.D., were temporarily relieved of their authority to control Minuteman III nuclear missiles, 10 of 19 returned to duty after completing recertification training. The remaining crew members were expected to complete their recertification in early June, according to an Air Force Global Strike Command news release.

In April, members of the 91st Missile Wing were sidelined after the wing earned a "marginal" rating in one of 22 areas covered during a consolidated unit inspection. The inspection revealed several shortfalls and an attitude of complacency among a "small number of officers," stated the command's June 7 release.

Chief of Staff Gen. Mark A. Welsh III, speaking to the House Appropriations Committee's defense panel on May 9, said the wing commander and the group commander at Minot "immediately started an investigation into what had caused the lower-than-expected performance by their crew members." The review included a "comprehensive, top-to-bottom assessment of training, performance on routine testing, simulations, et cetera," he said.

speculate on any decisions the Secretary may come to subsequent to the review," he said. "The successful integration of women into currently closed positions requires the department to be thoughtful and deliberate in determining the next steps."

The Pentagon announced in late January plans to open more combat roles to women. Unlike the other ser-

vices, most Air Force specialty codes already are open to women, except for some special operations positions.

Another Look at Claims

House Veterans' Affairs Committee Chairman Rep. Jeff Miller (R-Fla.) and House Majority Whip Rep. Kevin McCarthy (R-Calif.) introduced legislation that would establish an independent

task force or commission to analyze the Veterans Affairs Department's disability benefits claims processing system.

"We hope to establish a revised evidenced-based process that will help VA break its claims backlog once and for all in 2015, just as department leaders have promised," said Miller.

The claims process, on average, takes about nine months, but some claims take years. The task force would examine the reasons for the backlog and offer solutions to correct the problem by 2015, stated the release.

"The entire country is counting on VA to end the backlog by 2015, and Congress is committed to holding the department accountable until they achieve that goal," said McCarthy. "Our veterans deserve the care they earned while protecting and defending our country, and continued failure by the VA cannot and will not be tolerated."

WGS-5 Launched

The Air Force and its industry partners launched WGS-5, the fifth Wide-band Global Satellite Communications spacecraft, into orbit aboard a United Launch Alliance Delta IV booster fired from Cape Canaveral AFS, Fla. Within an hour of its launch at 8:27 p.m. local

Walk Toward the Light: TSgt. Sean Buck and A1C Pedro Cahua prepare to hook up an 1,800-pound cargo bag to a hovering Army UH-60 Black Hawk helicopter during a nighttime sling-load training mission at Kandahar Airfield, Afghanistan. The ability to deliver goods with pinpoint accuracy reduces ground convoys' vulnerability to IEDs.



USAF photo by Capt. Brian Maguire

Operation Enduring Freedom

Casualties

As of June 19, a total of 2,233 Americans had died in Operation Enduring Freedom. The total includes 2,230 troops and three Department of Defense civilians. Of these deaths, 1,756 were killed in action with the enemy, while 475 died in noncombat incidents.

There have been 18,795 troops wounded in action during OEF.

Afghan Air Force Grows

The Afghan air force continues to grow in capacity and capability as Afghan National Security Forces take the lead in the fight against insurgents and NATO troops move into an advisory role, according to a news release from coalition air advisors in Kabul.

Following the success of a winter campaign, the AAF increased support by more than 60 percent in the first three months of 2013, airlifting more than 9,400 personnel and more than 642,000 pounds of equipment and humanitarian supplies, stated the May 13 release.

"The Afghan air force's unprecedented progress is now growing from the inside out," said Maj. Gen. Abdul Wardak Wahab, AAF commander. "We are employing our force as well as ... developing it," he said.

Back in October 2012, it took an average of 72 hours for the AAF to respond to an emergency call and move a wounded Afghan to a medical treatment facility. Currently, the response time stands at less than three hours, approaching NATO standards, stated the release.

Dempsey Talks Afghan Transition

The NATO mandate for combat troops in Afghanistan will expire at the end of 2014, but there remain many options for the presence and disposition of foreign troops in the country after this date, according to Army Gen. Martin E. Dempsey, Chairman of the Joint Chiefs of Staff.

His comments on May 15 followed two days of discussions in Brussels with NATO officials, including Gen. Philip M. Breedlove, NATO's top military commander, and Marine Gen. Joseph F. Dunford Jr., the top general in Afghanistan. Dempsey said NATO chiefs examined whether the Alliance should take a regional approach to the training and advising mission after 2014 or whether it should proceed at the institutional level, or at the battalion, brigade, or corps level for the Afghan military. Each scenario has different requirements for troops, equipment, basing, and funding, he said.

Defense Secretary Chuck Hagel met with NATO and partner defense ministers also in early June for discussions on topics including Afghanistan, cybersecurity, a possible Libya training mission, and collective defense.

Afghan Airmen Test New Gun

The Afghan air force took another step toward bolstering its close air support capabilities with the test of GSh-23 guns on the Mi-35 attack helicopter.

Members of the AAF's 377th Rotary Wing Squadron at Kabul fired 23 mm rounds from newly mounted twin-barreled GSh-23s for the first time May 15 during a live-fire exercise, stated a May 31 news release.

"This weapons system provides a vital air-to-ground capability," said Lt. Col. Brandon Deacon, 438th Air Expeditionary Advisory Squadron commander. The exercise, involving two Mi-35s, also marked the first time the Afghans have had the GSh-23 as well as the Yak-B 12.7 mm machine gun and the S-5 57 mm rocket pod mounted on the Hind.

Once Afghan pilots complete certifications, they will be able to use the GSh-23 in combat to support Afghan ground troops.

time on May 24, controllers in Australia confirmed initial contact with the military communications satellite, indicating that it was "functioning normally and ready to be moved into geosynchronous Earth orbit," stated a release that day from Boeing, the satellite's manufacturer.

WGS-5 should enter operations by the end of 2013, following several months of orbit-raising activities to

reach its operational perch and on-orbit testing to verify its performance, according to a release from Air Force space officials at Los Angeles AFB, Calif.

WGS-5, which will give the US military and allied militaries greater access to fast and secure communications, joins four WGS satellites already operating on orbit. It is the second WGS

spacecraft in the Block II configuration; like WGS-4, it offers more robust communications throughput. The WGS-5 mission was the second space launch from Cape Canaveral in 10 days, following the May 15 launch of the fourth GPS IIF navigation satellite.

F-35 Costs Decrease

The Pentagon's selected acquisition report to Congress noted a \$4.5 billion reduction in the acquisition, operating, and support costs of the F-35 strike fighter program. Prime contractor Lockheed Martin said this marks the first time a SAR reflects a cost reduction in the program.

"We will work with the F-35 joint program office to implement further cost-saving measures, which will result in additional significant decreases to the total program cost," said a company spokeswoman.

The F-35 aircraft program has an estimated total cost of \$326.9 billion, down 1.5 percent from the previous \$331.9 billion estimate, stated the report, issued on May 23. However, that savings is partially offset by a \$442 million increase in the cost of F-35 engine acquisition, which jumped from \$63.9 billion to \$64.3 billion. Those costs rose primarily due to revised escalation indices, correction of cost allocations between the aircraft and engine subprograms, and a lower ramp-up of engine production in the near term, stated the report.

Chinese Anti-Satellite Test?

A Chinese space launch in May ostensibly for peaceful scientific research may actually have been a test of a new Chinese anti-satellite weapon, according to US press reports. China's state-run Xinhua news agency reported the May 13 launch of a high-altitude sounding rocket from southwestern China that was meant to investigate energy ions and magnetic fields in space.

However, the mission actually was a test of the so-called Dong Ning-2 missile that China could fire to attack a satellite, reported the *Washington Free Beacon*, citing US officials. The test reflects a significant advance in Chinese counterspace capabilities, claimed the Beacon.

A Reuters report citing a US defense official made similar claims. Asked for comment, Pentagon spokeswoman Lt. Col. Monica Matoush told *Air Force Magazine*: "We detected a launch on May 13 from within China. The launch appeared to be on a ballistic trajectory nearly to geosynchronous Earth orbit. We tracked several objects during the flight, but did not observe the insertion of any objects into orbit and no objects

Senior Staff Changes

RETIREMENTS: Lt. Gen. Ralph J. Jodice II, Lt. Gen. William J. Rew, Brig. Gen. Gregory J. Touhill.

NOMINATIONS: To be Brigadier General: James E. McClain. **To be ANG Brigadier General:** Robert C. Bolton.

CHANGES: Brig. Gen. Christopher J. Bence, from Dep. Dir., Ops., Natl. Jt. Ops. & Intel. Center, Ops. Team Two, Jt. Staff, Pentagon, to Dir., USAFE-United Kingdom, USAFE, RAF Mildenhall, UK ... Brig. Gen. Michael A. Fantini, from Cmdr., 82nd Tng Wg., AETC, Sheppard AFB, Tex., to Cmdr., 451ST AEW, ACC, Kandahar, Afghanistan ... Brig. Gen. Scott A. Kindsvater, from Dep. Chief, Spt./Security Assistance, Office of Defense Rep-Pakistan, CENTCOM, Islamabad, Pakistan, to Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex. ... Brig. Gen. Lawrence M. Martin Jr., from Vice Cmdr., 618th Air & Space Ops. Center (Tanker Airlift Control Center), AMC, Scott AFB, Ill., to Dir., Regional Affairs, Office of the Dep. Undersecretary of the Air Force, Intl. Affairs, Pentagon ... Brig. Gen. Jon A. Norman, from Dir., USAFE-United Kingdom, USAFE, RAF Mildenhall, UK, to Cmdr., 31st FW, USAFE, Aviano AB, Italy ... Maj. Gen. (sel.) Mark C. Nowland, from Dir., Strategy, Policy, & Plans, SOUTHCOM, Miami, to C/S, SOUTHCOM, Miami ... Maj. Gen. Joseph S. Ward Jr., from Commandant, Jt. Forces Staff College, Natl. Defense University, Norfolk, Va., to Dep. Dir., AF Quadrennial Defense Review, Office of the Vice Chief of Staff, USAF, Pentagon.

SENIOR EXECUTIVE SERVICE CHANGE: Mica R. Endsley, to Chief Scientist of the AF, USAF, Pentagon.

COMMAND CHIEF MASTER SERGEANT CHANGE: CMSgt. Cameron B. Kirksey, to Command Chief, AFRC, Robins AFB, Ga.

associated with this launch remain in space.”

China tested an ASAT weapon in 2007 that created thousands of pieces of debris on orbit. The Pentagon’s newly issued 2013 annual report on Chinese military developments stated that China is acquiring “a range of technologies” to improve its space and counterspace capabilities.

F-15 Goes Down in Pacific

A pilot assigned to the 18th Wing at

Kadena AB, Japan, was in stable condition in a military medical facility after the crash of an F-15 in late May, in the waters of the Pacific, announced base officials. Japanese rescuers recovered the pilot, who had ejected from the

Testify: USAF Chief of Staff Gen. Mark Welsh III (second from right in front row) and Air Force Judge Advocate General Lt. Gen. Richard Harding (right of Welsh), together with other service Chiefs and Chairman of the Joint Chiefs of Staff Gen. Martin Dempsey, appeared before the Senate Armed Services Committee to testify about combating sexual assault in the military. During the hearing, Welsh said, “Every airman is either part of the solution or part of the problem, and there is no middle ground.”

F-15 about 70 miles east of Okinawa at about 9 a.m. local time during his sortie, they said in a news release.

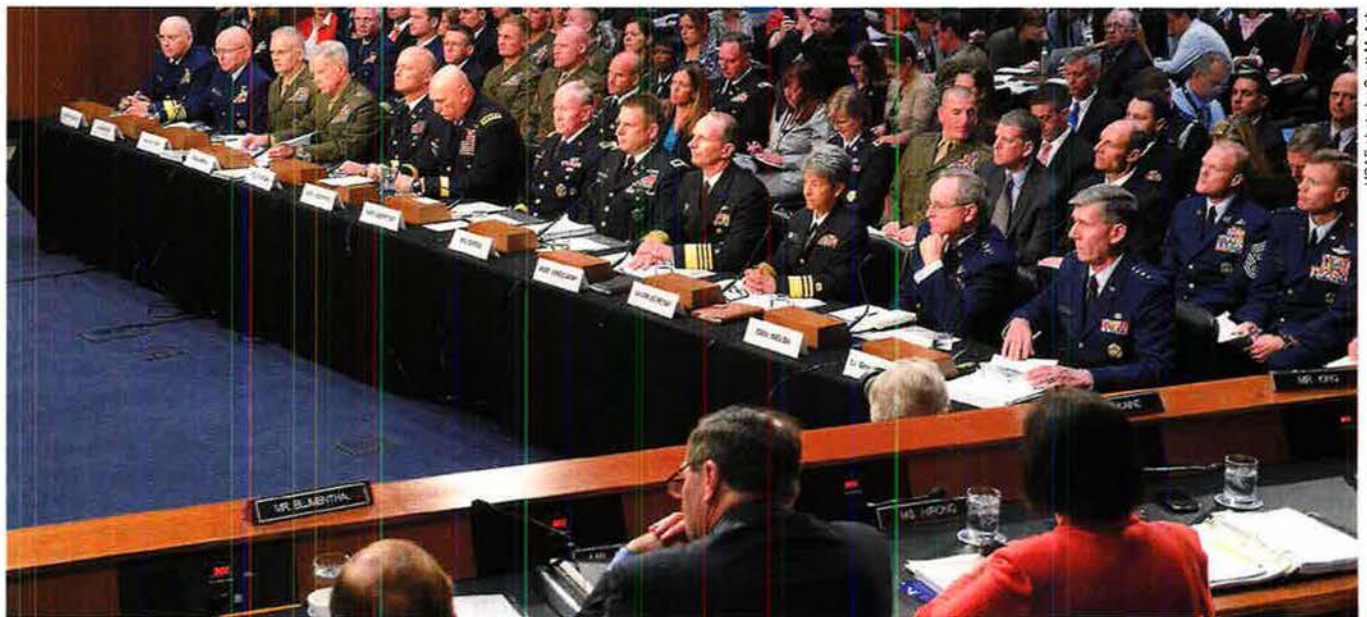
The cause of the mishap is thus far undetermined. As a result of the mishap, the wing announced that it would suspend F-15 training at Kadena for one day.

“It’s common practice to stand down training operations after a major mishap to allow aircrews time and opportunity to reflect on what happened and refocus on training requirements,” stated the wing’s May 28 release. “Every F-15 at Kadena will undergo an inspection to ensure they are safe to fly.”

No More O-3 Central Board

Secretary of the Air Force Michael B. Donley in May approved the elimination of the Captain’s Central Selection Board, meaning first lieutenants no longer meet a promotion central selection board to make captain, announced service officials. The change took effect immediately and returned the Air Force to the same promotion process that was in effect before July 2011. Accordingly, first lieutenants are now informed by their chain of command if they are recommended for promotion to captain.

“Senior raters will now provide a recommendation to promote or not to promote officers. All officers will get promoted unless their senior rater makes a recommendation of ‘do not promote,’”



USAF photo by Scott M. Ash

China's Secret

The Defense Science Board, in a confidential annex to a report issued earlier this year, found that Chinese hackers have engaged in a wide range of espionage activities targeting US aerospace and defense firms and have hacked into designs for more than a dozen major weapon programs, reported the *Washington Post*.

Among the weapon programs hacked or compromised by "cyber exploitation" are the F-35 strike fighter, V-22 tilt-rotor aircraft, C-17 transport, RQ-4 Global Hawk remotely piloted aircraft, AMRAAM missile, PAC-3 missile, and the THAAD missile defense system, according to the newspaper's May 27 report.

The public version of the DSB report, dated January, warned that the Pentagon was not ready to engage in a full-scale cyber conflict, but avoided charging the Chinese government with orchestrating the cyber attacks. Conversely, the most recent edition of the Pentagon's annual report on China's military, released in May, charged the Chinese government specifically with hacking and cyber espionage attacks. US officials have charged China with using espionage to close the military capability gap with the United States.

While the DSB has uncovered the cyber espionage activities, there are plenty of Chinese activities the United States remains unaware of, especially in relation to nuclear activities. For example, the information the United States has on China's nuclear weapons buildup is quite thin and controversial, said Richard D. Fisher Jr., senior fellow of Asian military affairs at the International Assessment and Strategy Center. The United States estimates that China possesses between 200 and 400 nuclear warheads, but according to Russian experts, China holds 1,600 to 1,800 warheads, said Fisher during a May 24 address on Capitol Hill.

Further, US experts believe that China has 16 tons of highly enriched uranium, whereas the Russians believe the Chinese have 40 tons of HEU, he noted. Fisher also said North Korea either has or will soon have deployable ICBMs that can reach Anchorage, Alaska.

The transporter erector launchers for these weapons were "made in China, given to North Korea," he emphasized. He also mentioned that China is supplying nuclear weapons to Pakistan, although the United States is not doing much about it.

said Lt. Col. Colin Huckins, chief of the service's promotions, evaluations, and fitness policy branch.

The Air Force eliminated the boards "due to the significant amount of time and financial investment for a very small quality cut, which affected few officers due to high promotion rates," according to the service's official press release. The board's rate was 95 percent, said the officials.

Vietnam War POWs Reunite

Nearly 200 former Vietnam War POWs and their families arrived at the Richard Nixon Presidential Library in Yorba Linda, Calif., in May to commemorate the 40th anniversary of the POWs' homecoming and the historic White House dinner that celebrated their return.

The event included a tour of the library's galleries with Ed Nixon, President Nixon's brother; Christopher Nixon Cox, President Nixon's grandson; and retired Cmdr. Everett Alvarez Jr., one of the longest held US POWs in Vietnam. There also was a wreath-laying ceremony in honor of President Nixon, a "missing man" flyover, and a POW celebration family BBQ, according to

the Richard Nixon Foundation's news release.

Events on May 24—the actual anniversary of the White House dinner—included a black-tie reception, banquet, and official portrait. The commemorative events in Yorba Linda, known as POW Week, began on May 20 with the open-

ing of a special exhibit highlighting the POWs' historic homecoming and White House dinner. It was "the largest dinner ever held at the White House," stated the release.

Combined Space Ops Eyed

US Strategic Command is looking to share space assets and capabilities with US allies, said USAF Brig. Gen. David D. Thompson, the organization's deputy director of global operations. An agreement of this kind promoting combined space operations would be the first of its kind.

"Our intent with combined space operations is to mirror some of the partnerships we have in other mission areas that are long-term and enduring," Thompson told American Forces Press Service in May. This agreement would build on an arrangement tested last year in which the United States and partner nations agreed to continue working toward closer cooperation in space. Intelligence, surveillance, and reconnaissance, space-based communications, and global positioning systems are some capabilities covered in the agreement.

"This gives [participating allies] an awareness and understanding that enhances their capabilities to conduct operations the way no other armed forces can today," said Thompson. "We have enduring requirements and enduring interests that are common among ourselves. So, we see this as a longer standing coalition with these nations."

New START Decisions

Decisions on how the United States will structure its strategic nuclear arsenal to comply with the New START agreement "look like [they] will be made at the end of this calendar year," said Madelyn R. Creedon, assistant secretary of defense for global strategic affairs.



USAF photo by SrA. Daniel Hughes

Irregular Training: SrA. Matthew Crow speaks with the pilots of a B-1B at Nellis AFB, Nev., before they take off on a Green Flag-West mission. Green Flag-West is a realistic air-land integration combat training exercise with the US Army and allies. Green Flag missions replicate irregular warfare conditions found in overseas contingency operations.

USAF photo by SrA. Mark Hybers



A1C Tracy Barnhill stands amid the wreckage of her mother's home in Mocre, Okla., in May, after it was destroyed by a massive tornado that left 24 dead. The twister hit three miles south of Tinker Air Force Base. Some 250 Active Duty and ANG airmen assisted victims with searches and security after the storm.

In May testimony before the House Armed Services Committee's strategic forces panel, Creedon said Pentagon officials continue to build the implementation plan so that the United States will meet the treaty's caps on deployed nuclear warheads (1,550), deployed launchers (700), and overall launchers (800) before the February 2018 deadline.

They want a solution that "allows the most flexibility" in the US arsenal "for the longest period of time," she said.

"In every case, we are looking at retaining a triad," noted Gen. C. Robert Kehler, commander of US Strategic Command, at the hearing.

Panel Chairman Rep. Mike Rogers (R-Ala.) reminded the witnesses that the Obama Administration still owes Congress a report on the implementation plan. Rogers also said the House "is not going to authorize" funding in Fiscal 2014 for implementation until Congress receives the report.

Seeking to Complement ASB

While the Air Force and Navy were first tasked to hammer out anti-access, area-denial solutions via the AirSea Battle office, the Army also is grappling with these issues, said Army Secretary John M. McHugh. The A2/AD concept is "a very important part of any successful defense strategy going forward," McHugh told reporters in Washington, D.C., in late April. The Army is now a "full partner" in ASB discussions and is moving forward with the Marine-Corps in opening the Office of Strategic Land Policy, he said.

The OSLP, said McHugh, will seek to refine ideas about operations, such

as forcible entry, power projection, and the involvement of ground forces in A2/AD scenarios, much like the ASB office did for air and naval forces when it first opened its doors.

"Right now we're talking about how do the ground forces... posture themselves to be a viable part of the national military strategy going forward," he said. "We envision [OLSP] as a complement to the other ongoing efforts, not a competition, in any way trying to slow down" either ASB or A2/AD discussions, he said. "But I recognize that some have tried to characterize it that way, but then I guess that's understandable."

Slowly Gaining Speed

Hypersonic technology like that successfully demonstrated in the flight of the fourth and final X-51A vehicle over the Pacific Ocean in May would bolster the effectiveness of a future strike missile design, said Charles Brink, the Air Force's X-51A program manager.

The May 1 flight of the X-51 was the longest ever air-breathing hypersonic flight, as the scramjet-powered vehicle reached Mach 5.1 while traveling more than 200 nautical miles in slightly more than six minutes. Briefing reporters on May 9, Brink said the ability to achieve such greater speed compared to a subsonic cruise missile of today would "enhance the survivability" of a strike weapon as it enters enemy territory. That speed would also allow for much greater responsiveness in reaching targets, he said.

"If you can get something that flies six times" the speed of a subsonic cruise missile, "instead of taking an hour to hit that target, it might only

take 10 minutes," explained Brink. "That kind of capability that can take out air defenses or high-value targets would be a great benefit."

Fielding such a strike missile will take years, however. "There's still a lot of work to be done," said Brink.

Guardsmen Recognized for Valor

SSgt. William Cenna, a pararescueman with the Alaska Air National Guard's 212th Rescue Squadron, received the Silver Star and two Bronze Star Medals with Valor Devices during a ceremony at JB Elmendorf-Richardson, Alaska. The May 18 ceremony recognized Cenna for his heroic actions on three separate occasions, all while deployed to Afghanistan in 2011 and 2012, according to a base news release.

At the same ceremony, four additional airmen with the squadron each received a Bronze Star Medal with Valor Device for actions in combat during the unit's deployment to Afghanistan in 2012: Capt. Chris Keen, MSgt. Chad Moore, TSgt. Chris Harding, and SSgt. Nic Watson.

"The efforts of all five Alaska Air National Guardsmen helped save American lives as they performed valiantly under fire in service to their state and nation," stated a second Elmendorf release. "They're true heroes in the purest form," said Col. Donald S. Wenke, commander of the Alaska Air Guard's 176th Wing at Elmendorf.

No-Shop Mondays

The Defense Commissary Agency announced that most military commissaries will close on Mondays when the Pentagon's furloughs of civilian defense employees begin in July as a result of budget sequestration. Commissaries that are normally closed on Mondays will close the following day as well.

The furloughs are scheduled to start on July 8 and run through Sept. 30, meaning the commissaries will be closed up to 11 Mondays through the end of the fiscal year, according to the agency's May 24 press release.

"We know that any disruption in commissary operations will impact our patrons," said Joseph H. Jeu, the agency's director. "We understand the tremendous burden this places on our employees, who, when furloughed, will lose 20 percent of their pay."

Jeu said Mondays should be the least painful days for customers, employees, and industry partners. The furloughs will impact all of the agency's more than 14,000 US civilian employees, stated the release.

The agency has 247 commissaries in 13 countries and two US territories. ■



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Adversaries are sharpening the skills needed to keep the US military away in times of war. But USAF has also been working to ensure the US doesn't get locked out of a war zone.

WHILE America was militarily preoccupied with Iraq and Afghanistan for the last 12 years, its rivals and adversaries studied American strengths, decided never to be another notch on the US belt, and are now fielding vastly improved weapons designed to keep US forces at bay.

These and nonkinetic means of preventing the US from using its full range of military power are collectively dubbed anti-access, area-denial capabilities and are driving urgent strategic discussions in the Pentagon. The advent of A2/AD directly challenges America's ability to fight in a place, time, and method of its choosing and is forcing nothing less than a broad rethink of the US way of war.

While experts agree the US ability to prevail in a modern war remains intact—for now—a rapid shift to fully integrated joint operations, the inclusion of “all of government” approaches, and the fine-

tuning of force structure and weapon inventories will be essential to preserve the nation's military options in the next 20 years.

The A2/AD problem “is not new,” said Col. Jordan Thomas, Air Force lead for AirSea Battle operations. Enemies, he noted, have always tried to erect barriers to US forces and in recent conflicts have worked to counter the United States with asymmetric strategies.

“What has changed is the character” of the A2/AD problem, Thomas said. “We have seen an increase in the capabilities of our adversaries or potential adversaries,” and these are causing the US “to operate [from] farther away and with greater risk.” Potential foes are “using longer-range systems; they are using more precise capabilities; and ... their effects are even more lethal.”

In short, the American military edge, long based on having higher quality but

smaller forces to offset an enemy's greater numbers, is eroding. Soon, enemies will field forces favored by both quantity *and* quality.

“Twenty years ago,” Thomas noted, airmen and marines at US bases on Okinawa, Japan, or US sailors in Bahrain “were not under a ballistic missile threat—or at least not a credible ballistic missile threat. Today they are.”

While China is not the sole focus of the A2/AD discussion—Russia, North Korea, and Iran are among the most frequently mentioned other potential adversaries—China's military rise has been the swiftest and most dramatic in recent years and represents the toughest challenge in the event of armed conflict.

According to the Pentagon's annual assessment of Chinese military power, China has been adding hundreds of tactical ballistic missiles to its arsenal each year. Most have been located in the coastal

FIGHTING FOR ACCESS

By John A. Tirpak, Executive Editor



Opposition forces TSgt. Christopher Clark (l) and A1C Destry Swadowski "attack" a convoy of Humvees at Osan AB, South Korea, during a drill. Prime BEEF (base engineer emergency force) teams train to support the response to chemical and biological weapons, among other nontraditional attacks likely "in the mix" of threats from North Korea.

USAF photo by SSGT Chad Thompson



Photo via chinomilitaryreview.blogspot.com



Sukhoi photo

region of the Taiwan Strait and have been oriented toward a possible armed conflict over Taiwan.

As their range expands, however—now out to 1,000 miles or more—these missiles can be based deeper within China's territory, making them harder to pre-emptively destroy.

Newer Chinese missiles also can reach Okinawa and Guam, the two key operating locations for the US in the Pacific. Salvos of such missiles would pose a stiff problem for US forces trying to maintain combat operations at those locations.

Not only is the number of missiles daunting, but China has sharpened its aim, giving those missiles increasingly accurate guidance systems, abetted by satellite-based, cyber, and other intelligence, surveillance, and reconnaissance systems.

Most Chinese innovations in land-based missiles also are being adapted for China's growing navy. A newly operational Chinese land-based ballistic missile, the DF-21D, is capable of flying more than 1,000 miles and adjusting its aim point in the terminal phase. It has been dubbed "the carrier killer."

"China is pursuing an air and space revolution," said Thomas R. McCabe, a Defense Department civilian analyst, in an April address to the Mitchell Institute for Airpower Studies.

McCabe, presenting a paper on China's aerospace goals and achievements, said the communist nation is advancing its military aerospace power on a broad front. It is taking dramatic steps forward in "combat aircraft, support aircraft, unmanned aerial systems, precision guided munitions, and anti-ship missiles, air defenses and radars, anti-satellite systems, ... an aircraft carrier," and ostensibly, a civilian manned space program, which will develop technologies applicable to military systems as well.

In fact, China is "modeling" its airpower on the US Air Force, which it sees as highly successful, McCabe said. Until it matches USAF in capability, it is focusing on those systems most able to frustrate American operating models and pose asymmetric problems the United States can't easily ignore.

Speculating on the US Navy's reaction to the DF-21, McCabe remarked, "I think they're scared to death of it."

Top left photo: Chinese J-15 fighters aboard the aircraft carrier Liaoning. Center photo: Russia's latest fighter, the T-50, during a demonstration flight. Right photo: Iranian SAMs on display in 2010. Iran is a frequently mentioned adversary of the US, and Russia is marketing air defense systems to the regional hotspot.

China also has highly credible fourth generation fighters in the form of the indigenous J-10, considered an analog of the American F-16. It fields license-built Su-27 Flankers of Russian design and has reverse engineered and improved the design to produce several new knockoff types, such as the J-11, with improved systems. A folding-wing carrier version also is flying.

Moreover, China has acquired Russian S-300 air defense systems and has copied variants of it and other surface-to-air systems and is also developing new mobile SAM systems.

One of these, the HQ-9, has an anti-radar seeker meant to locate and destroy electronic warfare aircraft. Like the American Patriot missile system, China's air defenses also have some capability against ballistic missiles. A series of very high frequency passive radars are being built nationwide in hopes of detecting stealth aircraft, McCabe said.

Copy Cats or Thieves

China has unveiled and test-flown two types of combat aircraft prototypes, which appear to be based on US stealth designs. While physics often drives engineers to similar-looking solutions in aviation, "they're stealing us blind," McCabe said of China's aerospace-related cyber espionage activities.

Evidence of the leakage can be seen in the seemingly stealthy J-20 and the J-31—the latter of which is a ringer for Lockheed Martin's F-35 strike fighter.

Russia continues to be a world leader in air defense systems and has marketed those systems to Iran and Syria, among other customers. Russia will soon field a stealth fighter of its own: the T-50, expected to be a marked improvement over Russia's successful Flanker series.

Cyber operations also are a centerpiece of adversary capabilities. Russia has used cyber attacks against Estonia and Georgia—in the latter case, to disrupt the organization of that country's defenses when Russia made its 2008 armored incursion there.

Cyber is not simply the domain of nation-states; nonstate actors are using it for espionage, for denial-of-service campaigns, for criminal purposes, and to inflict physical damage by fooling industrial control systems, for example, or air traffic control.

Several nations—most publicly, China and Russia—have, or are pursuing, anti-satellite systems, while other adversaries



have tried, with varying degrees of success, to jam American ISR or GPS satellite signals.

Collectively, these advances threaten “our expeditionary operations: how we get into a theater and how we operate once we get there,” Thomas explained.

The A2/AD problem comes on many fronts, however, and experts within and outside the Pentagon cautioned that an approach focused solely on military platform solutions will almost surely fail.

“Access” means not only an ability to penetrate an enemy’s defenses, but also the ability to win the consent of regional friends and allies to allow overflight of their territory or the use of staging areas or bases. Enemies will try to coerce these friends to deny such privileges to US forces, according to retired Lt. Gen. Robert J. Elder Jr., former head of 8th Air Force and now a professor at George Mason University in Fairfax, Va.

A big part of engaging a distant, well-fortified enemy will be affecting that enemy’s “decision calculus,” said Elder, forcing the adversary to hesitate and worry about the consequences of, for example, destroying a satellite or bombing a host-nation island and the retaliation that would come from such actions.

The future proliferation among adversaries of double-digit SAMs, stealth aircraft, and more lethal, longer-ranged ballistic missiles was a prominent theme in defense studies before the 9/11 attacks. After that, everything was focused on counterinsurgency effort, and US military thinkers put A2/AD on the back burner.

“We were not contested in airspace or information during the Afghanistan or Iraq ops,” said Elder, who is also president of the Association of Old Crows, an electronic warfare group.

That lack of threat drove some complacency and, at worst, a sense among some elements of the US military that “we’re not going to do manned aircraft anymore. Everything’s going to be uninhabited, remotely piloted,” Elder observed.

Thomas said he understands the criticism that the US took its eye off the A2/AD threat during the Iraq and Afghan wars. However, he insisted, it was always there, but the services were compelled to put counterinsurgency as a higher priority.

The Air Force, he said, had to be “all in” in terms of its commitment to the Southwest Asia campaigns. The upcoming disengagement from Afghanistan has freed up resources and given time for USAF thinkers to plan a way forward in A2/AD, he said.

Given the potential rain of tactical ballistic missiles on forward operating bases, increasing adversary capabilities in electronic warfare, space, and air-breathing ISR, and increasing numbers of fourth and even fifth generation fighters and networked modern long range air defenses, how does the Air Force, together with the other services, prevail in such conflicts?

“I hear about those nightmares every day,” Thomas said. “Unfortunately, there’s no single silver bullet.”

For starters, Thomas said, the Air Force is pursuing the Pacific Airpower Resiliency Initiative. This is a program meant to add just that—resiliency—to American operating bases in the Pacific theater. It will include hardened aircraft shelters, “dispersal, ... concealment, deception,” and runway repair capabilities.

Kathleen I. Ferguson, USAF’s acting assistant secretary for installations, told members of Congress in early April that USAF will harden “select hangars” at Pacific bases and is investing in greater firefighting and RED HORSE engineer units throughout the region to maintain and “recover” operating capability if necessary.

Air Force Secretary Michael B. Donley told the House Armed Services Committee the initiative is meant to make US bases “resilient in any number of threat scenarios.” Hardened facilities will be “mandatory” in the face of the regional ballistic missile threat, Air Force Chief of Staff Gen. Mark A. Welsh III said at the same hearing.

Thomas noted that an enemy “may think they have the map coordinates for a precise strike. However, [with] camouflage, concealment, deception, you may convince them that there’s nothing there, so they shouldn’t shoot. Or they may think something’s there and they shoot, but it goes to the wrong spot.” These techniques would be undertaken as part of an overall command, control, communications, computers, and ISR campaign, he said.

Elder noted that in Vietnam, the Air Force built revetments to protect its fighters, so that in case of a mortar or rocket attack, “if you hit one plane, you got one, not multiple planes.”

The Army already fields Patriot batteries on Okinawa and will soon start to deploy the Terminal High-Altitude Air Defense, or THAAD, system, Thomas noted.

But shooting missiles down is “difficult because the cost of the technology to shoot the missile down is greater than the cost of the missile” being shot down, Elder pointed out.

“You have to start looking at different ways to affect that,” he said, so the cost to defend is less than the cost of attack.



It's not all grim, Elder said. The Air Force has technologies and techniques that can "cause the missiles to explode prematurely" by "defeating the sensors." Directed energy has been linked with shooting missiles down, but it is better used to "defeat the sensor, the guidance system," Elder asserted.

However, "the bottom line is, we have to realize that the bases are going to be targets." The job now is to "minimize the effect. ... It's not going to come for free."

Chemical and biological weapons also are likely in the mix, but Elder said these don't spell certain doom.

Fifteen to 20 years ago, "we were really worried about the effect of chemical weapons on our air bases," Elder said. The Air Force studied the problem and determined the result would be "inconvenient, but there were a lot of things we could do" to reduce the impact on operations, especially at Osan and Kunsan air bases in Korea. Regular drills are run there, simulating chemical attacks and requiring civilians to take shelter while operators don chem-bio protective gear.

The fact that these procedures are practiced regularly—and don't make much of a dent in the pace of generating aircraft—helps deter any possible North Korean use of chemical or biological weapons. Not only does the US show it can fight through such an assault, but an adversary making such an attack would have to expect swift and powerful retaliation.

On the offensive side of the equation, however, penetrating a modern integrated air defense system is a much thornier problem than it used to be.

"Our enemy has learned to network," Thomas said, so "it's not just defeating the one system, but defeating their networks" that will be required to give the US a "decision advantage."

Step 1 is to "disrupt their ISR systems" and be able to act and react faster than the enemy, Thomas said. Various studies of A2/AD have called this opening phase the "blinding campaign," in which each side attempts to disrupt the other's awareness of what's going on.

The Air Force has thought about this and has taken a variety of steps to diversify its ISR assets, whether they're in space, air breathing, or networked to sensors in the other services. The goal, Elder said, is to build an ISR network so robust that

it no longer focuses on the platforms but on the intelligence product. The loss of any piece, therefore, will be less onerous.

The Air Force also can exploit ways to actually use the IADS against itself, manipulating it with jamming and the revealing of some targets while blanketing an area with many false ones and decoys. Elder said there will have to be attacks on some "key targets ... [to] drive them to nonoptimum operations," however.

Because enemies have become so dependent on electronics to network their systems—like the US—Elder said he expects there will be use of electromagnetic pulse, or EMP, weapons on both sides. The Air Force has tested a Boeing-developed cruise missile called CHAMP—Counterelectronics High-powered Microwave Advanced Missile Project—which demonstrated that it could overfly a target building and fry the computer systems in that building.

No Cookbook Approach

In April, David E. Walker, deputy assistant secretary of the Air Force for science, technology, and engineering, told the House Armed Services subcommittee on emerging threats and capabilities the service also is working on other high-powered microwave weapons.

"I'm a B-1 guy by trade," Thomas said. "In the '90s, there was a cookbook approach" to taking down an enemy IADS. But the rapid improvement in adversary SAMs and radars means "there's not necessarily a cookbook approach anymore. We have to leverage all the service capabilities in order to defeat an IADS or to gain an advantage in one domain by leveraging the effects that we can do in another."

It's called networked, integrated, attack-in-depth, he said. "Integration means that forces come together to act as one ... across all of the domains." That's why the Air Force and Navy partnered several years ago to explore AirSea Battle and why the Army is now also looking at how it can enable access as part of the joint effort.

There is already a governing document for these ideas: the Joint Operational Access Concept, or JOAC, the first version of which came out in January 2012. The document defined terms the joint community will use to discuss A2/AD and laid out broad contributions from each service.

In defeating an IADS today and the near future, Thomas said, the Air Force must recognize that cueing can be provided by radars and other sensors all the way down to "observers in the water ... that would provide information via cell phone."

Above: North Korean dictator Kim Jong Un (center) strikes a pose beside a Russian-built MiG-29 during a visit to an air base. **Above right:** An artist's concept of the Boeing cruise missile CHAMP, designed to overfly a target and fry the computer systems within it. USAF tested the counterelectronics missile successfully.



The new reality requires the Air Force to return to the days of the “package,” which would include not only suppression of enemy air defenses aircraft—enabled “by national technical means”—but also fighter sweepers, Rivet Joints, and other aircraft.

“It’s going to take a lot more assets,” he said.

The Air Force, however, has sharply reduced its combat inventory in recent years, by some 500 aircraft. This simply means the services must focus that much more on integration, Thomas said.

The idea behind AirSea Battle is “greater cooperation ... with the systems that we have that give us that asymmetric advantage,” Thomas said.

Army Secretary John M. McHugh told defense reporters in Washington in early May that his service is also struggling with A2/AD. He reported being a “full partner” in AirSea Battle discussions and noted that the Army and Marine Corps will open an Office of Strategic Land Policy as a result. That office will seek to refine ideas about forcible entry, power projection, and the role of ground forces in A2/AD.

The OSLP, he insisted, will be “a complement to the other ongoing efforts, not a competition to, not in any way trying to slow down” AirSea Battle. McHugh acknowledged the appearance that the Army is playing a me-too card or trying to blunt the rise of ASB out of fear that ground forces would be reduced in stature in the A2/AD fight.

“I recognize that some have tried to characterize it in that way, but then I guess that’s understandable,” he said.

No amount of cooperation will remedy a shortage of hardware, however, and that’s a fact that gives Air Force strategists some heartburn, Thomas said.

USAF has said for years that only the B-2 is capable of penetrating increasingly lethal IADS and that the B-1 and B-52 are relegated to less dangerous or standoff operations outside the range of enemy weapons. In a major campaign, however, the United States would require large numbers of standoff weapons.

“That’s ... really a big concern that all of us have,” Thomas said. “The determination whether we have enough depends on the circumstances. ... It really depends on what we’re trying to achieve.”

Depending on the scenario, an air campaign “could last a day or it could last four years,” Thomas observed. “I don’t feel comfortable saying, yeah, we’ve got enough or not.”

The principal USAF weapon for stealthy, standoff attack that isn’t released from a stealth aircraft is Lockheed Martin’s

Joint Air-to-Surface Standoff Missile, or JASSM. It and other direct attack or penetrating weapons are “short of inventory objectives,” senior USAF leaders acknowledged in prepared testimony for the House Armed Services tactical air and land forces subcommittee in April.

Lt. Gen. Burton M. Field and Lt. Gen. Charles R. Davis, respectively the deputy chief of staff for operations, plans, and requirements and top military deputy to the assistant secretary of the Air Force for acquisition, said weapons such as JASSM and the Small Diameter Bomb “are force multipliers” in an A2/AD environment. “Their shortage could increase friendly force attrition and drive a much higher level of effort enabling the attack of other critical targets.” Specifically, “the shortage of penetrator weapons will result in some inability to target adversary critical capabilities and increase risk,” according to the two generals’ prepared testimony.

Field and Davis reported that the JASSM program has delivered more than 1,000 missiles. The second lot of JASSM-Extended Range weapons is under contract, and USAF intends to buy a mix of 182 units in Fiscal 2014 with plans to ramp up to 360 a year later. The JASSM has a range of more than 200 miles; JASSM-ER can strike from greater than 500 miles.

While the US needs its forward bases in the Pacific for deterrence and “engagement” with allies there, “I just don’t think presence matters” in an A2/AD fight, said retired Lt. Gen. Stephen G. Wood, former head of US air units in South Korea and deputy commander of United Nations forces there.

“I think that we can adequately field a combat force from greater distances,” he said. The term “short range fighter” is meaningless in the context of air refueling, he said, and the advent of the A2/AD era doesn’t bring about the end of the fighter as a meaningful element in war plans.

During the early stages of Operation Enduring Freedom in Afghanistan, he noted, fighters from carriers and land bases in the Middle East flew up to 11-hour missions.

With air refueling—and Wood said there are “technologies that have been developed that will allow refueling tankers to penetrate farther than we would think”—there’s “no such thing as ‘short range’ anymore.”

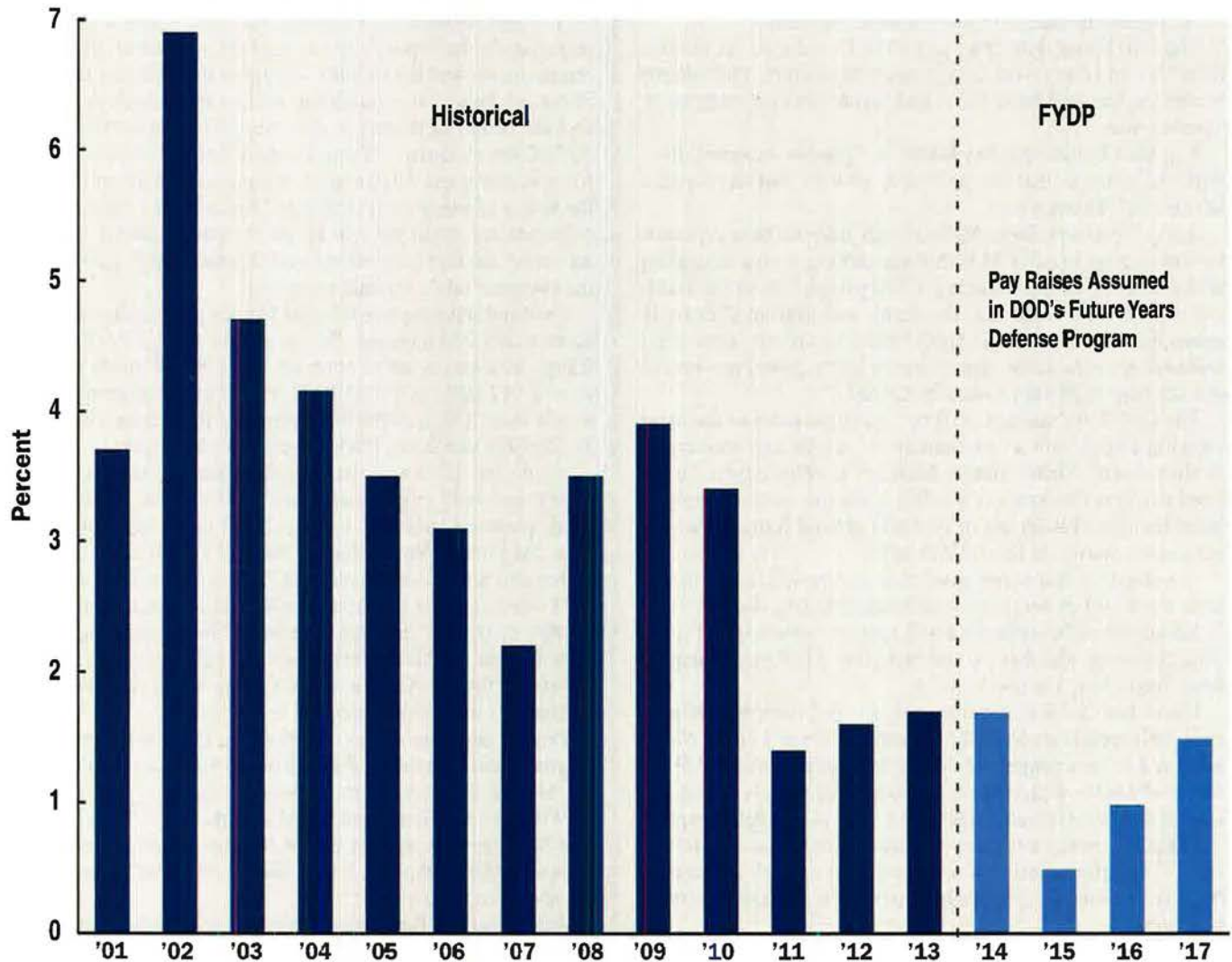
Asked flatly if the United States is adequately prepared for the A2/AD fight, Thomas said, “If you asked me this question in 2010, I would have said we are ‘not adequately prepared.’ However, there has been more emphasis placed on overcoming the A2/AD environment since then and we are making progress. The pace of this progress is really a subjective matter.” ■

Shrinking Pay Raises

After the Sept. 11, 2001, attacks and the start of wars in Afghanistan and Iraq, large annual military pay boosts became the norm. The result was predictable; today, says the Congressional Budget Office, the average enlisted member earns more than 90 percent of civilians with similar education and experience. Those days may be over, though. As seen in this chart, pay increases have been relatively small—between one and two percent—for the

past three years (2011-2013). Moreover, the Defense Department's Future Years Defense Program projects raises for 2015-2017 that will be even smaller. DOD's latest budget calls for spending \$169 billion for military compensation in 2013, about one-third of the entire base budget. As CBO noted, "Given the total cost of military compensation, small percentage reductions could result in substantial savings."

Military Basic Pay, Annual Percentage Increases



Source: "Approaches for Scaling Back the Defense Department's Budget Plans," Congressional Budget Office, Washington, D.C., March 2013.

An MQ-9 Reaper aircraft is shown in flight against a backdrop of a blue sky with scattered white clouds and a hazy, mountainous landscape below. The aircraft is a high-wing, V-shaped aircraft with a large fuselage and a T-tail. It is flying from left to right.

**Extended Range
MQ-9 Reaper**

EXTREME PERSISTENCE

- 42-hour ISR-only endurance
- 2,900 nmi mission radius
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Internal and external reviews will reshape the Air Force's Active Duty, Guard, and Reserve.

REBOOTING the Total Force

By Amy McCullough, News Editor

The National Defense Authorization Act for Fiscal Year 2013, signed into law by President Barack Obama on Jan. 2, created a National Commission on the Structure of the Air Force, to be composed of eight members. The independent commission is charged to determine the appropriate USAF force structure in a way that avoids the political animosity, sense of surprise, and distrust of the system that accompanied the proposed reductions to Air National

Guard forces included in the Fiscal 2013 President's budget request.

The goal this time around is to find ways to reduce costs while keeping the current and anticipated needs of combatant commanders—and the unique capabilities of the Active and reserve components—in mind. The commission held its first meeting on April 30 and is to report back to Congress by Feb. 1, 2014.

Of the eight "Air Force Structure" commissioners, four were appointed by



USAF photo by SSgt. Eric Harris



An Alaska Air National Guard aircrew drops equipment from a C-17 during an Arctic search and rescue exercise.

Army National Guard photo by Sgt. Edward Eagerton



Air Force Reserve airmen remove the filler hose from an AFRC C-130 at Dyess AFB, Tex., after loading the airlifter with fire retardant.

the President while the other four were selected by leaders of the House and Senate Armed Services Committees. Only four have direct ties to the Air Force.

The eight members include: retired Lt. Gen. Harry M. Wyatt III, former Air National Guard director; F. Whitten Peters, former Air Force Secretary; Erin C. Conaton, former Air Force undersecretary; retired Gen. Raymond E. Johns Jr., former commander of Air Mobility Command; R. L. Brownlee, former Army acting secretary; Janine Davidson, former deputy assistant secretary of defense for plans; Margaret C. Harrell, director of RAND Corp.'s Army Health Program and a senior social scientist; and retired Marine Corps Lt. Gen. Dennis M. McCarthy, former assistant secretary of defense for reserve affairs.

"Our proposed force structure is relatively stable for now," said then-Air Force Secretary Michael B. Donley during a May 8 Senate defense appropriations subcommittee hearing. "But beyond FY '14, it is dependent on decisions yet to be made, and especially on achieving a balanced approach to deficit reduction to avoid further sequestration."

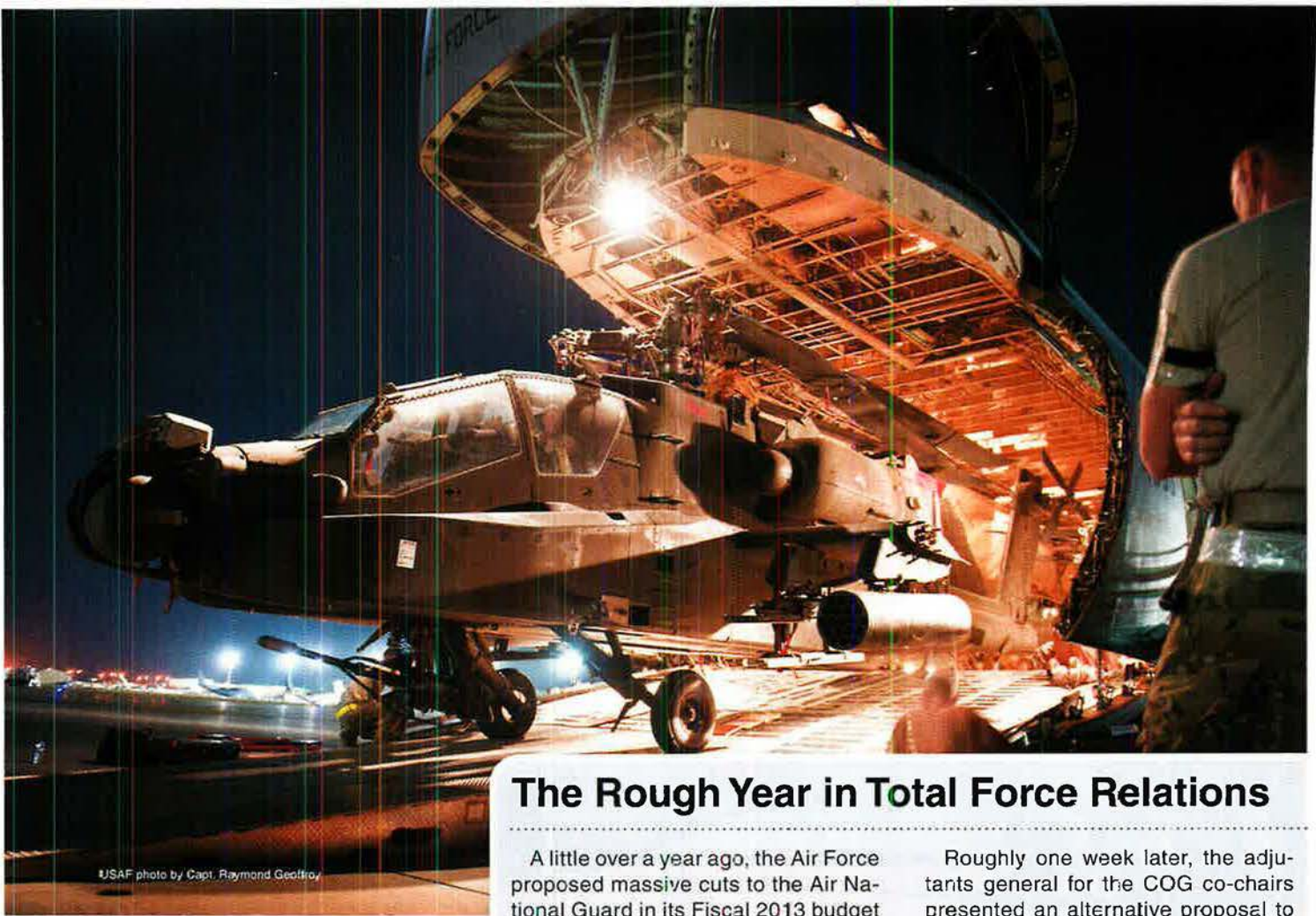
Determining the Mix

Even before law mandated the commission, Air Force leadership had decided to establish a task force with a similar objective: the Total Force Task Force.

"I don't think we knew the level of integration" that had already occurred between the three components, said Lt. Gen. Michael R. Moeller, deputy chief of staff for strategic plans and programs

on the Air Staff, referring to the recent coordination between Active Duty, Air National Guard, and Air Force Reserve planners. But because of "the number of changes that are happening both in the strategic and fiscal environment and then combined with what was a bruising, bruising experience in the '12 and '13" budget requests, USAF leaders realized there was still more work to be done before they could determine the most effective Total Force capabilities mix, said Moeller.

As a result, Donley and Chief of Staff Gen. Mark A. Welsh III signed a memorandum on Jan. 28 creating the Total Force Task Force, or TF2. The idea is to step back from the ongoing Total Force debate and take a fresh look at how to most effectively integrate all three components in a way that will magnify the strengths of each.



USAF photo by Capt. Raymond Geoffroy

Airmen and soldiers load an Army helicopter on an Air Force Reserve C-5 at Bagram Airfield, Afghanistan.

The task force's approach will be a sharp contrast to the controversial 2013 budget process because it's designed to be "open and transparent." The task force also will provide a point of contact for the state adjutants general (TAGs) and external stakeholders and give the Air Force an avenue to provide updates throughout the process, said Moeller in a late March interview with *Air Force Magazine*. Moeller said his job is to "clear any bureaucratic obstacles" for the three two-star general officers leading TF2.

The three TF2 leaders are: Maj. Gen. Mark E. Bartman, assistant adjutant general-air, Ohio National Guard; Maj. Gen. Brian P. Meenan, mobilization assistant to the commander of Air Mobility Command at Scott AFB, Ill.; and Maj. Gen. John Posner, director of global power programs on the Air Staff. Each is on six-month orders to the task force, and they have between them a core team of 25 to 30 people working full-time on Total Force issues. They also will tap a much larger "matrix organization" that expands and contracts depending on the workload.

The Rough Year in Total Force Relations

A little over a year ago, the Air Force proposed massive cuts to the Air National Guard in its Fiscal 2013 budget request. It asked Congress for permission to retire 286 aircraft, more than half from the Guard. It also outlined plans to cut 9,900 personnel across the Total Force, including 5,100 Guardsmen, 3,900 Active Duty members, and 900 Air Force Reservists.

At the time, USAF leaders said the force structure changes were necessary to preserve its fighting effectiveness in the face of steep spending reductions. But Congress, the nation's governors, and the reserve components were caught by surprise, creating a public-relations nightmare that service leaders are determined not to repeat in their future long-term planning for the Total Force.

As soon as the Fiscal 2013 request became public, many state leaders, adjutants general, and members of Congress blasted the proposed cuts, claiming the Guard was bearing a disproportionate amount of the pain. In late February 2012, members of the Council of Governors—a bipartisan group of 10 governors appointed by the White House—met with then-Defense Secretary Leon E. Panetta to discuss a letter, signed by 49 governors, voicing concern over the Air Force's proposal.

Roughly one week later, the adjutants general for the COG co-chairs presented an alternative proposal to the Air Force.

"The proposal is not the ideal solution because it was crafted within constraints identified by the Air Force to address governors' concerns regarding ANG manpower and aircraft," stated an April 2012 letter from the National Governors Association to the House and Senate Armed Services Committees' staffs. Nevertheless, the council said its plan, which would have cut thousands of additional Active Duty billets while retaining thousands of Air Guardsmen, would save about \$700 million over the Future Years Defense Program.

The Air Force, in its evaluation of the initial counterproposal, said it would actually increase USAF's "budgetary shortfall over the FYDP by \$528 million" while "imposing unacceptable stress on both the Active and reserve components."

The battle continued to play out in the halls of Congress and across the country, and by late March 2012, Deputy Defense Secretary Ashton B. Carter got involved, launching an independent review of the council's proposal. Panetta presented the Defense Department's counter to Congress in late April, offering to retain 24 C-130 transports in its

“The determination of our leadership to break down barriers preventing us from planning and advancing as a Total Force will drive this effort to success,” said Maj. Gen. Joseph G. Balskus, Moeller’s military assistant and an Air Guard officer, who works closely with the task force.

“The team we have assembled from the three components and the extended team members across Headquarters Air Force, [and] the Air Force secretariat, Air National Guard, and Air Force Reserve is incredibly impressive.”

Purely Integration?

Moeller said TF2 is a “fundamentally different” approach from the way the Air Staff has operated in the past.

“We stand up these steering groups and planning teams and these different entities and they look at specific problems and then they go away,” said Moeller. “I’ve not seen such a level of effort where the Chief and the Secretary have essentially hired three two-stars



Marine Corps photo by Cpl. Enrique Saenz

Now-retired Marine Corps Reserve Lt. Gen. Dennis McCarthy—seen here in 2005 as Marine Forces Reserve commander speaking to troops in Norway—is chairman of the Air Force Structure panel.

for a six-month period to come in and lead this.”

The task force will become a permanent part of the Air Staff even after it makes its recommendations. The goal is to serve

as a one-stop point of contact on all Total Force issues.

“I’m not sure how it’s going to look. One of the recommendations may be to stand up a task force-like entity in the Air

Fiscal 2013 budget request to ensure that the Air National Guard could meet its mandate to support the states.

The \$400 million package outlined in Panetta’s April 23 letter to Congress did not specifically address which units might be affected, but DOD officials said the compromise would save about 2,200 Guard positions.

“I strongly urge you to consider this proposal, which we believe sustains our national defense requirements and is responsive to concerns raised by the Council of Governors,” wrote Panetta in the April 23 letter to Rep. C. W. Young (R-Fla.), chairman of the defense appropriations subcommittee.

Although many in Congress seemed to think DOD’s counter was a step in the right direction, they also felt it didn’t go far enough.

Sen. Carl Levin (D-Mich.), chairman of the Senate Armed Services Committee, noted in a statement to the press that Panetta’s “recommendation would reverse more than 40 percent of the personnel reductions to the Air National Guard initially proposed by the Air Force.” Levin also said the 24 additional C-130s represented “progress toward restoring some proportionality to the Air Force’s proposed budget.”

However, Sen. Patrick Leahy (D-Vt.), co-chair of the Senate National Guard

Caucus, said in a press release the Air Force still “failed to meet the governors in the middle” of the personnel cuts.

“Recognizing the complexity and importance of the synergy between the Active and reserve components ... senior leaders of the Air Force—Active, Guard, and Reserve—reviewed the FY13 [President’s budget] force structure decisions in light of these concerns and developed a Total Force Proposal” that was presented to Congress in November 2012, according to the Air Force’s Fiscal 2013 National Defense Authorization Act implementation plan.

The new proposal retained 90 percent of the savings included in the original Fiscal 2013 request; however, it also restored about 38 percent of the reserve components’ aircraft and 75 percent of the Air National Guard end strength reductions.

The Total Force Proposal also reversed the slated elimination of one ANG and one Reserve C-130H squadron, one ANG KC-135 squadron, and two ANG A-10 squadrons. And it reversed the planned shift of all MC-12W Liberty intelligence, surveillance, and reconnaissance aircraft to the Guard.

In addition, the proposal restored some of the reserve components’ missions and added new missions for some Guard and Reserve units.

With the new proposal, the Air Force also made some changes to the Fiscal 2012 President’s budget force structure for the Active component. These included divesting two C-130H squadrons, four KC-135 aircraft, and one fighter squadron and the transfer of one fighter squadron to the Air Force Reserve.

Most of the changes are set to take effect in Fiscal 2013 or 2014. The remainder will go into effect no later than Fiscal 2017, according to the NDAA implementation plan.

“Our Air Force continues efforts to maximize the strength of our Total Force, and we are pleased with the progress that is being made on this front,” said Air Force Secretary Michael B. Donley in a March 28 release. “This implementation plan illustrates the Air Force’s continued commitment to transparency as it completes the force structure requirements directed and authorized by the NDAA.”

Ultimately, the National Defense Authorization Act, signed into law by President Obama on Jan. 2, directed USAF to shrink its force structure by 122 aircraft and about 6,100 Active Duty military billets, 65 aircraft and roughly 1,400 military billets from the Air National Guard, and 57 aircraft from the Air Force Reserve.



USAF photo by SMSgt. David H. Lipp

Above: North Dakota Air National Guardsmen (l-r) SrA. Michael Carlson, SrA. Cody Jenson, and SrA. Kathleen Stenger exit the missile field after an exercise at Minot AFB, N.D. **Right:** MSgt. Aaron Smith Jr. (l) and MSgt. Megan Reed, Reservists with the 55th Combat Communications Squadron, fine-tune a radio frequency module and stabilize a satellite communications antenna during African Lion, a bilateral US-Moroccan exercise.

USAF photo by SrA. Will Toussaint

Staff and use it just purely as an integration cell,” said Moeller. “You have the Chief of the Air Force Reserve, you have the Air National Guard, we have the different Air Staff directors, and the secretariat, but I think we would all agree that there has to be some plug-and-play for the external entities like the TAGs and [Council of Governors]. Right now we really don’t have a place where they can plug in, with the exception of the task force.”

Although TF2 has many chores, they all fall under three overarching objectives: conduct a comprehensive review of the existing Total Force structure; develop strategic assumptions and questions; and present recommendations to Donley and Welsh for review, said Moeller.

“We’re doing things simultaneously, but the majority of the comprehensive review must be done ... because you don’t know where you are going if you

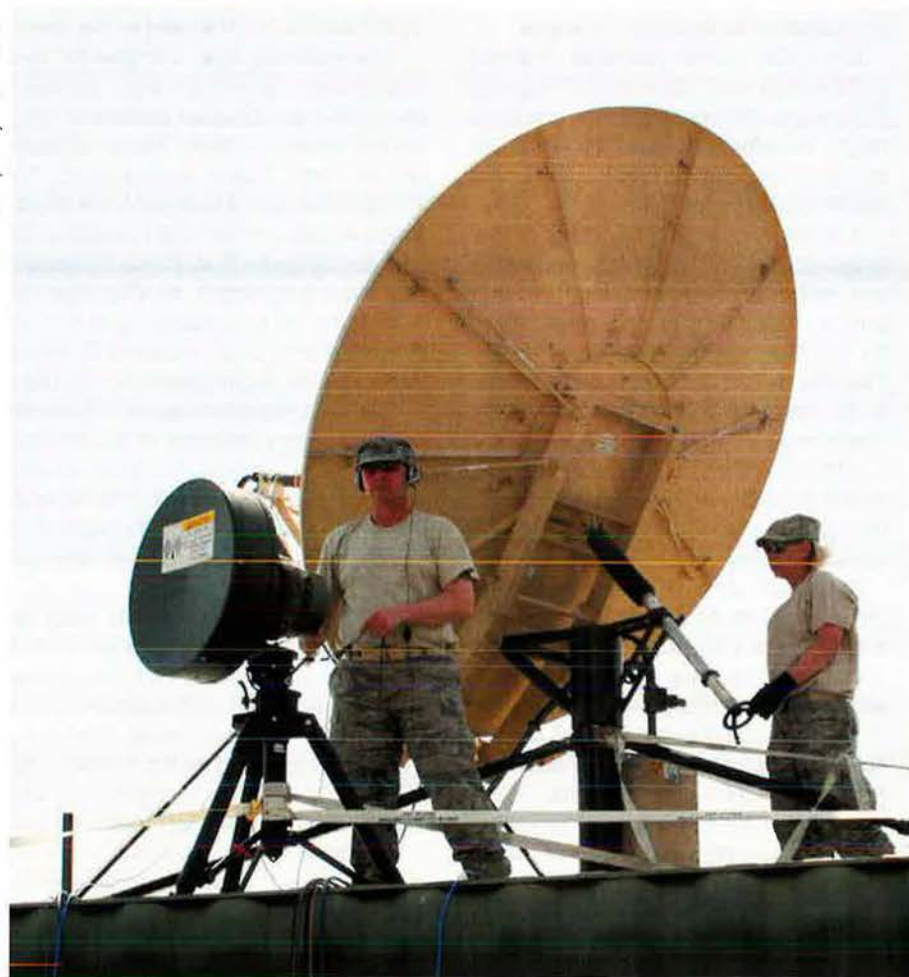
don’t know where you are starting from,” he said.

A successful comprehensive review means dusting off plans and studies completed as far back as 2002. It also means reaching out to experts—including former heads of the National Guard Bureau and Air Force Reserve—and consulting with think tanks, TAGs, the Council of Governors, and other independent organizations. The review also will consider the Defense Strategic Guidance and the National Security Strategy as well as the Air Force strategy development effort and the Defense Strategic Review.

“Even as the task force got started, they realized there is just a lot out there,” said Moeller. “The magnitude of their work is bigger than anyone thought.”

Originally, the task force intended to “report out” in October, but that’s “slipped slightly” due to the extensive analysis required in the review, Moeller told the House Armed Services subcommittee on readiness on April 24.

“I think November, early December, the task force will report out on its findings,” he added.





Maj. Gen. Steven Kwast (shown here as a brigadier general at Bagram Airfield, Afghanistan) is the Air Force representative for the Quadrennial Defense Review. The recommendations of the task force and the national commission will be folded into the QDR, Kwast said.

One challenge will be coming up with a unified set of definitions and assumptions. Although the coordination between the three components has improved vastly over the years, each brings a unique perspective to the table.

“The language is just different. The tribes are different and we need to come to agreement on these pieces,” Moeller said. He acknowledged that it will be tough to reach consensus on some of those issues, but said the entire process will be more effective if a compromise can be reached at the beginning.

Air National Guard Director Lt. Gen. Stanley E. Clarke III told lawmakers during the April 24 hearing that it’s important to maintain all parts of the Total Force: All components must work under the same standards, meet the same inspections, and be operationally engaged. In addition, all three components must be adequately resourced, he added.

“I think that the Total Force is better today because of that, and we stand ready to work anywhere, anytime, alongside our regular Air Force or reserve airmen at any time,” said Clarke.

Maj. Gen. Richard S. Haddad, deputy chief of the Air Force Reserve, told lawmakers the Reserve has “always prided itself on being that combat-ready, efficient and effective, and cost-effective force.” And considering the reserve components have been operationalized since Operation Desert Shield, he said, “there’s no question that there’s a need for us.”

Although Haddad said he was hesitant to “get ahead” of the task force and its findings, he said his “hat goes off” to Air

Force leadership for being “extremely transparent with this process.”

“I think it’s important that we really look at the roles and missions of our Guard, Reserve, and Active Duty, and then come back and make those assessments as to where we’ve put weapons systems and force structure,” said Haddad. “And I truly believe that it’s better to put it in the Guard and Reserve, as opposed to putting it in Congressman [Ron] Barber’s [D-Ariz.] Boneyard there in Tucson, because I think it allows our nation to have that capability and capacity at a lower cost.” Haddad was referring to the Air Force’s request to retire 286 aircraft—most from the Air National Guard—in Fiscal 2013 as part of its cost-saving measures.

Everything on the Table

Moeller said the fiscal environment remains the biggest assumption the task force must make. Other assumptions, he said, will include a combination of “constraints, restraints, and yes-no-type questions.”

“We need to make sure that any courses of action that this team comes up with is in the realm of the real world,” he noted.

That’s easier said than done, since officials have yet to fully grasp the full ramifications of sequestration—the 10 percent across-the-board spending cuts mandated by Congress.

“It comes down to covering the gaps with those assumptions,” said Moeller. “If the assumption has to change it could change the Total Force planning effort, but the only wrong answer is not getting started.”

Moeller told lawmakers the task force is looking at a broad range of policies and personnel requirements that will ensure the Air Force embraces the “unique advantages that come from the reserve component—both the Air National Guard and the Air Force Reserve.” The task force also is looking to make certain that the “unique capabilities” of the reserve components “mesh” with the unique capabilities of the Active Duty to “ensure that we can cover the full spectrum of our responsibilities for the future.”

The task force’s conclusions will help shape the Fiscal 2015 planning and programming process and beyond. That means Fiscal 2016, “realistically,” would be the absolute earliest any of its recommendations could be implemented, said Moeller.

However, as of early April it still wasn’t clear how the national commission and the task force would compare and contrast or exactly how the two sets of recommendations would be married together. Maj. Gen. Steven L. Kwast, the Air Force’s representative for the Quadrennial Defense Review, said it’s not quite clear what role the force structure issue will play in the QDR, but both the task force’s recommendations and those of the national commission “will all fold in to the QDR,” allowing the Air Force to “tackle this holistically.”

“We’re collaborating with the national committee and the task force on that issue, but everything is on the table,” said Kwast during a Mitchell Institute for Airpower Studies event in Arlington, Va., in late March. “That’s good, because the pathway to success is open collaboration. We need to bring in the governors and TAGs as part of it so we can design something that allows each of those parts to serve its purpose as well as each other.”

Kwast said one of the problems with past force structure decisions is that “we’ve been trying to use Title 32 people” in Title 10 roles. “That’s not how they are built, but they need to complement each other. We need to design the bones in a way that they complement each other.”

Moeller agreed, saying the Air Force has never really discussed Title 32 responsibilities, such as specific requests from governors for capabilities needed for disaster response, in the context of the Total Force. “Opening that aperture” for both the Active Duty and reserve components is another way the task force is unique, he said.

“The Chief and the Secretary want this to be really and truly an open effort,” said Moeller. “That, fundamentally for me, is what is different from what we have done in the past.”

Rethinking

The last time US ground forces were killed by enemy airplanes was in April 1953, when North Korean biplanes attacked an island off the Korean peninsula. Two US Army soldiers, manning an anti-aircraft battery, were killed.

Since then, the Air Force has made it Job 1 to control the air in any armed conflict. It has succeeded so well that success has come to be taken for granted and is a foundational concept in the doctrine of every branch of the armed forces: The Air Force will achieve air superiority. It has been obtained through a combination of technology, training and tactics, and often, overwhelming numbers. Having the very best fighters has been a cornerstone of this thinking.

But some Air Force leaders are starting to question whether there are other ways to achieve air dominance. For two decades, USAF has not been challenged for control of the air in a shooting war. The mission, officials argue, is too important to become

bogged down in debates about airframes and force structure. New approaches and new thinking may be required.

The Air Force's five-year budget plan emphasizes modernization of its fighter force and standoff weapons. But a new Quadrennial Defense Review is underway, and given unprecedented constraints on defense spending in the modern era, Pentagon leaders promise every mission will get a serious relook, and air superiority will be no exception.

The discussion has to be about more than fifth generation fighters and capability gaps, says Maj. Gen. Steven L. Kwast, who is heading the Air Force element of the QDR.

"Creativity and innovation is not an accident and it's not genius people in a closet somewhere that are going to come up with it," Kwast told defense journalists in March. The former head of requirements for Air Combat Command said USAF has gathered leaders from a variety of disciplines to look at the "spectrum of ideas"

An F-22 Raptor (1) and an F-15 Eagle pull into vertical climbs over the Nevada Test and Training Range near Nellis AFB, Nev.

USAF photo by MSgt. Kevin J. Gruenwald

Low on cash, USAF rethinks its most basic mission.

Air Dominance

By Marc V. Schanz, Senior Editor

for new solutions to the air dominance problem.

“When I look across all the ‘black’ programs and all the ‘white’ programs”—meaning heavily classified and unclassified projects—“I see ideas that have germinated and increased in technology readiness levels over the last 10 years, and nobody’s really looked at them together again on some of these really wicked problems we have,” he said.

Kwast said the Air Force is taking the rethink seriously and wants to push unconventional ideas about how to gain freedom of maneuver and freedom from attack from the air in any given scenario. In January, ACC convened an air superiority “Innovation Summit” of scientists from many disciplines—ranging from marine biology to anthropology—at JB Langley-Eustis, Va., he said.

Involving disciplines not commonly associated with air combat was intended to produce novel ideas and illustrate how air superiority can be differently interpreted by different audiences. In this case, the audience was a panel of Air Force subject matter experts, directors, and weapon systems chiefs. They then had to select some of the best ideas to brief to ACC’s leadership.

The guidelines to presenters, Kwast said, were to “figure out how to control this continuum of air and space somewhere in the globe, in a temporal dimension that is fast and ... violent.” Some of the ideas presented were “astounding,” he said.

The Air Force Research Laboratory presented its latest research on directed energy—high-power chemical lasers and electric lasers, as well as high-power electromagnetic systems—and their possible application to air superiority. A biology professor presented territorial defense strategies employed in the animal kingdom, ranging from swarm attacks to defeat larger predators to the cost-benefit analysis of close combat in certain species.

“You don’t have to build a bigger shark necessarily to control the environment,”

USAF photo by A1C Joseph A. Pagan Jr.



Gen. Michael Hostage, head of Air Combat Command, exits a surface-to-air missile system at Fort Polk, La. Plans now call for more power projection and countering anti-access, area-denial threats, leaders say.

Kwast noted, “especially when you’ve got people out there with spear guns; there are other ways of controlling that environment.”

Unfriendly Overhead

Kwast said the summit produced some “aha moments” which challenged some long-held assumptions. Sometimes the surprises were revelations about just how far some technologies have advanced—in engines or space suits—bringing them into the realm of a “game changer.” What all the different disciplines and experts brought really challenged ACC officials to think about the future of air superiority, he added.

There won’t be any sudden, aggressive shifts in doctrine, Kwast said, “because you don’t want to grab onto that wacky idea and let go of theology that’s worked.” Nevertheless, “we sure as hell can be a little bit better than we are at being creative and innovative.”

The ACC leadership considers its summit—with its theme “Air Superiority: 2030 and Beyond”—a great success, and a second phase of the summit is slated for this summer.

Uncertainty about the battlespace of the future and the prospect of austere budgets are also adding urgency to the new thinking. USAF leaders don’t want to miss out on creative alternatives due to complacency or inertia.

“Fundamentally, air dominance is the ability to operate unchallenged or at least unprohibited” from the air, ACC chief Gen. G. Michael Hostage III said in April.

“There has been an assumption over time [that] the noise overhead will always be friendly,” he added, noting that over the last 20 years at least, adversary air capabilities were promptly dealt with. But USAF received a more complicated set of missions in the January 2012 Defense Strategic Guidance.



At left, an artist's concept of a future USAF fighter. Going forward, air dominance may require more innovative approaches than designing a new air superiority aircraft, USAF officials say.

Illustration by Erik Simonson

Hostage, speaking to the Atlantic Council in Washington, D.C., noted the strategic calculus has shifted as the US pulls back from its manpower-heavy counterinsurgency commitments. Planning constructs now demand more emphasis on power projection and operating in scenarios where anti-access, area-denial (A2/AD) capabilities have steadily built up, from the Pacific to the Persian Gulf. Counterair technology—in the form of advanced and increasingly portable air defense weapons and the proliferation of “fourth generation” fighters around the globe—has greatly shrunk the capability gap between the US and its potential adversaries.

“In a contested, denied environment, [air dominance] will be more temporal; it won’t be pervasive,” Hostage asserted. There will be no resemblance to the Iraq or Afghanistan battlespace, where an air commander could operate freely, having to worry only about deconflicting the traffic, he said.

Airpower analyst John Stillion, a senior fellow at the Center for Strategic and Budgetary Assessments, said the last 10 to 20 years can be viewed as an anomaly in the history of combat, and this should concern USAF leadership.

The increasing ranges of World War I machines gave rise to long-range escort fighters in World War II, Stillion noted. From the postwar era to today, air superiority has been defined by missiles and advanced radar.

Now, however, “what we have is an increased reliance on sensors and weapons, and that I think is going to drive us

into an arena where we have this growing measure-countermeasure competition,” he said. Stealth, infrared sensors, networks, and electronic countermeasures will make the air-to-air fight increasingly complex and difficult with a near-peer competitor, he noted.

Such an environment is one which USAF leaders haven’t had to fight in for some time, Stillion noted, echoing Hostage’s observation that any air dominance-air superiority scenario would not be static.

A Sortie Factory

Air superiority “will not be something that happens in a day or a week ... if you are up against someone with a capable air force,” Stillion said, and this raises the issue of attrition.

“We haven’t thought about that in a while,” he noted.

Stillion pointed out that nations such as China and Iran have invested heavily in missile forces which could target bases and carriers. That in turn has prompted a conversation inside the Pentagon about base resiliency.

“Think of the air base as a sortie factory. ... If you can disrupt that process, you will have a significant impact on the combat power that sortie factory can generate,” Stillion said.

These scenarios, coupled with readiness-damaging budget cuts, give air planners pause, because air dominance and air superiority are non-negotiable aspects of joint doctrine. In any environment, they must be gained quickly and decisively to make other operations possible. Air

superiority forces, unlike ground or naval force packages, can’t spool up over the course of weeks or months; they must be ready to fight in hours.

Air dominance and air superiority, though often used interchangeably, mean different things to military planners.

Air superiority, per the Joint Chiefs of Staff Joint Publication 3-01, is the “degree of dominance in the air battle” which permits conduct of operations at “a given time and place without prohibitive interference” from air and missile threats.

Air dominance—a far more difficult task—is achieved when opposing forces are incapable of effective interference with US operations within a given area using air and missile threats.

The distinction isn’t lost on USAF’s top airman. In one of his first addresses as Chief of Staff, Gen. Mark A. Welsh III told the Air Force Association’s Air & Space Conference last September, “If we are not able to gain and maintain air superiority ... in a future conflict—if we couldn’t guarantee that we could—then everything about the way the United States Army and the United States Marine Corps fight on the ground would have to change.” The mission of air dominance is a “foundational element of the use of airpower,” Welsh said, and it is incumbent on the Air Force to “make that very clear to everyone.”

Still, air superiority programs have been on the losing side of many recent Pentagon budget battles. As a mission, it was eclipsed by the needs of two grinding counterinsurgencies where air dominance was never in question. The most visible casualty came when then-Defense Secretary Robert M. Gates’ capped the F-22 program in 2009.

Welsh and others are quick to insist that it’s not a debate centered on force structure, but in making a priority of air superiority and air dominance because they are key to any 21st century military strategy.

“I’m not talking about asking for more F-22s, folks,” Welsh said in September.

"I'm just saying this mission is critical to us. It's foundational."

Though thinking about transformation, the Air Force wants to keep a steady grip on the capabilities it has today. Despite spending cuts, USAF is investing in air superiority by modernizing at least a portion of its legacy F-16C/D and F-15C/D fleets with active electronically scanned array (AESA) radars and new processing technology, as well as countermeasures and additional situational awareness tools, according to USAF's military deputy for acquisition, Lt. Gen. Charles R. Davis. The Air Force is also boosting procurement and development of its air superiority weapons, the AIM-9X Sidewinder and AIM-120D Advanced Medium-Range Air-to-Air Missile (AMRAAM), in the Fiscal 2014 budget request.

Production of the latest version of AMRAAM—USAF's premier medium-range air-to-air weapon—was slowed while the test program verified fixes to software issues and production delays. The Air Force wants to purchase 199 AIM-120Ds in Fiscal 2014, up from 113 sought in 2013, and plans to increase production of both the AMRAAM and Sidewinder across the Future Years Defense Program.

These investments don't advance USAF's state of the art, though.

"These new systems and enhancements really only bring capabilities and technologies [that have been in existence for] years" and which have been fielded on other platforms, Davis told the Senate Armed Services airland subcommittee in April. The Air Force is now in a mode of reacting to adversary capabilities that are rapidly improving, and Davis noted that several countries have tested prototype fifth generation aircraft in just the last three years.

"We are doing very little to bring new systems on right now, to be able to stay in front of that threat and make the threat react to us," Davis warned.

The shrinking capability gap, as measured in air superiority aircraft, is

one of the issues behind ACC's push for innovative approaches. Kwast said the Air Force and the rest of the military is still on a long journey away from a Cold War-era force structure: built around large numbers, redundant capabilities, and shaped to defeat adversaries in two near-simultaneous wars.

Kwast, at AFA's Air Warfare Symposium in February, said the "tapestry of capability" in today's force is "unsustainable" in the long-term strategic and fiscal environment. New technology can enable better ways of prosecuting missions, he said.

Comms Out, GPS Out

DOD has also indicated its desire to harness cutting-edge research and development to advance the conversation about air superiority. Arati Prabhakar, director of the Defense Advanced Research Projects Agency, said DARPA is in the early stages of the "Air Dominance Initiative," a collaboration with both the Air Force and Navy to look at technologies which could create a "generational shift" in US air superiority. The project emerged from a consensus among the military services that future threats will be far more sophisticated than those of the last decade, and DARPA has taken a "systems approach" to the question of air superiority and air dominance.

"This is not a question about what the next aircraft looks like," she explained. The goal of the project is to explore capabilities which, when layered, would "comprehensively extend air superiority." The ADI team is examining areas such as networking, communications, advanced sensors, and manipulation of the electromagnetic spectrum as potential tools to achieve this. "We're talking about how manned and unmanned systems might work together, what role space assets play," she said, adding the

ADI study results will inform the next budget cycle.

While much of the air dominance conversation focuses on the future, Hostage noted that he still has to present forces to fight today, and part of the challenge in maintaining air dominance is maintaining a flexible and adaptable mindset.

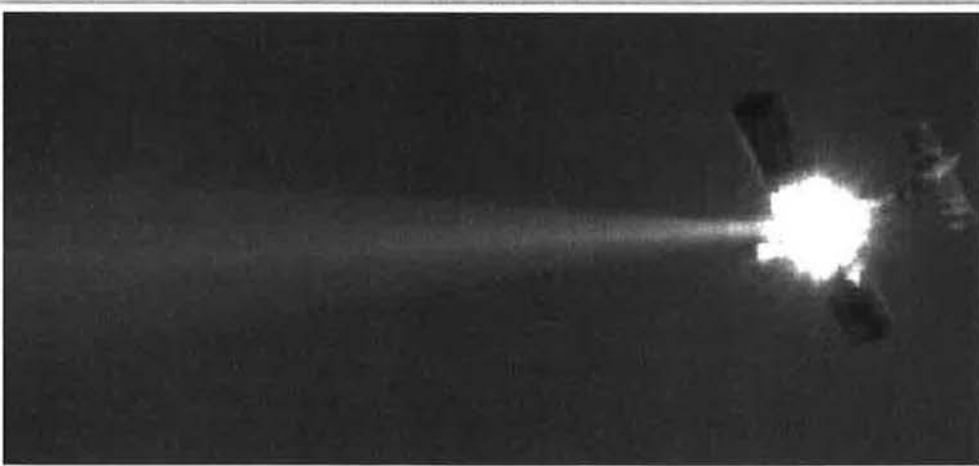
"We are working the fleet" and the tactics, techniques, and procedures they employ, Hostage said, adding "I'm changing the culture." In a process began by Hostage's predecessor, Gen. William M. Fraser III, ACC has steadily ramped up training activities across the combat air forces to be more representative of a combat environment where things taken for granted don't work or are denied—space-based navigation or functional runways, for example.

When he first flew fourth generation fighter aircraft, Hostage noted, radars and data links were new and sometimes didn't work correctly. Today, he said, when a pilot turns on the jet, everything works. "I'm taking it away from them. ... They'll fly one scenario where the GPS isn't working. They'll fly another scenario where their comms aren't working. ... I want them to be able to ... operate routinely and effectively in a contested, degraded environment."

The days of being able to operate Predator and Reaper orbits over an enemy continuously will be long gone in such a scenario, Hostage added—but by training in an environment where capabilities are degraded, it will prepare airmen for air superiority operations in the future.

It "may not be continuous, but I'll be able to provide it at a level that allows our combatant commanders to do what they have to do," Hostage said. "Air dominance means when you're there, you ... hold the upper hand. ... That is what this is about—changing the calculus" of the enemy. ■

APRIL/ROTA photo by Nick Tarasenko



A high-energy laser aboard a mobile active targeting resource takes out an unmanned aircraft in an Air Force Research Laboratory demonstration.



DOD photo

Ascendent Eagle

By Rebecca Grant



The F-15 masterfully addressed USAF's air combat frustrations from Vietnam and became the most successful fighter in history.

The F-15C Eagle has tallied the most lopsided score of any Air Force fighter in history: 38 USAF kills, no losses. Its record fulfilled the Air Force's quest to build the best fighter in the world for air-to-air combat. That pursuit had its origins in the struggles of the 1960s.

The Air Force's official history of the 1991 Gulf War noted that, in Vietnam, the air-to-air exchange ratio between USAF and Navy fighters and their North Vietnamese enemies was "discouraging," rarely topping two-to-one. That experience was a bitter one for airmen accustomed to strong success in the last two years of World War II, where American pilots outscored Japanese and German opponents by 10-to-one, and in Korea, where US fighters led by F-80s and F-86s racked up a similar kill ratio.

The slim margins in Vietnam had many causes. Fractured command, political restrictions, and a lack of realistic training all played a part. So did the wily tactics of the Vietnamese MiG-17, MiG-19, and MiG-21 pilots. On top of this, the AIM-7 and AIM-9 missiles, which equipped most US fighters, suffered from poor reliability.

Yet for the Air Force the overarching lesson was that it did not have a fighter optimized for air-to-air combat, as the trusty F-4 Phantom was a multirole fighter. Against the Soviet Union and Warsaw Pact forces in Europe, that

might not be good enough. Killing Soviet MiGs had to be treated as a top priority.

The answer? The F-15.

The Eagle began life under the name F-X: for fighter, experimental. Studies of an F-X to replace the F-4 began in 1965. Senior leaders on the Air Staff were well aware that the F-100 and F-4 fleets were not a force for air superiority.

Turn and Burn

"If I had been commander of four wings of Russian fighters I could have wiped us out in a single morning of air-to-air combat," said then-Maj. Gen. Arthur C. Agan in a 1973 oral history interview. Agan was serving as assistant deputy chief of staff for plans and operations on the Air Staff in 1965.

But building a true air dominance fighter was not a foregone conclusion. The McNamara Pentagon favored plentiful, cheap, and "joint" aircraft.

Agan convened a panel including aces from Korea and World War II and charged them with finding improved technology for a new fighter. Step 1 was to agree to design the best air-to-air fighter technology could provide. Once that was achieved, USAF could modify it for the fighter-bomber mission.

Step 2 was deciding which technology path to follow. Should the new fighter seek dominance by flying higher and faster, or should it emphasize maneuverability so it could turn and burn? The two paths

came together in a concept called the Blue Bird.

Blue Bird maximized maneuver and added healthy doses of power, altitude, and range. "What the 'turn and burn'" F-X advocates wanted was an aircraft with relatively conventional avionics and weapons—including cannon—but with the engine power and aerodynamics to defeat any Soviet fighter in turning dogfights at low and medium altitudes," wrote Marshall L. Michel III in a 2006 doctoral thesis on USAF after Vietnam.

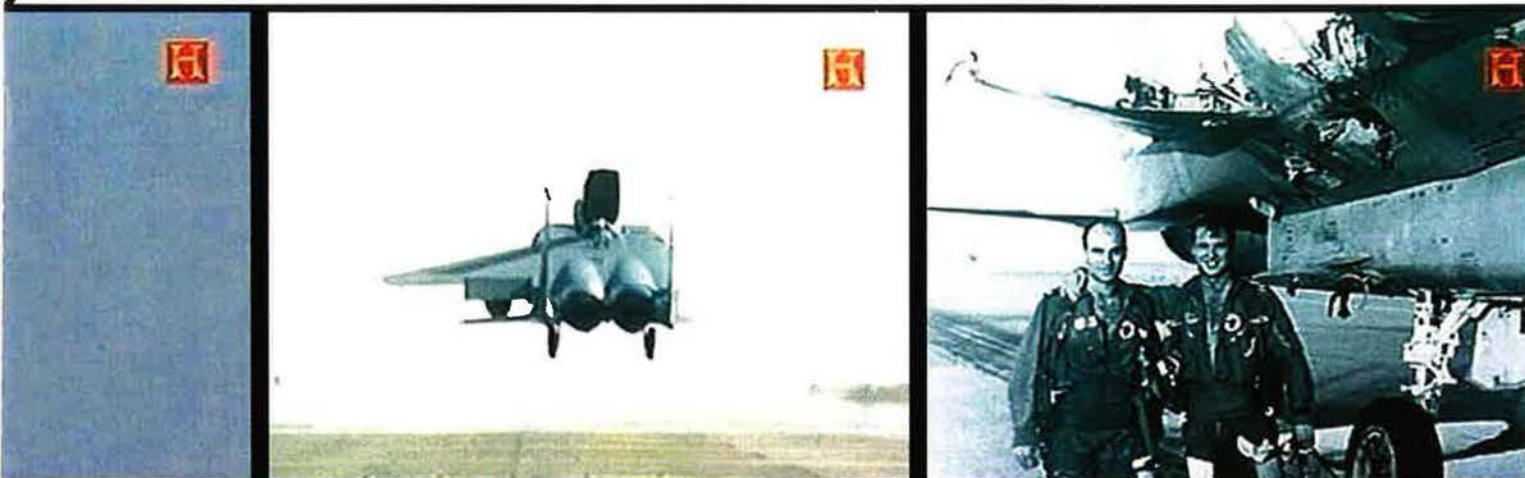
The embryonic F-15 had powerful support. USAF four-stars from Air Force Systems Command, US Air Forces in Europe, Pacific Air Forces, and Tactical Air Command at Langley AFB, Va., banded together behind the Blue Bird concept. Over the next two years they fended off many challenges. Some wanted USAF to buy the upcoming Navy F-14. The Office of the Secretary of Defense offered another candidate fighter—nicknamed Red Bird—that would be a lightweight, mass-procured solution. However, USAF leaders remained firm.

Part of their motivation was to avoid the complications of the TFX program, which was about to yield the F-111. Although the F-111 would one day prove itself in combat, the program was in the doghouse when early studies for the F-15 began.

Secretary of Defense Robert S. McNamara had insisted USAF and USN develop the fighter jointly. The TFX program

Left: An F-4 (carrying a target mounted under its left wing) and an F-15 fly together over the desert. The F-4 Phantom was an effective multirole fighter, but USAF believed it needed a fighter optimized for air-to-air combat. Enter the F-15. Below: Stills from a History Channel film show an Israeli F-15, one wing sheared off from a collision with an A-4 during training, being maneuvered to land on a runway in Israel.

Photos courtesy of the History Channel





The Soviet-built MiG-25 Foxbat—this one carrying four AA-6 Acrid missiles—was designed to counter supersonic USAF bombers and reconnaissance aircraft. The Eagle proved superior.

featured all the latest technology such as variable-wing geometry, state-of-the-art avionics, terrain following, and precision bombing capabilities, all while being filled with compromises. Consequently, it was expensive and unpopular.

Never really enthused about the F-111, the Navy thoroughly lost interest in the TFX as a carrier-based fighter and dropped out of the program in 1968. The Air Force continued with the program and ultimately procured the aircraft as the F-111 for use by Tactical Air Command and as the FB-111 for Strategic Air Command.

Although General Dynamics manufactured 563 F-111s, the McNamara TFX program was seen as a mistake because it tried to fulfill too many requirements with one system.

With air superiority on the line, the last thing USAF wanted was a repeat of the TFX experience. Two events let USAF avoid that road.

First, a new menace appeared. In July of 1967, the Soviet Union presented the MiG-25 Foxbat to the world. Although the jet had first flown in 1964, little was known about it until four MiG-25s performed a fly-by at the Moscow air show. The Foxbat startled Western observers and indicated the USSR was serious about air superiority. Analysts believed the muscular Foxbat was designed to counter supersonic USAF bombers and reconnaissance aircraft such as the SR-71. If so, it would pose a stiff challenge to the F-4 and to NATO strategy.

For the Air Force, the MiG-25 looked like a fighter with extreme agility and interceptor speed. The speed part was true: The Foxbat had two afterburning turbofan engines giving it a top speed in excess of Mach 2.

The MiG-25 set numerous records and became the first aircraft to reach an altitude of 115,000 feet.

In 1976, a defector would land a brand-new MiG-25 in Japan, and USAF, after disassembling and studying it, discovered the Foxbat's limitations. A true high-speed interceptor, it turned out not to be the air combat powerhouse analysts feared; it could only bear a turn of less than five Gs. But in 1967, the MiG-25 represented a thrown-down gauntlet.

Built-in Dominance

The next critical event was the November 1967 announcement of McNamara's departure. With him went the pressure for the Air Force to take a chance on another joint aircraft program.

The Air Force was then free to respond to the challenge of the Foxbat. In December 1967, General Dynamics and McDonnell Douglas received contracts for a new fighter. Formal proposal contracts on the Blue Bird concept followed a year later. In the final proposal round, Fairchild Republic, North American Rockwell, and McDonnell Douglas submitted designs. No fly-off was held.

In a hurry, USAF in December 1969 selected McDonnell Douglas to build its

premier new fighter. The task: Build "a fighter superior in air combat to any present or projected Soviet fighters," noted Capt. David R. King and Capt. Donald S. Massey in a silver anniversary retrospective on the F-15 published in 1997.

The first F-15 rolled out of the plant in St. Louis just 30 months after McDonnell Douglas' selection. First flight came on July 27, 1972, in California, and USAF accepted its first operational aircraft in January 1976.

Dominance was built into every aspect of the new fighter. The design gave the F-15 a high engine thrust-to-weight ratio paired with low wing loading.

"First and foremost was the Air Force requirement that under certain conditions the F-15 had to have a thrust-to-weight ratio greater than one-to-one, meaning the engines had to develop more pounds of thrust than the airplane weighed so the airplane could accelerate going straight up," recalled Rich Martindell, a retired USAF pilot and safety investigator.

Light wing loading was just as important. The F-15's ratio of aircraft weight to wing area created extreme maneuverability. Together these design features gave the F-15 a superb ability to turn tightly without losing airspeed. Locked in a close fight with other aircraft, the F-15 could turn hard and still maintain speed and energy for its next move. Here was the superior combination USAF was seeking.

Pratt & Whitney developed the F100 engine specifically for the Eagle. Early F100 series engines gave 24,000 pounds of thrust apiece, and later modifications improved reliability and increased thrust to 29,000 pounds.

Advantages did not stop with thrust. The F-15's aerodynamics and flight-control systems were "amazing," explained Martindell. "Looking at an F-4 and an F-15 side by side, even though the F-15 is much larger, it is still sleeker and not as brutish as the F-4."

Added to that was a flight-control system that allowed the pilot to move the stick in the desired direction, leaving the flight computer "to figure out the necessary control deflections for the ailerons, elevons, and rudder, all of which could operate independently as needed, to get the correct response," he said.

This level of control stood in stark contrast to the F-4.

"In the F-4, once you went over 19 units angle of attack you could not move the stick left or right to control roll or the aircraft would depart controlled flight from adverse yaw," noted Martindell.

And one other nice-to-have feature, appreciated by deployed pilots from muggy Guam to the dusty Middle East over the decades: the fantastic air conditioner.

Inside the F-15 was something that made it altogether different from the lightweight, expendable fighter concept: its radar. F-15 radars have been substantially upgraded over the years, culminating in the current active electronically scanned array variants. But the radar made it a standout from the start.

The first F-15s were equipped with the AN/APG-63. It was an X-band pulse Doppler radar tuned to observe targets at all altitudes and ranges—especially the coveted airspace beyond visual range.

The need to accommodate such a large radar in the nose section was one of the reasons the F-15 had to be so much larger than previous fighters, according to Martindell Hughes, the original radar manufacturer, calculated that the F-15 would need a physically large radar to achieve the power and detection ranges the Air Force demanded.

The F-15 was first employed in combat on June 27, 1979, but not in US hands. Six F-15 pilots of the Israel Defense Forces encountered Syrian MiG-21s over southern Lebanon. The Israelis shot down all five MiG-21s.

The IDF's F-15s racked up many more kills against Syrian MiG-21s, MiG-23s, and MiG-25s through the 1980s. The IDF also claimed a pair of MiG-29s in 2001.

One-Wing Landing

The IDF's defeat of a MiG-25 in February 1981 was especially noteworthy, as this was the once-vaunted Foxbat the F-15 had been designed to counter. In fact, after the 1976 defection unmasked the Foxbat's shortcomings, the Soviet Union decided to cut its losses and quit producing the interceptor. Even so, many MiG-25s were sold to Libya, Syria, India, and others.

One Israeli F-15 added a spectacular footnote to Eagle lore that demonstrated the true rugged maneuverability of the jet.

On May 1, 1983, an F-15D—engaged in dissimilar air combat training over the Negev desert—collided with an Israeli A-4 Skyhawk. The A-4 pilot ejected, but the collision sheared off one wing of the F-15D, which plunged into a spin. Applying afterburner and skillfully manipulating the large remaining surfaces and flight control computers, the pilot recovered the F-15D and actually landed the one-

winged fighter on a runway nearby. The IDF later repaired the aircraft and returned it to flight operations with a new wing.

Meanwhile, USAF was taking delivery of the new F-15C/D variants. The Air Force received the first of 408 F-15Cs and 62 two-seat F-15Ds in June 1979. The F-15C had been upgraded with 2,000 pounds of extra internal fuel among other improvements. Later, USAF also launched a formal multistage improvement program for aircraft already in the inventory, to give them structural, radar, and electronic warfare upgrades. The F-15C/Ds were also wired for the AIM-120 AMRAAM.

For all the wonders of the Eagle, it did not earn a US combat reputation until Iraq invaded Kuwait on Aug. 2, 1990. F-15Cs were among the first USAF forces to touch down in Saudi Arabia to defend the kingdom from further Iraqi aggression. A total of 48 F-15C/Ds from the 1st Tactical Fighter Wing made the nonstop flight from Langley to Dhahran, Saudi Arabia, tanking along the way.

Another group, deployed in September 1990, was the 58th Tactical Fighter Squadron from Eglin AFB, Fla. This was no ordinary unit. The 33rd Tactical Fighter Wing cherry-picked its most experienced pilots from three squadrons to augment the 58th FS "Gorillas." A few months later, they would take the lead in sealing the F-15's air combat reputation.

Operation Desert Storm counted on USAF-led coalition airpower to break up Iraq's air defenses and open the door to several weeks of steady attack on Iraq's ground forces. The job of the F-15Cs was to ensure that Iraq's well-stocked air force could not disrupt the coalition air armada's highly orchestrated attacks.

Iraqi dictator Saddam Hussein was confident his air defenses could hold their own. Intelligence sources said he believed his integrated air defenses would shoot down enough coalition aircraft to force an early start to the ground war. "They will [only] be engaging in Rambo stunts," he taunted before the campaign, according to a 1992 article in the *Journal of Strategic Studies*.

For their part, coalition airmen were much more confident. Still, Air Force Chief of Staff Gen. Merrill A. McPeak warned President George H. W. Bush that the coalition might lose up to 100 aircraft.

The F-15 would be the decisive factor in keeping Iraq's air force at bay. Other fighters shared air superiority tasking, but not in the same measure as the F-15. For example, Navy F-14s were committed to defensive operations around the two carrier task forces. Meanwhile, F-16s mainly suited for multirole operations flew in large strike packages on bombing and air defense suppression missions. Navy and Marine Corps F/A-18s flew counterair but were on tap for bombing missions, too, as

Three pilots of this F-15C, Gulf Spirit, scored four aerial victories in Desert Storm, as noted by the flags and star. No F-15s were lost during the conflict.

DOD photo





An F-22 Raptor (l) and an F-15 fly in formation near the USAF Weapons School, Nellis AFB, Nev. The two fighters are expected to fly for decades to come.

were the attack-specialized A-10s, A-6s, A-7s, and AV-8s.

For months, F-15Cs flew combat air patrols (or CAPs) along the borders of Kuwait and Iraq. On the other side of the line, Iraq listed some 700 aircraft of various types—including Soviet-built fighters—plus about 75 French-made F-1 Mirages. The Iraqi air armada included more than 200 older MiG-21s but also featured Su-25s, MiG-23s, MiG-25s, and nearly 40 new, highly capable MiG-29s.

Before the Border

The night of Jan. 17, 1991, saw the proof of the F-15's dominance. The F-15Cs from the 33rd TFW and 1st TFW shot down Iraqi fighters far behind enemy lines and bagged both an F-1 Mirage and a pair of MiG-29s south of Baghdad. In total, the F-15Cs scored six kills on the first night of Operation Desert Storm.

Two days later, Capt. Cesar A. Rodriguez and Capt. Craig W. Underhill tracked a pair of MiGs until they slipped into the cover of an Iraqi SAM site. Suddenly a second pair of MiG-29s popped up. Rodriguez maneuvered defensively until Underhill shot down the MiG-29. At 8,000 feet, Rodriguez turned his F-15C hard into a circling fight with the second MiG-29.

"By the time it was all over, we were both below 300 feet," said Rodriguez. When the Iraqi MiG-29 tried a Split-S to get under Rodriguez, the Iraqi misjudged the remaining altitude and hit the ground. The F-15's turn-and-burn qualities had paid off handsomely.

Another round of kills came as Iraqi air force pilots fled to Iran. Capt. Thomas N. Dietz and 1st Lt. Robert W. Hehemann were both members of the 36th Tactical Fighter Wing from Bilburg AB, Germany. On Feb. 6, 1991, they were flying CAP east of Baghdad when an E-3 AWACS aircraft notified them of Iraqi aircraft taking off from a nearby airfield. The Iraqi fighters—on the deck at 100 feet—were trying to flee to Iran, as several dozen had since late January.

"The trick was to get to them before they got to the border," recalled Dietz. The two F-15s ran north and then banked right to close in behind the Iraqis. Hehemann shot down two Su-25s and Dietz shot down a pair of MiG-21s, all with AIM-9s.

"We were at the right place at the right time," Dietz said later.

Because of the F-15's abilities, Desert Storm was the first conflict in history where air-to-air kills beyond visual range predominated. "Of the 23 AIM-7M kills credited to USAF F-15s," noted the *Gulf War Air Power Survey*, "16 involved

missiles that were fired from beyond visual range."

The F-15's degree of control over the combat airspace had "no historical precedent," the survey concluded.

With the F-15, the 58th FS, and its augmentees tallied 12 aerial victories—the most of any squadron in Desert Storm or since.

No F-15Cs were lost. The Eagle hatched from project Blue Bird has never experienced a combat loss.

Today, USAF's F-15C/Ds may perch above 50,000 feet awaiting their prey. In exercises such as Cope North and Red Flag, they scream and slice into the air battle using every advantage of speed and turning envisioned by the Air Staff generals of the mid-1960s.

Though eclipsed by the powerful F-22 Raptor in agility, stealth, and computer power, USAF sees its F-15s serving alongside the Raptors for another two decades to come. The F-15 has truly served as the most dominant air superiority fighter in history, and its 30-year reign as king of air combat may never be rivaled. ■

Rebecca Grant is president of IRIS Independent Research. Her most recent article for Air Force Magazine was "Iraqi Freedom and the Air Force" in the March issue.

By Robert S. Dudley

Commanders Are Critical

"To truly turn the corner on sexual assault, we must thoroughly consider every reasonable alternative. ... It will be important for us to remember that commanders are ... the key to permanent organizational and environmental change. ... Changing views on respect and dignity does not happen overnight and it requires consistent leadership focus. We must avoid creating an environment where commanders are less accountable for what happens in their individual units. ... If we are serious about change, we must reinforce to commanders that success depends on their sound judgment in all matters involving good order and discipline, not separate them from the problem."—**USAF Gen. Mark A. Welsh III, Chief of Staff, on calls to take sex-assault cases from unit commanders, Senate Armed Services Committee, June 4.**

Commanders Are Suspect

"You have lost the trust of the men and women who rely on you that you will actually bring justice in these cases. ... Not every single commander necessarily wants women in the force. Not every single commander can distinguish between a slap on the ass and a rape."—**Sen. Kirsten Gillibrand (D-N.Y.), leader of drive to strip unit commanders of authority over sex crimes, remarks to the service chiefs, Senate Armed Services Committee, June 4.**

DOD's One-Way Street

"What we've learned from the last drawdown, where we cut 200,000 civilians from the Defense Department, was that the work didn't change, and so some other way was found to do the work. What are your choices there? Either the military does it, which is the most expensive way to perform almost any task, or you hire contractors. That's fine as long as it's for a surge capacity and then you reduce it, but what we've seen over the last 20 years is they bring it up and never draw it back down. In the 2000s, we built up the defense budget tremendously, but we only added about four percent to military personnel. We had an increase in civilian personnel of up to 60 percent by some measures, and doubled our contractors. ... We have to find the things we can

stop doing."—**David J. Berteau, Center for Strategic and International Studies, FederalNewsRadio.com, June 4.**

Syrian "No-Fly" Zone?

"It is quite frankly an act of war and it is not a trivial matter. It would absolutely be harder than [the 2011 air campaign over] Libya. This is a much denser, much more capable defense system than we'd faced in Libya. I know it sounds stark, but what I always tell people, when they talk to me about a no-fly zone, is ... it's basically to start a war with that country, because you are going to have to go in and kinetically take out their air defense capability. These are some very capable systems that are being talked about. ... Completely eliminating them, controlling them, containing them—each of those requires a different level of effort, none of them easy. As long as the weapons can move about the country on the surface, it is a problem of controlling battlespace. I think that it is a tough mission set."—**USAF Gen. Phillip M. Breedlove, NATO's Supreme Allied Commander, Europe, on dangers of setting up a "no-fly zone" over Syria, Stars and Stripes, May 31.**

Far East Center of Gravity

"The US Air Force has allocated 60 percent of its overseas-based forces to the Asia-Pacific—including tactical aircraft and bomber forces from the continental United States. The Air Force is focusing a similar percentage of its space and cyber capabilities on this region. These assets enable us to capitalize on the Air Force's inherent speed, range, and flexibility."—**Secretary of Defense Chuck Hagel, remarks to Singapore defense conference, June 1.**

An "Uh-Oh" Convergence

"A special case of ... convergence is emerging in the cyberworld, where the greatest mismatch between the level of threat to our country (high) and our level of preparation (low) is evident. High-threat packages move through the world's servers, fiber-optic cables, and routers in the service of nations, anarchic organizations, and garden-variety hackers. Trillions of dollars' worth of cybercrime occurs each year; if the cyber-capability and the resultant

cash converge with terrorist groups or pariah states such as Iran and North Korea, the potential for catastrophe is high."—**Retired Adm. James G. Stavridis, former NATO Supreme Allied Commander, Europe, op-ed in Washington Post, May 31.**

Mystery of Defense Market

"The [defense] sector never really dropped. It never really collapsed, even when people thought it might. The index is higher than it's ever been, which means that we actually have a higher [stock market] valuation of defense companies now than we did when we hit the peak in defense spending during the Iraq and the Afghanistan wars. I'm really not sure what to make of that."—**Scott Sacknoff, manager of Spade Defense Index, on the impact of the federal budget sequester, Defense News, June 3.**

He Means "China"

"We will oppose the change of status quo by force by anyone. We need to retain the status quo until we get to a code of conduct or a solution."—**Adm. Samuel J. Locklear III, US Pacific Command, remarks to reporters in Malaysia about rival claims to disputed areas of the South China Sea, Associated Press, June 4.**

Save the Nuclear First Team

"The people who design, build, and maintain America's nuclear weapons are the only ones who have the expertise to anticipate and deter the nuclear threats that adversaries dream up. They're the same men and women who build the sensors that can detect nuclear explosions from space. And they're the same professionals who know whether to 'cut the red or blue wire' in a terrorist device. When dealing with a threat this serious, we can't afford to have second-rate talent hastily trained in nearly forgotten methods. That's why the esoteric knowledge these first-string weaponers possess—gained over decades working on nuclear weapons—is invaluable. ... Zeroing out the US nuclear stockpile means also zeroing out the nuclear-talent stockpile, with potentially catastrophic results."—**Col. J. Douglas Beason, USAF (Ret.), chief scientist of Air Force Space Command, Wall Street Journal, May 31.**



Feeding the F

Airmen want to eat. The global operation needed to feed them is bigger than most realize.

The Air Force serves some 53.4 million meals a year to airmen around the globe. That's enough to feed the fans at Pasadena, Calif.'s Rose Bowl—about 92,500 seats—one meal a day for roughly a year and a half. Great effort goes into ensuring that airmen have access to nutritious, ap-

pealing, quality food, no matter where they are, according to officials with USAF and the other organizations involved in feeding service members. There are more than 35,000 airmen on deployments—including combat airmen in Afghanistan, who are fed by the Army—and more than 57,000 airmen stationed overseas, according

to Air Force figures released in early May. They all need to eat. The feeding enterprise constantly experiments with menus and dining alternatives to keep meals convenient and varied. "Our piece is to provide the fuel, as it were, to keep that airman going," said Michael J. Teal, chief of food service and



USAF photo by SSGT Stephanie Wadon

Left: SSgt. Russ Johnson pushes one of 40 pallets carrying meals, ready to eat, onto a C-17 at Bagram Airfield, Afghanistan. His aircrew dropped 48,000 pounds of MREs on a 15-hour mission. Above: Airmen file into a dining facility at Bagram.

orce

By Michael C. Sirak, Executive Editor

business activity policy for USAF's deputy chief of staff for manpower, personnel, and services. "There is a capability that is required. We have to feed the force," he said. "We are committed to making sure we are taking care of [airmen] regardless of ... location, ... whether it's a big base, small base, overseas, contingency operations, downtown Miami, or the middle of Rapid City, South Dakota. We treat them all the same."

Military-supplied meals touch the palates of Air Force basic military trainees,

enlisted personnel, officers, civilian employees, and contractors. They consume meals hot and cold, ranging from individual meal, ready to eat (MRE), rations and group rations in the field, to boxed flight meals for aircrews and maintainers on flight lines, to entrees in dining facilities on bases Stateside and enduring locations overseas.

"If there is a contingency anywhere in the world, we have military cooks [who] can deploy to provide agile combat support," said Teal.

The Air Force spent roughly \$500 million on food services in Fiscal 2012, including buying some \$220 million worth of food products.

USAF deals with 57 prime vendors across the globe, said William Spencer, chief, Appropriated Fund Food and

Beverage Operations Section, with the Air Force Personnel Center.

It costs \$15.30 per day to feed an airman in Afghanistan and \$14.60 for airmen in other parts of Southwest Asia, said Teal—but those figures are for the food only, not transport costs. For airmen stationed in Europe, Guam, Japan, and South Korea, for example, the basic daily food expense is \$11.80. For airmen assigned Stateside, the per-day food cost is \$9.65, he said.

Food services airmen and contractors prepare meals in the Air Force's 172 dining facilities (known as DFACs), and flight kitchens worldwide.

"We use military cooks at probably 50 of our total operations. We do have some locations that are 100 percent staffed by contractors, said Teal. "If

you go into any dining facility in the Air Force, I think you come out saying, 'That was a good meal.' Our guys and gals do a good job. Our contractors do a good job."

Air Force personnel consume the bulk of their total meals each year in service DFACs. Enlisted airmen are the principal users of dining halls, especially junior personnel who live in on-base dormitories and use dining cards under an arrangement known as essential station messing. Enlisted members who receive other forms of basic allowance for subsistence also frequent the DFACs, paying for their food.

A 120-day Pipeline

Depending on the location, DFACs may also serve—for a price—officers, civilian employees, contractors, retirees, and even family members. Creech AFB, Nev., for example, boasts one of USAF's newer dining halls; it caters to most of the personnel who work on the base, the hub of Air Force remotely piloted aircraft operations, because other options are limited.

Creech "doesn't have any dorms"—many personnel commute from Nellis Air Force Base in North Las Vegas, nearly an hour away—and "there is the need to feed the force" at Creech "and let them get back to their mission," said Teal.

The Air Force uses a standardized 14-day menu for its dining facilities worldwide, meaning that on any given day, the main entrée offerings available to airmen stationed in Europe, the Pacific, or Middle East are the same as those at Stateside locations.

For example, the dinner options on May 16 at the Desert Inn Dining Facility at Davis-Monthan AFB, Ariz., were chicken cordon bleu, vegetable stir fry, and roast loin of pork, with carrots, au gratin potatoes, and corn as the sides. That evening, airmen at the Buon Appetito Dining Facility at Aviano AB, Italy, had those same choices, as did visitors to the O'Malley Military Dining Facility at Kunsan AB, South Korea, according to the menus for those halls.

However, there are exceptions to the 14-day menu. In Afghanistan, the Army is in charge of feeding all US personnel—as it was in Iraq—and offers different menus at its Bagram Airfield and Kabul Airport dining facilities, staffed by contractors. NATO manages the dining halls at Kandahar Airfield, said David P. Staples, who heads the Operations

USAF photo by SSGT. Stephanie Wingo



Directorate in the Army's Joint Culinary Center of Excellence (JCCOE).

As the US troop drawdown in Afghanistan continues, the Army's standardized 28-day contingency operations menu has ramped down to a 21-day format, said Staples, and by April 2014, the menu will be on a 14-day cycle.

"The [food] pipeline is 120 days from the States to the prime vendor, so in order to transition to ensure we have no waste or excess at the end of this drawdown, ... we are reducing the menus," he said. Until the drawdown is complete, the Army won't be adding new items to the menu, he said.

The Defense Logistics Agency oversees contracts with prime vendors supplying the food for Afghanistan, said Anthony Amendolia, chief of Middle East and Europe regions customer operations in DLA Troop Support's Subsistence supply chain. It does the same for the Air Force in those parts of the world outside of Afghanistan where USAF is in charge of dining facilities. In Southwest Asia, this means the huge troop Transit Center at Manas, Kyrgyzstan, and at five "undisclosed locations" that the Air Force doesn't name due to host-nation sensitivities but where the service has an enduring presence.

When airmen rapidly deploy to a new hot spot on the globe, the Air Force—if it's the designated lead service for food—works with DLA to "push food forward" immediately to sustain them, said Spencer. At first, this usually means individual MREs and Unitized Group Rations, he said. The UGRs range from self-heating meals that require neither cooks nor field kitchens to those including fresh, perishable items prepared in field kitchens.

The goal is to establish, inside 120 days, a "steady location" where airmen have access to the "normal food" they would find in a dining facility, said Spencer. "Once it becomes a steady location, we will set up the same way we do in the US," he said. "DLA will put a vendor in place" to provide food items that meet the Air Force's requirements to complete dining hall menus, he said.

"Air Force headquarters really advises us on which items are needed to make up the menu," said Amendolia. "Our role is not to determine the menu; our role is just to provide what items are needed."

By law, most foodstuffs must come from US suppliers, regardless of where an installation is located. For example, "all of the food that they eat in Afghani-



An airman (left) and others make their dining choices at Bagram. The Army is in charge of feeding all US personnel in Afghanistan, as it was in Iraq.

stan—with the exception of fresh fruits and vegetables, dairy products, and fresh breads—comes directly from the United States. [on] containers shipped across the ocean and [through] different countries,” said Amendolia.

“All the food is delivered in sealed containers, so ... it is safe in transit, whether it is going from a prime vendor’s warehouse to a customer or across the ocean,” he said.

Items from the US used to go through the port of Karachi, Pakistan, and then over land routes into Afghanistan, but “that’s not been the case there for a little while,” said Amendolia. The food supplies now “go through several countries up north and come down, so it is a long process,” he said, referring to the Northern Distribution Network that flows supplies into Afghanistan through Russia and neighboring former Soviet states.

Some food products are moved in and around Afghanistan by air. Mobility aircraft air-dropped about 12 million

“Food T”

In 2010, surveys indicated many enlisted airmen weren’t happy with the variety of food in USAF dining halls or with the limited hours the halls were open. They were making use of the dining facilities—DFACs—for only about one of the three meals per day they were entitled to, said Fred McKenney, chief, Air Force Food and Beverage Branch at the Air Force Personnel Center.

Enter the Food Transformation Initiative, or “Food T,” as food service officials call it—shorthand for a series of experiments to make dining halls more like those on college campuses, with more choices, more appeal, and more healthful options.

The Air Force launched Food T in October 2010 on a test basis at six locations: JB Elmendorf-Richardson, Alaska; Fairchild AFB, Wash.; Little Rock AFB, Ark.; MacDill AFB, Fla.; Patrick AFB, Fla.; and Travis AFB, Calif. In addition to the college cafeteria-style layout, the idea was to expand variety and eating options available to airmen using meal cards on base. Aramark of Philadelphia is the contractor.

The Air Force added seven more bases—Barksdale AFB, La.; Beale AFB, Calif.; Dyess AFB, Tex.; Eglin AFB, Fla.; Ellsworth AFB, S.D.; F. E. Warren AFB, Wyo.; and Vandenberg AFB, Calif.—in August 2012, with Sodexo of Gaithersburg, Md., as the contractor.

The first set of dining halls switched from cafeterias to the food court-like setup found on most college campuses, said McKenney. This group also permitted airmen to use their meal cards at the base’s morale, welfare, and recreation food and beverage outlets, such as the bowling alley, golf course, and community center. Expanding meal card use to these sites also gave airmen access to meals before and after dining hall hours. The DFACs, too, stayed open for longer hours, going from 60 to 112 hours a week, said McKenney.

The Air Force also opened the DFACs at the first six pilot locations to the broader base population to enhance a sense of community on the installation, he said.

Moreover, to give airmen access to food right on the flight line, three Provisions on Demand (POD) kiosks were opened at Elmendorf, Little Rock, and Travis. Each POD is “a kiosk that you would see at an airport, where you have got a lot of grab-n’-go ... stuff,” said Michael J. Teal from the Air Staff’s manpower, personnel, and services office. The PODs have “various chilled and hot cabinets” where items like sandwiches and wraps are displayed. Popular items for sale are carrots and celery with hummus, cups of grapes or berries, and cups of cheese cubes and pepperoni, he said. Enlisted airmen can use their meal cards at the POD, he said.

Of the three, the Knucklebuster Café POD at Travis is the busiest, said Teal. Open around the clock, it gives maintainers on the flight line easy access to the food they want. Knucklebuster averages 350 visitors a day but has served as many as 600 in a day.

“We are very proud of the fact that with the POD, we do bring hot food out there. At 0200 in the morning, you can get a chicken dinner at Travis,” said Teal, noting that airmen will eat healthy “if it is done well.” The feedback from the first six pilot locations has been promising. Enlisted airmen on meal cards ate more than 360,000 additional meals.

The Air Force has also been updating the 14-day menu under an initiative called Operation Refresh. Over the course of the past 18 months or so, the menu has incorporated 22 new recipes, said Teal. The goal is to introduce one new recipe a month. However, certain comfort food items—fried chicken, spaghetti, and lasagna—“will always be popular,” he said.

pounds of food and water to widely scattered locations in Afghanistan in 2012, according to Air Forces Central Command.

The prime vendor for Afghanistan is the Supreme Group, an international supply chain conglomerate based in Dubai, United Arab Emirates. Its bakery in Afghanistan supplies breads and pastries. It flies in produce, usually from Dubai.

Eight locations in Afghanistan are on the Army’s Worldwide Directory of

Sanitarily Approved Food Establishments for Armed Forces Procurement. The job of inspecting these facilities falls to Army Veterinary Services personnel—not because dogs are involved in sniffing out pests but because veterinarians have expertise in public health, microbiology, and pathology. Veterinary Services ensures facilities meet quality and safety standards, said CW5 Ronald Biddle, senior food safety officer in quality assurance in the JCCOE.



A military retiree eats a purchased boxed lunch while hitching a ride in the belly of a C-17. The chips and soda in his lunch would be coded red for "only eat occasionally" in USAF's "Go for Green" labeling system.

Four of these sites are water sources, one is a bakery, two are distributors, and one is a storage facility, he said. Most of the bottled water US military personnel consume in Afghanistan comes from those Afghan sources, said Staples. Afghans also provide some fruits and vegetables, chips, soda, noodles, and ice, he said. The Afghan First program encourages Afghan farmers to supply produce, said Staples.

The DLA makes a strong effort to provide airmen overseas with the same name-brand products they're used to at home, said Amendolia. "They will see French's mustard, Heinz ketchup. They will see all of the major brands that they are used to. We always make sure that they don't see some generic brand."

DOD standards stipulate that a female service member involved in moderate activity needs about 2,500 calories a day, while her male counterpart needs about 3,200 calories, said Renita C. Frazier, a dietician in the JCCOE. During the summer months in Afghanistan, said Staples, an airman or soldier consumes, on average, about six liters of water per day.

Early on in Afghanistan, and again in Iraq, troops in the field were stripping their MREs of unwanted items to lighten the ponderous loads they had to carry. These discarded items represented lost calories, and it was not uncommon for troops to lose weight.

To help ensure that airmen—and other military personnel—get adequate calories and nutrients in Afghanistan's high-altitude terrain and extremes of hot

and cold, the Pentagon introduced the Modular Operational Ration Enhancement, or MORE, to supplement MREs and other operational rations for personnel in the field.

These high-calorie MORE components are meant to combat weight loss and decreased physical and cognitive abilities. They contain items such as beef jerky, energy gels, carbohydrate-fortified beverages, caffeinated gum and mints, and "Zapplesauce"—applesauce enriched with maltodextrin to provide an energy boost.

"Quite a bit of science is behind the food that is behind the soldier or the airman, to make sure they are taken care of, whether they be in extreme environments of driving trucks or standing on the flight line in [the] heat," said Alphonzo Byrd, chief of the JCCOE's Quality Assurance Division.

Go for Green

Food service management boards convene regularly in Afghanistan to discuss menu options, said Staples. Chicken livers were dropped from the menu based on troop feedback, he said. As part of the drive to add more nutrient-dense foods, the Army added a fish dish once a week to raise omega-3 fatty acid levels, said Frazier.

Managers at dining facilities at home and abroad do have some leeway, however.

"While we have a menu, we still allow managers to be managers," said Staples. "Stir-fry became a huge popular meal because one manager made it."

The dining facilities in Afghanistan have also incorporated local cuisine. "We have lamb, rice, flatbread on the menu. Those things were added because, not only do our people like them, we feed a lot of Afghan National Army" and local nationals at the coalition hospitals, said Staples.

While strong efforts are made to satisfy everyone's dietary needs—such as soymilk for lactose-intolerant persons; ample fruit and vegetables and meat substitutes for vegetarians; and halal meals for Muslims—Staples acknowledged that there are some strict diets the Army simply can't support in the deployed environment.

The Air Force, like the other services, has adopted the "Go for Green" campaign to help airmen make more healthful eating choices at dining facilities. Food lines have labels identifying high-performance foods versus those either high in fat or containing ingredients that hinder performance.

"We color-code all of the menu items," explained Fred McKenney, chief of Air Force Food and Beverage. "Green is 'eat all that you want.' Yellow is 'eat in moderation.' Red is 'only eat occasionally,'" he said. The goal is to get airmen to come to rely on the color codes, thereby relieving them of the burden of having to spend time trying to figure out the nutritional value of each food item.

"I think that is a better way to address that than to have them have to read each description for each item," he said. Examples of green-coded foods are fresh fruits and vegetables and baked chicken without skin, said Frazier. Soft drinks are a "red" performance-hindering food under the rating system, she said.

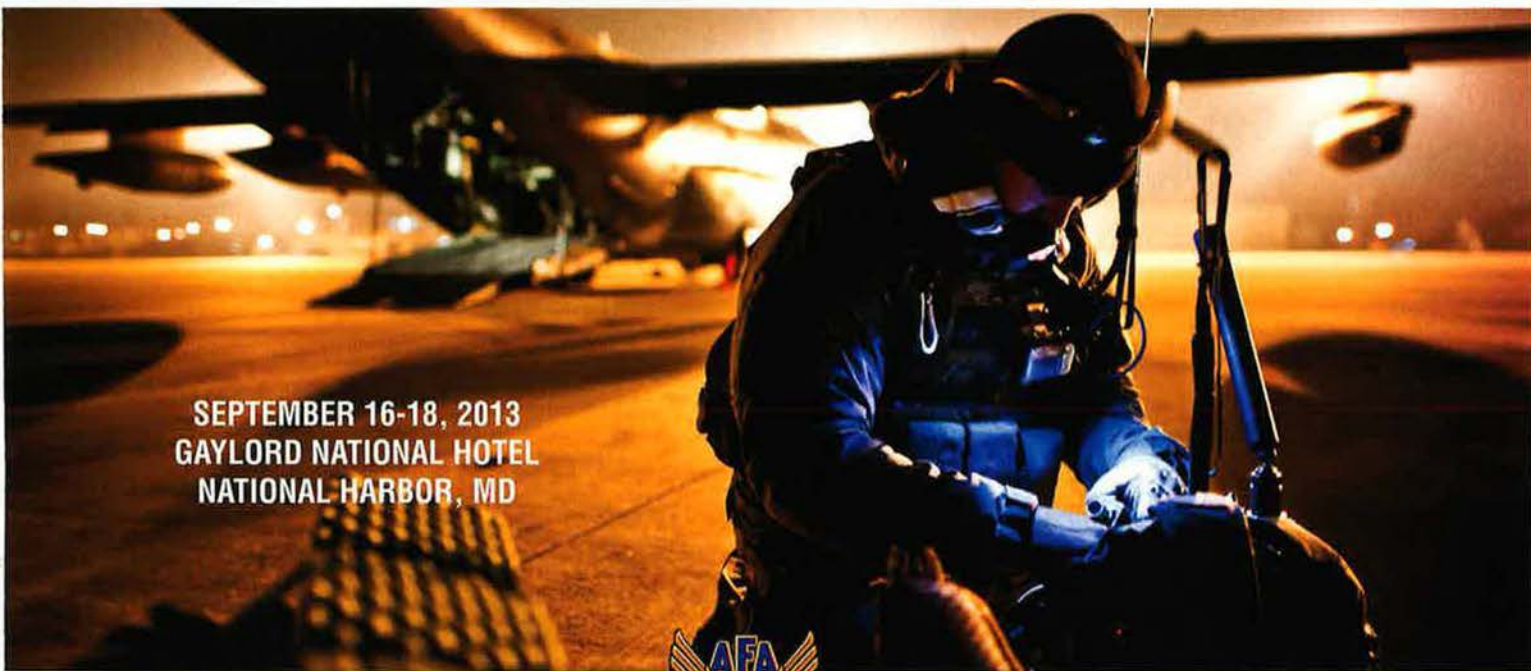
Amendolia said DLA goes to extremes so that airmen have holiday meals on Thanksgiving, Christmas, Easter, and Passover, birthday cake for the Air Force's birthday, and extra food available for the Super Bowl.

DLA starts as early as April to order the food items for Thanksgiving, such as whole turkeys and various pies. By June, it's planning for the Christmas meal and making sure items like egg-nog and nuts, not normally part of the menus, will be on hand on time, said Amendolia.

"We take pride in the fact that everybody—no matter where they are—gets a Christmas and Thanksgiving meal. We know they are not at home" and the only thing to remind them of home "is that meal," he said. ■

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A collage of three images: a jet flying over water, a rocket launch, and a large aircraft on a runway.

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A close-up of a fighter jet's nose and cockpit, with an American flag in the background.

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Hawk's World

By Richard Halloran

A lot has changed in PACAF over the last 10 years. A lot more will change over the next 10.



When Gen. Herbert J. Carlisle assumed command of Pacific Air Forces in August 2012, he made his priorities clear: Bolster military-to-military engagements in the Asia-Pacific region; integrate air and missile defenses to confront expanding threats from China and North Korea; combat the tyranny of distance in the region by projecting American airpower and reach; and take care of airmen.

In less than a year, "we've made some great progress," said Carlisle in an interview at JB Pearl Harbor-Hickam, Hawaii.

As the US retrenches its forces following more than a decade of war in Iraq and Afghanistan, it must rely more on allies and friends for the common defense. Carlisle said he wants to "broaden our robust ties with key allies and joint partners by establishing a multilateral training construct." The goal is to "train like we intend to fight," he added.

That will require cultivating an agile apparatus for command and control,

which Carlisle said "provides the backbone of our success." He has called for command relationships that provide clear lines of communications tailored to the mission plus systems that ensure continued operations in contested environments.

Completing this list of priorities is the vital task of nurturing resilient airmen. Carlisle emphasized: "Airmen are the critical enabler." The general, known to most by his call sign "Hawk," seeks an increased awareness of the Asia-Pacific strategy and plans to reward bold leadership at all levels.

Even with these operating instructions, Carlisle asserted, the \$1.3 trillion budget shortfall facing the armed forces over the next 10 years "will fundamentally change what we do and how we do it." Pacific Air Forces has taken its fair share of hits in operation and maintenance funding as the Air Force attempts to navigate recent budgetary turmoil, but unlike other major commands, its flying hours have largely been protected because of increasing threats from North


Korea and the planned strategy shift to the Asia-Pacific, said Carlisle.

"There is never enough money, manpower, or time. One of those three is always falling out of place," he said.

Air Force leadership has said the service will need to chop 200,000 flying hours from the force for the remainder of Fiscal 2013, yet PACAF's flying hours remain mostly intact.

Air Combat Command, on the other hand, has already started standing down more than a third of its fighter and bomber units. In addition, Red Flag, and many other major exercises throughout the Department of Defense, have been canceled.

Of the 17 USAF squadrons grounded by budget issues, only one from PACAF has stopped flying: the 18th Aggressor Squadron at Eielson AFB, Alaska. Grounding that squadron, which flies F-16s in Red Flag-Alaska exercises as enemy aviators, saves the Air Force the immediate fuel and maintenance costs of flying 18 F-16s plus three backup fighters. It also helps cut the costs of



An F-16 in aggressor markings flies an air-to-air combat mission during Cope North near Andersen AFB, Guam, in February, before sequestration forced USAF to cancel some other major exercises.

USAF photo by S/A Matthew Bruch



A pilot with the 25th Fighter Squadron prepares to take off in an A-10 from Osan AB, South Korea. PACAF's flying hours have largely been protected because of increasing threats from North Korea.

moving other squadrons and support units from their home bases to Alaska to participate in a Red Flag drill.

Terminating the exercise has some clear costs, however. For example, many Air Force fighter units in South Korea rely on a trip to Red Flag-Alaska to keep their skills sharp, as there are limited opportunities for realistic combat training on the Korean peninsula.

The suspension also means USAF, Navy, and Marine Corps aviators are denied vital training. Equally important, in the eyes of PACAF planners, is the fact that airmen from allied and friendly nations have been turned away, a move that has weakened PACAF's engagement with other air forces, directly counteracting one of Carlisle's initial priorities.

British and Canadian forces were scheduled to participate in the two-week Red Flag-Alaska exercise before it was canceled.

The 18th Aggressor Squadron also is caught up in another issue with wide implications: the consolidation of units to cut costs. These proposed moves have aroused fierce opposition from lawmakers and the surrounding communities, due to the potential loss of jobs and income.

PACAF has proposed moving the aggressor squadron from Eielson, near Fairbanks, to Joint Base Elmendorf-Richardson in Anchorage. The proposed relocation would mean removing 623 military personnel from Eielson, transferring 542 positions to Elmendorf, and eliminating 81 positions altogether. The Air Force has also proposed cutting an additional 749 military and 179 civilian positions at Eielson, saying they are no longer needed for operations there.

The planned reductions came in response to mandates from Congress; however, they drew immediate and vocal opposition from the Alaska delegation on Capitol Hill, led by Democratic Sen. Mark Begich, and from the Alaskan state government, led by Gov. Sean Parnell (R).

AirSea Battle

Another consolidation has also proved more difficult than expected: Folding 13th Air Force into PACAF's headquarters. Realigning the numbered air force has turned out to be a significant challenge. In 2011, USAF ordered 13th AF to be stitched into Pacific Air Forces to reduce duplication and to turn PACAF into a warfighting command.

Officials have met some resistance as they seek to meld 13th AF's operational

staff into PACAF's command staff, which is charged with organizing, training, and equipping forces for US Pacific Command operations.

Under the new organization, Lt. Gen. Stanley T. Kresge, the former 13th AF commander, has become the PACAF vice commander.

As PACAF looks ahead to 2023, it is entering a new era in its area of responsibility. In Washington, President Barack Obama's second term promises to be substantially different from the first term in policy toward Asia. It will be fashioned by newly appointed Cabinet officers—Secretary of Defense Chuck Hagel, Secretary of State John F. Kerry, and Director of Central Intelligence John O. Brennan. Even so, Carlisle contended, "I don't think there is anybody in the United States who doesn't recognize the importance of the Asia-Pacific region." Therefore, he said of the "pivot" or "rebalance" toward Asia, "I do think it will endure."

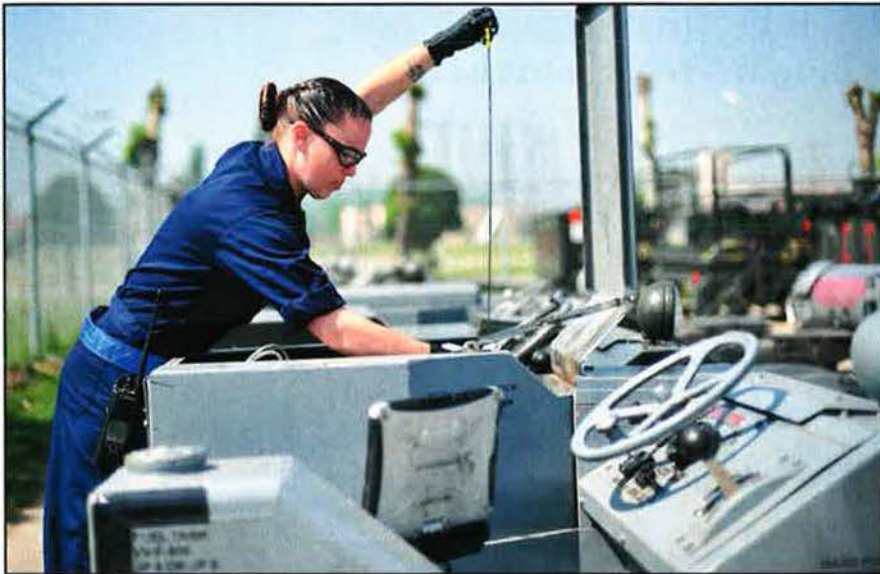
The general also said efforts to develop AirSea Battle (ASB), which is intended in part to counter China's extensive air defenses, would "endure."

An early version of ASB came out of a PACAF wargame seven years ago. Carlisle, who served as the commander of 3rd Wing at Elmendorf and as Air Force's A 3 from 2011 to 2012, pushed the concept along in Washington.

During a trip in April to Japan, South Korea, and China, Kerry sought to reassure Asian allies and friends that the US remained committed to the security of Asia. "Some people might be skeptical of America's commitment to this region," he said in a speech in Tokyo. "Well, let me be clear: President Obama made a smart



A1C Stephen Zbinovec (center) helps marshal a Japanese F-15J Eagle on the flight line at Andersen Air Force Base during the exercise Cope North.



SSgt. Jennifer Koontz checks the oil of a "jammer" at Osan AB, South Korea. Secretary of State John Kerry insists the US remains committed to the region's security.

and a strategic commitment to rebalance our interests and investments in Asia. My commitment to you is that as a Pacific nation that takes our Pacific partnership seriously, we will continue to build on our active and enduring presence."

Similarly, Deputy Secretary of Defense Ashton B. Carter has sought to reaffirm US commitments in Asia. In an address at the Center for Strategic and International Studies, a Washington, D.C.-based think tank, Carter said he had recently gone to Japan, South Korea, the Philippines, and Indonesia "to make sure that our forces, our allies, and our partners in the region understand that we are serious about our defense commitments there—that we are going to walk the walk, not just talk the talk." He added, "It's important to point

out how much time, energy, and intellectual capital, as well as resources, we are investing in our rebalance to Asia."

China Seeking Sphere of Influence

Skeptics, however, abound.

They point out that two of the architects of the Obama "pivot" to Asia, previous Secretary of State Hillary R. Clinton and Assistant Secretary of State for East Asian and Pacific Affairs Kurt M. Campbell have left office. The President's national security advisor, Thomas E. Donilon, who led White House staff efforts on the pivot, has resigned.

In this uncertain era unfolding in Asia, new governments have taken over in China and North Korea, both potential adversaries. If precedent holds, both na-

tions' governments will still be around 10 years from now, making long-range planning somewhat easier.

Carlisle was quick to assert that military-to-military and particularly air force-to-air force relations with Japan, Thailand, and India were in good shape despite often-troubled political relations. When the earthquake and resulting tsunami struck Japan in March 2011, for instance, US Pacific Command and PACAF personnel and aircraft began working with the Japan Self-Defense Forces within hours. Carlisle and other senior US officers credited the mission's success to the enduring US-Japan military collaboration.

During Cope Tiger 13, USAF pilots from the 44th Fighter Squadron at Kadena AB, Japan, and the 25th Fighter Squadron at Osan AB, South Korea, trained with aviators from Thailand and Singapore at Korat Royal Thai Air Base in central Thailand. Last year, USAF pilots flew with and against Indian Air Force pilots flying Su-30 and other Russian-built aircraft in the Cope India exercise. Leaked reports suggested that the Americans were surprised by some of the capabilities of the Russian aircraft and impressed with the skill of the Indian pilots.

On competition between the US and China for influence in Asia, Carlisle said every Asian nation has some sort of political relations with both. But he contended that the US seeks an open international system while China seeks to forge a sphere of influence. He agreed with US political leaders, diplomats, and military officers who contend that the US should not ask Asians to choose between America and China. And he applauded the Southeast Asian diplomat who asserted that, as a general rule, Asian nations want the US "to be on tap, but not on top."

However, Carlisle looked back a tad wistfully, saying: "We can't do today what we could do in 2003" because of budget constraints and numerous deployments supporting US Central Command operations that took place in the ensuing years.

Then he brightened and quoted from Winston Churchill, Britain's famous prime minister: "Gentlemen, we have run out of money. Now we have to think." ■

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, "Rising Up Down Under," appeared in December 2012.

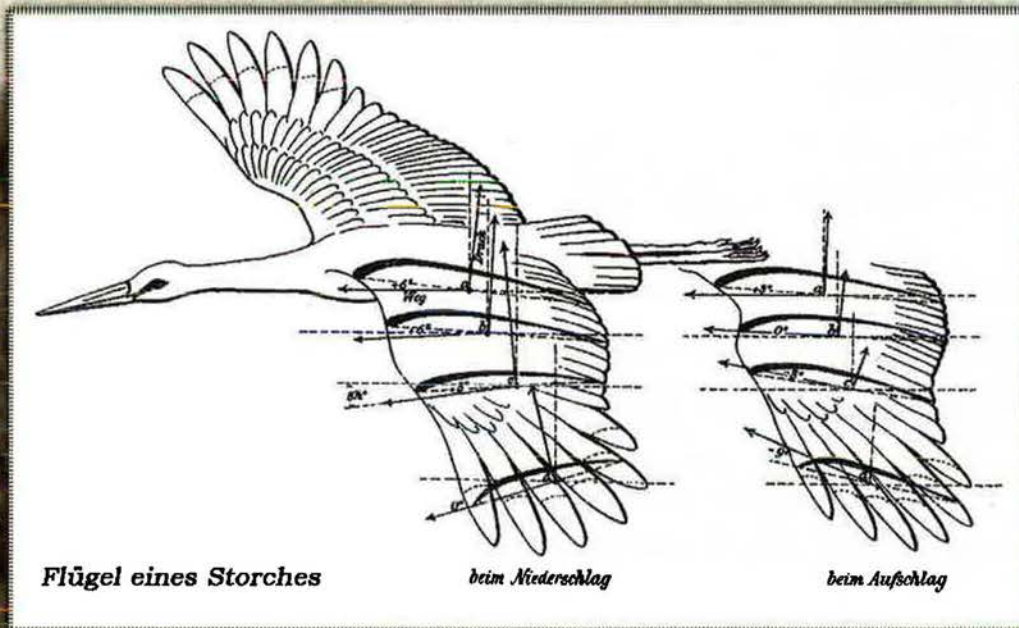


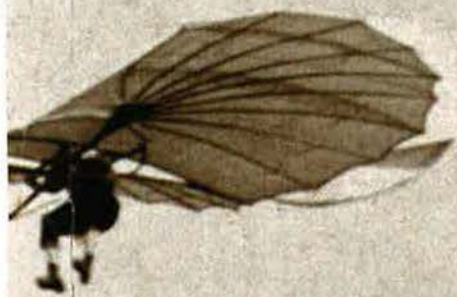
Gen. Herbert Carlisle (in window) and Maj. David Morales tour a train that delivers coal to the central heating and power plant at Eielson AFB, Alaska. Red Flag-Alaska, a multilateral exercise held at the base annually, has been canceled.

People know what the Wright brothers accomplished, but they were not the first humans to take to the air.

Firsts in *Flight*

By Peter Grier





Thirteen years before the Wright brothers' pioneering flight at Kitty Hawk, N.C., a French inventor named Clément Ader climbed into a bat-like contraption at an isolated French estate and made aviation history of his own.

On Oct. 9, 1890, Ader opened the throttle on his steam-powered aircraft *Éole* and roared down a level 700-foot runway. As he recalled later, "I advanced at high speed, the jolting of the wheels on the ground stopped almost at once, and for a few seconds I was suspended in a state of indefinable joy."

He had achieved liftoff. With the end of his cleared space rapidly approaching Ader stopped the engine and sank back to the ground. Measurements showed the *Éole* was airborne for about 160 feet, at a height witnesses estimated at eight inches.

Ader was fortunate he had gone no higher. The *Éole* had no tail. Nor did it have workable flight controls, as perhaps befitted a contraption named after the god of the winds. The pilot's forward vision was blocked by the steam engine's condenser.

But for a brief moment he had done something no other person had ever accomplished.

"Although *Éole* was incapable of either sustained or controlled flight, this represented the first occasion on which a powered aircraft carrying a human made a takeoff from level ground," writes Smithsonian senior curator of aeronautics Tom D. Crouch in his book *Wings: A History of Aviation From Kites to the Space Age*.

Orville and Wilbur Wright invented and constructed the world's first successful heavier-than-air flying machine. Though their primacy was at times disputed by various claimants in the early years of the 20th century their place in history is secure today. The Wright brothers were technological geniuses who worked methodically to solve such problems as the proper camber and airfoil shape for wings. They grasped that the key to real flight was control of pitch, roll, and yaw. Their work revolutionized world transportation.

But they did not work in isolation, as they freely acknowledged.

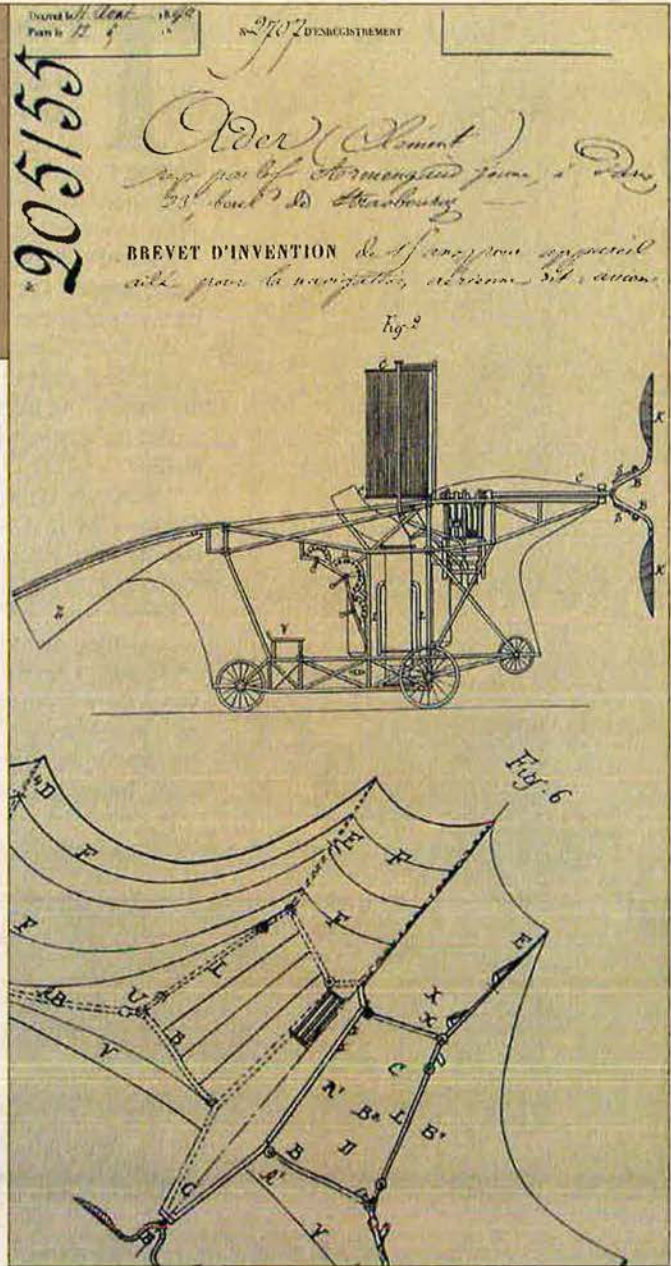
"They were well aware of all previous work, sought out information and advice,

Otto Lillenthal, aka the "birdman of Pomerania," was the first human to launch himself into the air, fly, and land safely. He conducted some 2,000 flying experiments in 16 gliders. Inset: Lillenthal's illustration of the flight of a stork.

Library of Congress photo



Clément Ader (left) wasn't interested in gliders—he knew the value of powered flight. At right is the patent for one of Ader's flying machines. Pictured below is his Avion III. It was funded by the French Ministry of War. It crashed on takeoff.



via Wikipedia



relied (sometimes to their sorrow) on the work of others, and kept abreast of developments in America and abroad," writes former Air Force historian Richard P. Hallion in his book *Taking Flight: Inventing the Aerial Age From Antiquity Through the First World War*.

At Kitty Hawk the Wright brothers made the first controlled, sustained, powered, human heavier-than-air flight. Change any of the words in that sentence and other claimants appear.

Clément Ader, for example, made what some historians regard as the first uncontrolled, unsustained, powered human heavier-than-air flight, though in his case "hop" might be a better word.

"There's a whole series of notable flights, though a lot of the earliest ones are lost in time," says Hallion.

Who made the first human flight of any kind? The answer to that is buried in legends. Many cultures have myths of bird-men who used wings of some sort to reach the heavens. Of these the familiar story of Daedalus and Icarus is today the best known.

The Flying Monk

The first significant attempts in recorded history were those undertaken with a scientific and technological focus. In other words, they were the work of people who looked at flight in an analytical manner and then tried to design flying equipment that might actually work.

Hallion points to one such in particular: Brother Eilmer, the "flying monk" of Malmesbury, England, who made a "very notable effort."

Sometime near the beginning of the 11th century this young Benedictine monk donned a crude pair of cloth-covered wings, perhaps made from ash or willow, and leapt from the top of a tower at Malmesbury Abbey, a religious house in Wiltshire in England's southwest.

Brother Eilmer had been inspired by the fable of Daedalus and had perhaps studied the jackdaws that rode air currents around the tower's top.

He traveled a furlong, or about 600 feet, according to an account of the event by the eminent 12th-century historian and monk William of Malmesbury. This likely carried him over the city wall and into a small valley by the River Avon.

Then, buffeted by the wind and frightened by his boldness he fell, breaking both legs.

"He used to relate as the cause of his failure that he had forgotten to provide himself with a tail," wrote William of Malmesbury.

Hallion theorizes that Brother Eilmer had a glide ratio of about four feet of forward progress to one foot of sink, given the reported distances involved. This means he had to have wings fairly far back on his body, lest the center of lift be too far forward.

Most likely, air pressure pushed his arms up into a crude dihedral, providing stability and preventing flapping, which would have likely resulted in his death.

Perhaps as he neared the ground, Brother Eilmer pulled his head up to avoid injury, causing a stall. His comment that a tail might have helped indicates he had some understanding of the aerodynamic forces involved and was learning from his experience.

Not that he ever tried again—the

broken legs left him lame for the rest of his life.

It's impossible to prove that this was the first human flight. But the record indicates that at the least it was the first serious flight attempt in world history, according to Hallion.

"He is undertaking this with a substantial interest in how flight is actually prosecuted. That kind of sets a tone," Hallion says.

Not every pioneer of pre-Wright flight used heavier-than-air methods patterned after birds. The late 18th century saw the birth of another way of ascending: ballooning.

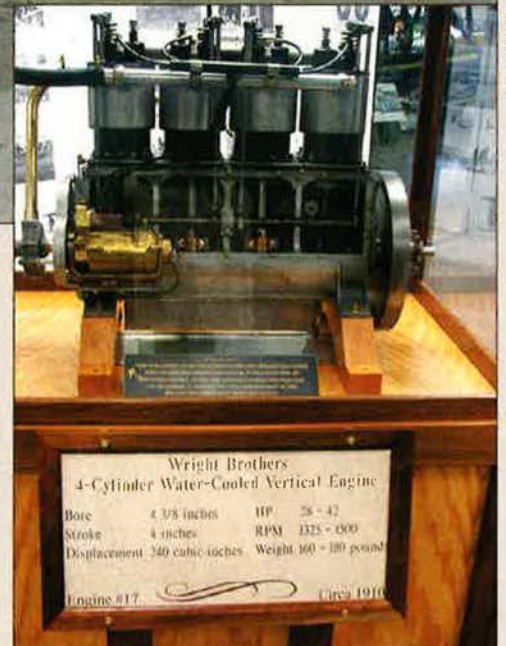
Two French papermakers, the brothers Jacques-Étienne and Joseph-Michel Montgolfier, were the first to demonstrate the lifting ability of balloons on a large scale. They had noticed ash rising in paper fires and at first thought it was smoke that was propelling the flakes

aloft. Eventually they discovered that hot air caused bags to rise.

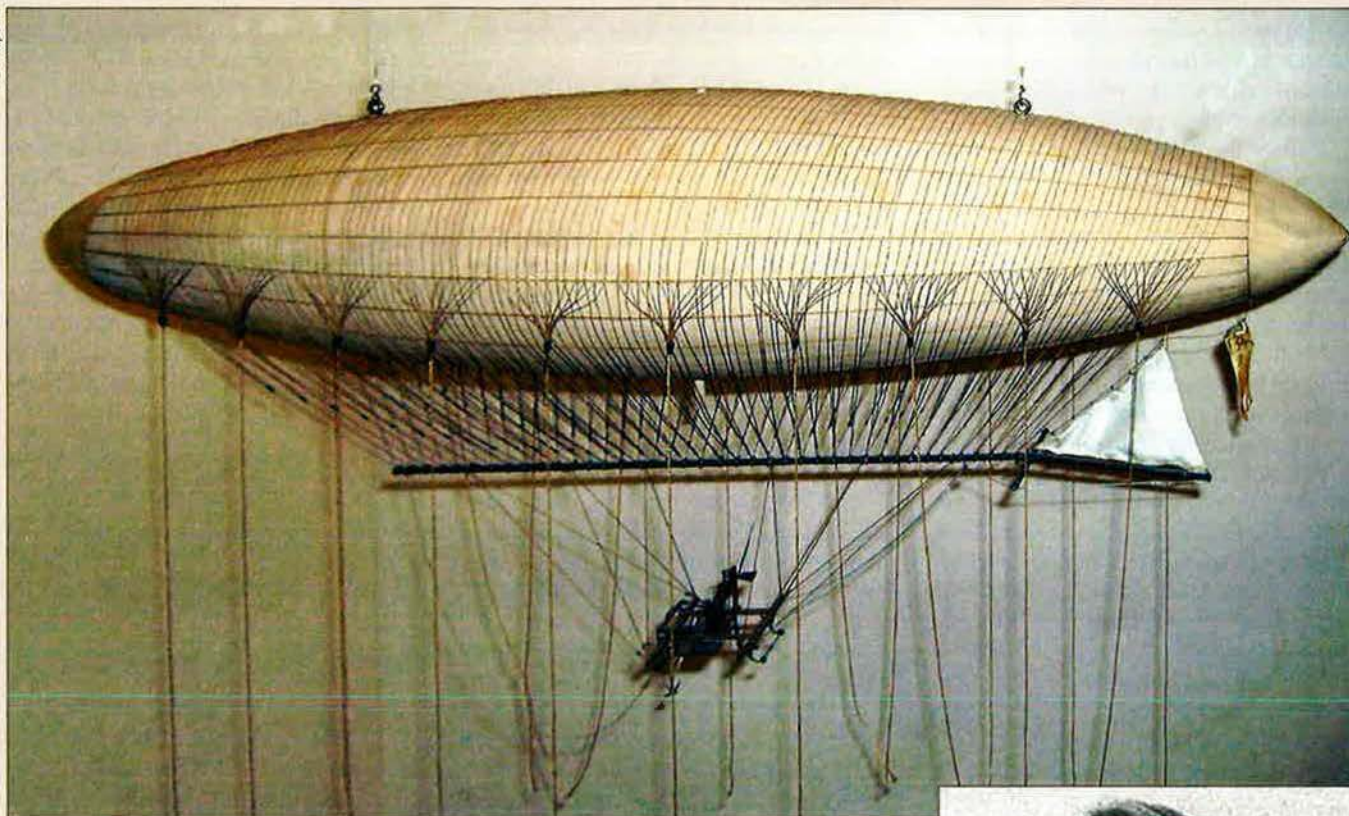
In June 1783, they sent up a 35-foot-diameter balloon in a public demonstration. Three months later they launched a duck, a sheep, and a rooster aloft at the palace at Versailles with the royal family in attendance. Then on Nov. 21 the brothers triumphed. A large Montgolfier hot air balloon rose untethered from the grounds of the chateau of the dauphin of France, carrying two men: the scientist Jean-Francois Pilâtre de Rozier and François Laurent, the marquis d'Arlandes.

The first successful flight of the Wright Flyer at Kitty Hawk, N.C., in 1903. Below, l-r: Wilbur Wright; Orville Wright; and a Wright four-cylinder water-cooled vertical engine, circa 1910, on display at the New England Air Museum, in Windsor Locks, Conn.

Library of Congress photos



Via Wikipedia



These intrepid travelers were “the first humans to make a free flight,” according to the Smithsonian’s Crouch. They doffed their hats and bowed to the throng below when they reached an altitude of 250 feet. Climbing to about 3,000 feet, they traveled for some 20 to 25 minutes over the environs of Paris. The flight ended with a gentle descent into an open field.

The Montgolfiers had faced competition in their race to make the first manned balloon ascension. The eminent scientist Jacques-Alexandre-César Charles was working on hydrogen-filled balloons at the same time the papermakers were experimenting with hot air.

Hydrogen promised superior lifting power and longer flights than hot air. But it was expensive and difficult to generate—one of the means of production Charles used was to fill an oak cask with iron filings and pour in sulphuric acid. In the end, the first manned flight in a hydrogen balloon followed the Montgolfiers by 10 days.

Up, Up and Away

As ballooning advanced through the end of the 18th century and the beginning of the 19th, its shortfalls became apparent. Balloon envelopes had to be huge to carry even small weights, for one thing. They went where the wind took them, for another. Control was a major problem. Balloons could fly out of a city, or into a city, depending on the

A model of Henri Giffard's 144-foot-long steam-powered airship (above). When his airship burst during a descent, Giffard (right) tried to raise funds to build a 2,000-foot version, but failed.

whims of nature. They could not reliably make round trips.

Enter Henri J. Giffard. A French railway draftsman and engineer, Giffard was highly interested in the possible use of steam propulsion for aerial navigation. In 1847, he proposed a steam-powered helicopter, but eventually turned his attention to the more practical target of an airship.

Eventually he designed a lightweight, coke-burning steam engine and boiler that produced about three horsepower, driving an 11-foot three-blade propeller at 110 revolutions per minute. He mounted this beneath a cigar-shaped gas bag of about 144 feet in length and added a triangular sail-like rudder at the back for directional control.

The result was “the first controlled powered balloon—a dirigible or airship,” writes British military and social historian R. G. Grant in his book *Flight: The Complete History*.

On Sept. 24, 1852, Giffard flew his airship from the Paris Hippodrome to the municipality of Élancourt, about 17 miles away. His underpowered craft cranked up to only about 5 mph, so it was helpless in the face of a headwind. But in still air



or in front of a breeze it could maneuver. Thus he arguably achieved the world’s first controlled, sustained, powered human lighter-than-air flight.

Eventually his airship burst during a descent, and he failed to raise funds for an enormous 2,000-foot-long version of the craft. Then his eyesight failed, rendering him miserable. In 1882 he committed suicide. He was only 57 years old.

One year after Giffard’s ground-breaking controlled flight, another aeronautic advance of equal or greater importance likely occurred a few hundred miles away across the English Channel.

George Cayley, a man some historians call the “Father of Aeronautics,” was the person behind it.



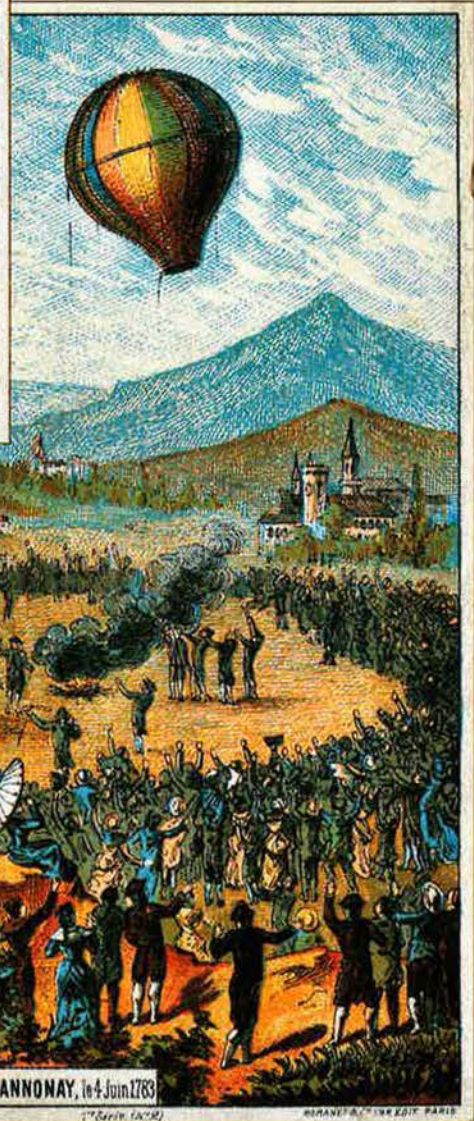
work indicated that angling wings upward at the center line, forming a dihedral, would provide some lateral stability.

In 1804 he designed and built what some call “the first real airplane in history.” This was a model glider—basically, a five-foot stick with a kite for a wing and a dart-like tail.

In 1809 Cayley constructed a larger model on the same form. A man who carried this “flying parachute” and ran downhill into a breeze would be pulled upward to the point where his feet could scarcely touch the ground.

During the middle decades of his life the enterprising Yorkshire baronet focused on politics and other mechanical

Left: A description and drawing, including engineering proportions, of the Montgolfier brothers' balloon. Note the brothers doffing their hats and waving to observers. Below, an artist's illustration of the event shows the amazed crowd's reaction.



Cayley, born in 1773, was a member of England’s rural gentry, a baronet with a country seat at Brompton Hall in Yorkshire. From an early age he took a keen interest in science and technology—and especially the possibility of flight. Overall he was a remarkable man, a poet who fought for the education of the lower classes and the abolition of slavery. Active in Whig politics, he eventually served as a member of Parliament for Scarborough.

His great contribution was to apply the research methods and tools of the scientific approach to the study of aerodynamic forces, and then use his findings to experiment with actual flying prototypes. He realized that the key to flight was the behavior of air itself.

“An uninterrupted ocean that comes to every man’s door ought not to be neglected as a source of human gratification and advantage,” Cayley said.

Using a whirling-arm device to test various shapes, Cayley ascertained that a cambered or curved surface produced greater lift for a given angle of attack than a flat surface. He discovered that there was an area of lower pressure on the upper surface of a cambered wing in flight and an area of lower pressure underneath. His

enthusiasms. In the late 1840s he had another burst of aeronautical enthusiasm, and began building larger, more refined gliding models.

In 1849 he constructed a triplane aircraft with a rudder and elevator and a boat-like fuselage large enough to carry a small boy as it flew a few yards downhill.

Then in 1853 came his breakthrough. Cayley built what he called his “new flyer,” which may have been either a triplane or a monoplane and was large enough to carry a full-grown man. He convinced one of his retainers—likely a coachman—to be his pilot. Launched on the high side of a valley behind Brampton Hall, the flyer flew across the vale and came down with a crash about 500 yards away, according to an account by Cayley’s granddaughter.

The granddaughter’s testimony was given decades after the fact. If she is to be believed, the coachman struggled out of the wreckage and gave notice on the spot, saying, “I was hired to drive and not to fly.”

But contemporaneous accounts refer to the glider taking to the air. It was said to be the first recorded flight by an adult in an aircraft. It was uncontrolled, unsustained, and unpowered. But it was a successful human heavier-than-air event.

Orville Wright later credited Cayley for his work on the principles of aeronautics, saying in 1912 that “Sir George Cayley was a remarkable man.”

But Cayley was not the glider designer who most influenced the Wrights. That was Otto Lilienthal, the birdman of Pomerania, the German who was the first human to launch himself into the air, fly, and land safely.

“Lilienthal inspires the Wrights to fly,” says Hallion.

Born in 1848, Lilienthal was a trained engineer who ran a successful machine shop and factory in Berlin. Like many of the pioneers of aviation he was fascinated by flight from childhood. He conducted his own experiments in wing design with whirling-arm machines, intensively studied the aerodynamics of bird flight, and published his findings, but what he believed in above all was personal experimentation.

“To invent an airplane is nothing. To build one is something. To fly is everything,” he said.

Between 1890 and 1896 Lilienthal made 2,000 flights in some 16 different gliders of his own design. They were all hang gliders, monoplane wings of

fabric-covered wood with small tails that were controlled by the movement of the pilot’s body.

He became an international celebrity via dramatic newspaper accounts of his exploits and engravings of his derring-do in the air. Eventually he sold copies of his gliders to like-minded experimenters around the world.

Then on Aug. 9, 1896, Lilienthal flew straight off the top of a hill in the countryside some 60 miles outside Berlin. A gust caught his wing, his nose rose in the air, and the aircraft stalled. He fell 50 feet to the ground and died the next day with a broken back.

Military Interest

Wilbur Wright read a brief account of the tragedy to his brother as the latter lay on his bed, sick with typhoid, at home in Dayton, Ohio. Years later Wilbur stated that Lilienthal had been the first man to understand that balancing, or control, was the first great problem of human flight, not the last. The tail-first design of the Wrights’ own aircraft was due in part to their desire to avoid the stalling problem that had proved fatal to the German flier.

Gliding, by definition, only takes an aircraft so far. Early aviators could not take full advantage of advances in aeronautical science until they had reliable propulsion systems. That is where Clément Ader and other pioneers of power entered the picture.

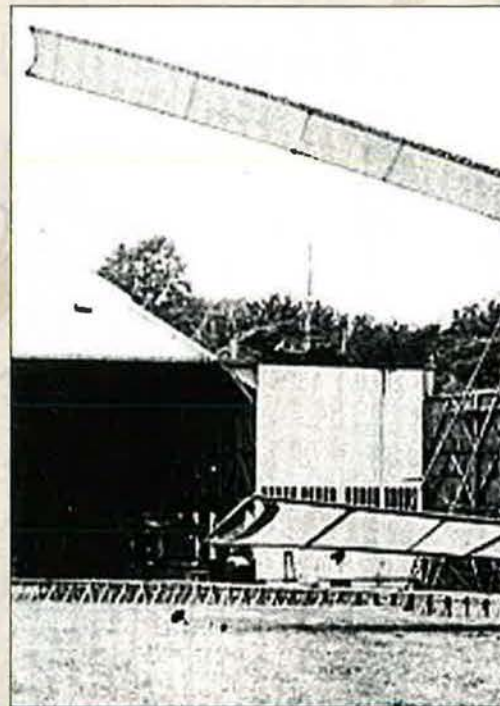
Born in 1841, Ader is a controversial figure in the history of aviation, “a mixed bag,” says Hallion.

An electrical and mechanical engineer, Ader first came to French public attention with his Theatrephone, a system of lines laid in Paris sewers that carried the sound of live performances to hotels and cafes. He studied birds by drugging them with chloroformed bait and then examining their wings while they remained unconscious.

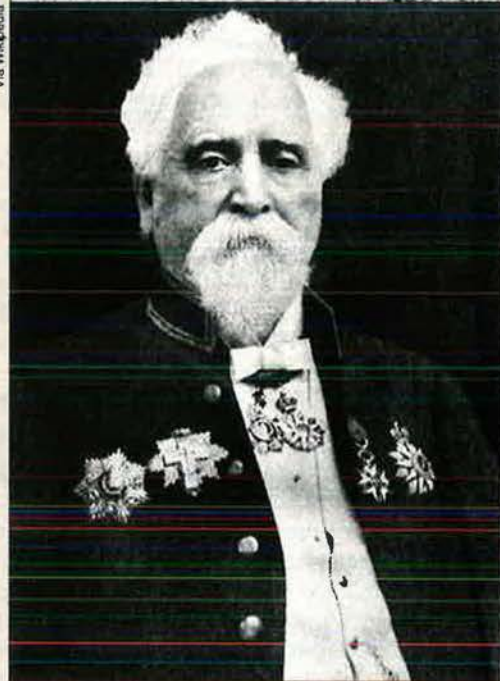
Ader did not bother with gliding or models when he turned his full attention to aviation. He built his full-scale, steam monoplane *Éole* between 1882 and 1890.

The plane itself resembled a modern movie director’s idea of a 19th century aero craft. It was bat-shaped, with a streamlined fairing and four-blade propellers constructed to resemble bird feathers. Aside from aesthetics, its most notable aspect may have been its four-cylinder engine, which produced 20 horsepower despite weighing only about 200 pounds.

Éole’s power-to-weight ratio likely was a reason it hopped into the air on



Via Wikimedia

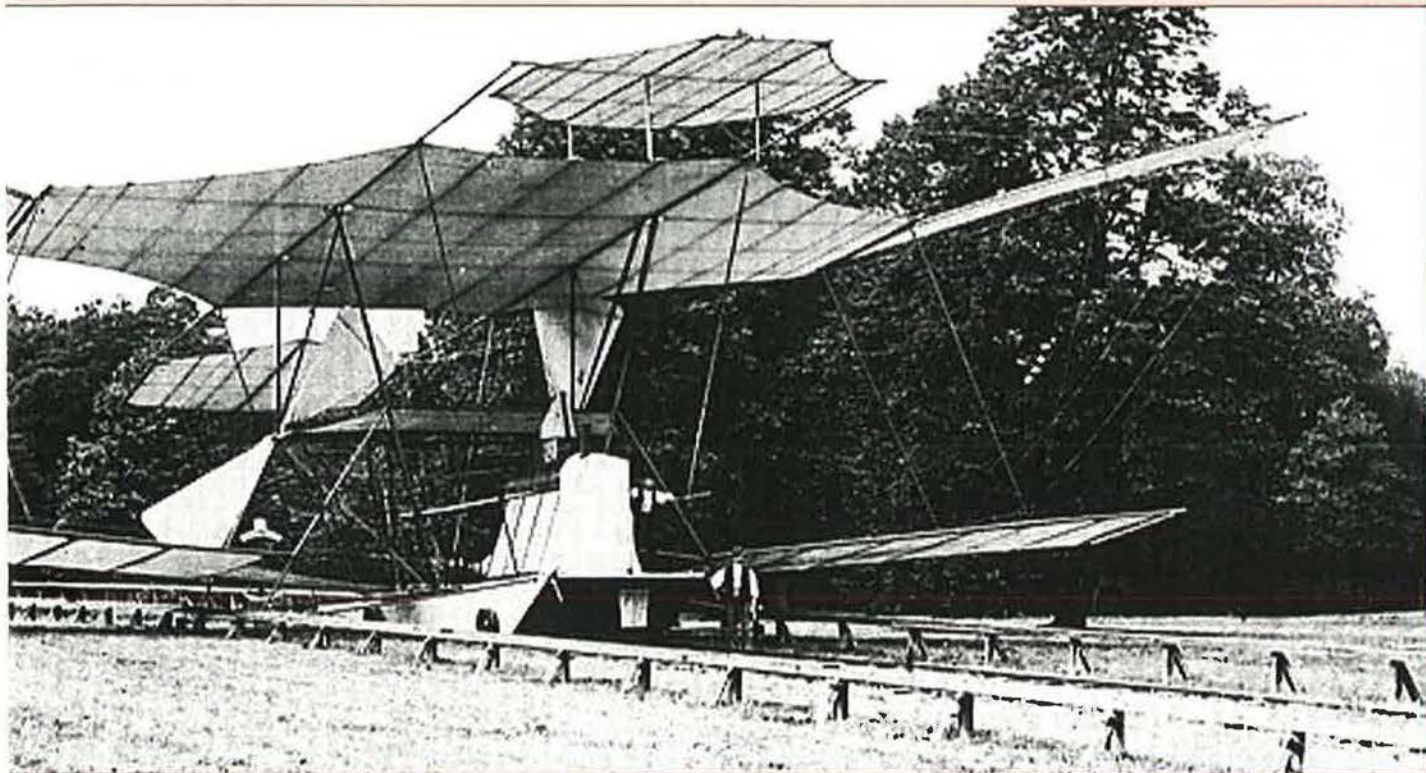


Oct. 9, 1890, for the first powered takeoff in history. But was Ader truly flying? That’s a matter of interpretation.

“You can build anything to ricochet around, but is it actually aloft? Can you see the sky under it?” says Hallion. “By that standard, I don’t think so.”

Even so, Ader was encouraged by his success. So was the French Ministry of War, which offered him money—eventually, more than 650,000 francs—to build a new and larger model. Over the course of seven years Ader produced a larger, twin-engine version of the *Éole* named *Avion III*.

In 1897, trials of this aircraft at a military camp were a disaster. The tail



Hiram Maxim (l), inventor of the Maxim machine gun, had a chance to beat the Wrights into the air with powered, controlled flight, but when his flying machine cranked up to 40 mph on its first flight, he cut power to avoid damaging the aircraft and never flew it again. The Wright brothers won the race.

wheel lifted off the ground but nothing else. Winds blew the craft off its test track, resulting in heavy damage.

The French military lost interest. Then in 1906, after the Wrights' success, Ader claimed that Avion III had flown 984 feet in 1897. Furthermore, he said the Éole had flown a second time, in 1891.

A few years later the military released its report on the Avion, revealing that the aircraft hadn't achieved liftoff. Virtually all historians today discount Ader's claim of further Éole flights as well.

Hiram S. Maxim, not Clément Ader, might have been the inventor with the best chance to beat the Wrights to the air in full-powered flight. A native of Maine, Maxim conceived the notion of a rapid-fire weapon that would use the recoil from one bullet to load the next. He moved to England in the 1880s after the British War Office expressed strong interest in his design.

The success of the Maxim gun made him a wealthy man and hero of Victorian England. But he was also strongly interested in flight and devoted a portion of his munitions fortune to

the construction of a large test machine for aeronautical research.

He completed the contraption in 1893. It was a huge biplane with 4,000 square feet of lifting surface and two 180-horsepower steam engines, each powering a 17-foot propeller. It ran on a circular track on his rented estate with upper guard rails that prevented it from lifting more than two feet into the air.

On July 31, 1894, Maxim fired up his steam engines to their maximum pressure and let his rig run. It moved so quickly that its crew, which included Maxim, was thrown off balance. After about 600 feet it lifted off its support rails, and its restraining supports began to buckle and fracture. At the time it was making perhaps 40 mph.

"There's one moment when he's really airborne in that thing," says Hallion. "He should have gone to full power and just said, 'Let's have at it.' If he had done that he would have been credited with the first flight."

Instead Maxim cut power to prevent further damage. His rig settled down. It never flew again, due to high cost, among other factors.

Maxim was a wealthy man but he had already spent pounds sterling worth about \$2 million in today's money in his flight research. His gun business was suffering, in part because of his inattention to the firm. Then in 1896 his brother Hudson, who felt Hiram had capitalized on work he had done, instigated bigamy charges against

Maxim in the US. The famous inventor was eventually cleared of the charges but in the meantime was distracted from his other interests. In the end his gun company was sold and his flight research ended.

The Wrights were the first to put all these accumulating advances together. They combined the aeronautical knowledge of the science-oriented pioneers with the technical knowledge of the engineers and the daring of the gliders.

Most of all, they were airmen. Maxim and Ader were what Hallion refers to as "chauffeurs," people who thought that piloting an aircraft would not be much different than driving a vehicle.

But the Wrights themselves were far from flawless. Their canard design was unstable and difficult to fly. They stuck with it too long as aviators in other nations, particularly France, produced more practical platforms.

"They knew how to build the first airplane. They did not know how to build the second airplane," says Hallion.

Despite the fact that the Wright brothers undeniably changed the world by launching aviation as we know it today, eventually they, too, were surpassed as the aerial age began. ■

Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, is a longtime contributor to Air Force Magazine. His most recent articles, "Cyber-Patriot Heats Up" and "Not Clowning Around," appeared in June.

In March 1945, British Field Marshal Bernard L. Montgomery stood on the Rhine with visions of a triumphal entry into Berlin dancing in his head. It was Montgomery's expectation that in addition to his own 21st Army Group, he would have command of the US Ninth Army and an absolute priority on fuel and supplies. He would then make a 250-mile dash across the north German plain to capture Berlin.

Prime Minister Winston Churchill agreed with Montgomery's assumptions but the supreme Allied commander, Gen. Dwight D. Eisenhower, did not.

Ike understood his mission to be destroying the German armed forces and ending the war in Europe as soon as possible. Berlin had political, symbolic, and psychological importance but it was a bombed-out hulk with almost no military

value. Except for a token presence, the Reich ministries had moved out already. The Soviet army was camped on the Oder, 35 miles from Berlin, with more than a million troops in position to attack.

The Battle of the Bulge in December had sapped German strength in the west, but 61 divisions remained, with additional pockets of strength in the Baltic states. Eisenhower's plan was to advance on a broad front, capture the industrial heartland of the Ruhr, split Germany down the middle, and consolidate Allied gains on the flanks. A diversion of resources for a single thrust by Montgomery would have brought operations elsewhere along the line to a stop.

The United States, Britain, and the Soviet Union had agreed in 1944 on the boundary lines for postwar occupation of Germany. Berlin lay more than 100 miles inside the Soviet zone, although

the Allied powers would share control of the city. Eisenhower was not willing to expend tens of thousands of lives for the prestige of taking territory that would be turned over to the Soviets as soon as the war ended.

Eisenhower also wanted an orderly linkup with the Soviet forces, whose emotions were running high as they swept through Germany. "What are your ideas on control and coordination to prevent unfortunate incidents and to sort out the two advancing forces?" Gen. George C. Marshall, US Army Chief of Staff, asked Eisenhower. "One possibility is an agreed line of demarcation."

Over the objections of Montgomery and Churchill, Eisenhower decided against an all-out push for Berlin and elected to meet the Soviet forces on the Elbe. Harsh criticism of the decision followed in the years ahead. It dogged Eisenhower in

"THE HALT" ON THE E



his run for the presidency in 1952 and still pops up occasionally in theories that Ike's failure to take Berlin delivered the city into Soviet hands.

Eisenhower and Montgomery

In the first part of the war, Britain had been the dominant partner in the western Alliance, but by 1945 the Americans were providing most of the troops and resources and had taken over the leadership role. The British did not handle the change gracefully.

It rankled that Eisenhower was the supreme commander. "I would never class Ike as a great soldier," Montgomery sniffed.

El Alamein in North Africa "was the only major victory the British had in the first three years of the war," said historian Stephen E. Ambrose. "The British public had desperately needed a hero and after El Alamein the government deliberately

built up Montgomery." He was immensely popular with the British public and the Army rank and file.

The Americans were less impressed by Montgomery and his egotism. The relationship hit bottom in January 1945 when Montgomery held a press conference at which he essentially claimed credit for winning the Battle of the Bulge. Churchill tried to repair the damage with a speech in the House of Commons, acknowledging that the Americans had done most of the fighting and had taken most of the casualties.

Nevertheless, Churchill was also anguished by the decline of British prestige. According to Field Marshal Alan Brooke, chief of the Imperial General Staff, Churchill "propounded strategies on ensuring that British troops were retained in the limelight, if necessary at the expense of the Americans."

The British pushed constantly for appointment of a "land forces commander" to be inserted between Eisenhower and the Allied army groups. This would have effectively made Ike a figurehead. Their choice for the job was, of course, Montgomery.

Eisenhower had appointed Montgomery coordinator of the ground forces during the initial move inland after the Normandy invasion, but by March 1945, he had resumed operational command of the seven Allied armies—four American, one British, one Canadian, and one French.

Up to then, the leading element of the offensive had been Montgomery's 21st Army Group on the northern flank, supported by the 12th Army Group under US Gen. Omar N. Bradley and the 6th Army Group under US Lt. Gen. Jacob L. Devers. The Ninth US Army had been attached to

Left: The Brandenburg Gate in June 1945, after the Soviet army took Berlin. Below: Field Marshal Bernard Montgomery, flanked by Gen. Dwight Eisenhower (l) and Gen. Omar Bradley (r), in 1946. Montgomery was loved by the British public, but many Allied military leaders were not so enamored.

L.B.E

By John T. Correll

Eisenhower did not regard Berlin as an important military target. He would not expend tens of thousands of Allied lives to take it.



Carl Wehrother photo via Bundesarchiv, Germany



When Eisenhower established a bridgehead on the Elbe, Montgomery was still 60 miles short of the goal. Eisenhower was concerned that Montgomery's plodding pace might allow the Russians to reach Luebeck first and keep going into Denmark.

Montgomery for the drive to the Rhine. Montgomery assumed the arrangement to be permanent.

When Montgomery did not get the orders he wanted, he gave the directions himself. In a message to Eisenhower March 27, he said, "Today I issued orders to army commanders for operations eastward which are about to begin." He would "drive hard" toward the Elbe and "thence by autobahn to Berlin, I hope."

He had miscalculated on several points.

As recently as September 1944, Eisenhower had recognized Berlin as a principal objective, but back then, the Red Army had been outside Warsaw. In a massive effort in February 1945, the Soviets surged almost 300 miles westward to draw within artillery range of Berlin, where they were busily building up their stores of munitions and supplies. It appeared likely that the Soviets would take Berlin, and Eisenhower had turned his attention to other pressing objectives.

Furthermore, primacy in the offensive was about to shift from Montgomery to Bradley. On March 7, elements of Bradley's 12th Army Group seized an intact bridge over the Rhine at Remagen and expanded the bridgehead deeper into Germany. Meanwhile, Montgomery paused at the Rhine and did not get across until March 23.

Bradley, steady and reliable, could be counted on to exploit the bridgehead, whereas Montgomery's reputation for methodical plodding inspired little confidence. "Monty wanted to ride into Berlin on a white charger," said British Maj. Gen. John F. M. Whiteley, deputy operations chief at Supreme Headquarters Allied Expeditionary Force, but "the feeling was that if anything had to be done quickly, don't give it to Monty."

British Lt. Gen. Frederick E. Morgan, deputy chief of staff for Supreme Headquarters Allied Expeditionary Force, said, "Monty would have needed at least six months to prepare."

The Cable to Stalin

On March 28—in an initiative that would reverberate for years—Eisenhower sent a cable to Maj. Gen. John R. Deane, the US military liaison officer in Moscow, with a message to be delivered to Stalin. Ike said operations had reached the point where it was essential for him to know Russian intentions so actions of the advancing forces could be coordinated.

His own immediate plan, he told Stalin, was to encircle the Ruhr and isolate it from the rest of Germany, then "divide the enemy's remaining forces by joining hands with your forces. ... For my forces, the best axis on which to effect this junction would be Erfurt-Leipzig-Dresden." Contrary to the legend that Eisenhower's message conceded Berlin to the Russians, the cable did not mention Berlin at all. However, it could be reasonably inferred from the context that Ike did not regard Berlin as a major goal. He was aiming for Dresden, some 100 miles to the south.

Concurrently, Eisenhower sent telegrams to Marshall and Montgomery about the latest developments. The Ninth US Army would revert to Bradley, whose army group would become the spearhead of the advance.

The British complained furiously that Eisenhower had exceeded his authority by contacting a head of state directly. Eisenhower said he wrote to Stalin in his capacity as head of the Soviet armed forces, not as head of state. Besides, Churchill had always felt free to deal with Eisenhower directly.

More to the point was the diminution of the British role. Churchill told the British chiefs of staff that Montgomery had been "deprived of the Ninth United States Army" and that the British "might be condemned to an almost static role" in the final phase of the war. In a message to Eisenhower March 31—sent directly, as usual—Churchill expressed his dismay at "the relegation of His Majesty's forces to an unexpected restricted sphere."

Delivery of the message to Stalin was held up temporarily, but Marshall and the US military chiefs, weary of British complaining, stood staunchly behind Eisenhower. Montgomery's new assignment was to protect Bradley's left flank, seize Luebeck in northern Germany, cut off German troops in the Danish peninsula and Norway, and take the crucial ports on the North Sea.

Bradley pushed into central Germany, encircled the Ruhr, and trapped Field Marshal Walter Model's Army Group B

in the pocket, capturing 325,000 troops and an enormous amount of supplies.

Deane delivered the message to Stalin March 31. Stalin declared his full agreement with Eisenhower and said the Soviet high command planned to "allot secondary forces in the direction of Berlin." In actuality, Stalin did not believe a word that Eisenhower had said and ordered the Soviet attack on Berlin to begin.

The Issue of Berlin

Eisenhower had not completely ruled out Berlin as an objective. "At any time that we can seize Berlin at little cost, we should, of course, do so," he said in a wire to Marshall April 7. Ike's original orders from the Combined Chiefs of Staff in February 1944 directed him to "undertake operations aimed at the heart of Germany and the destruction of her armed forces." Nothing was said in the instructions, then or later, about political considerations.

"I am the first to admit that a war is waged in pursuance of political aims, and if the Combined Chiefs of Staff should decide that the Allied effort to take Berlin outweighs purely military considerations in the theater, I would cheerfully readjust my plans and thinking so as to carry out such an operation," Eisenhower told Marshall.

There was no change in orders. In fact, there is no indication the Combined Chiefs ever considered such a change. Nevertheless, Churchill continued to press the issue. He said the fall of Berlin would "be the supreme signal of defeat to the German people" and that leaving it to the Soviets would strengthen their conviction "that they have been the overwhelming contributor to our common victory."

For Churchill, the focus of the war had evolved from a pure defeat of the Germans to establishing the postwar balance of power in Europe. This was of far less importance to the Americans, who did not intend to stay in Europe after the war and were anxious to shift their military effort to finishing off the Japanese in the Pacific.

The irony was that the occupation zones were mostly a British creation. The initial plan, called "Rankin C," was drawn up by the British in 1943 and submitted in 1944 for consideration by the three-power European Advisory Commission. The United States had some doubts, but the Soviets agreed right away. The zones were promulgated in the Occupation Protocol of September 1944 and confirmed at the Big Three meeting at Yalta in February 1945.

Churchill "most definitely wanted Allied troops within the Russian zone when



ITAR-TASS photo

American soldiers (l) and Russian soldiers greet one another on the Elbe in Torgau, Germany, in April 1945. The American advance halted there. The Russians went on to take Berlin, a prize with little military value to offer but a high price in lives.

the Germans surrendered, and he did not want them pulled out until he was certain Stalin would give something in return," said Ambrose.

Although Eisenhower regarded it as "militarily unsound" to make Berlin a major objective, he kept the issue open. According to Bradley, "the capture of Berlin was still under active consideration by us as late as April 15," the day before the Russians began their assault on Berlin.

"I never suggested going back on our word over the agreed zones provided other agreements were also respected," Churchill said in his memoirs. "I became convinced however that before we halted, or still more withdrew, we ought to seek a meeting with Stalin face-to-face and make sure that an agreement was reached about the whole front. It would indeed be a disaster if we kept all our agreements in good faith while the Soviets laid their hands upon all they could get without the slightest regard for the obligations into which they had entered."

The Russians, who had suffered enormously during the German invasion of their country, were determined to have their vengeance on Berlin. Had the Americans and British challenged them for capture of the city, it is inconceivable that they would have acquiesced passively.

At the Elbe

In the spring of 1945, SHAEF intelligence created a distraction with reports of a "National Redoubt" in the Bavarian Alps where SS divisions and other Nazi

stalwarts might be gathering for a final stand. The redoubt did not in fact exist, but Eisenhower could not ignore the possibility. It did not, however, seriously hamper the advance into central Germany.

By April 11, US forces had closed the 200-mile distance from the Rhine to the Elbe. The next day, elements of Lt. Gen. William H. Simpson's Ninth Army crossed the river near Magdeburg, 50 miles from Berlin, and established a bridgehead on the other side. Simpson pleaded for permission to keep going to Berlin.

The bridgehead on the Elbe was at the end of a long supply line, with few bridges available. Forward units had to be supplied by air from support bases on the Rhine. A German force of about 50,000 stood between Simpson and Berlin with more in terminal defense lines around the city, ordered by Hitler to hold and fight to the death.

"At that time we could probably have pushed on to Berlin had we been willing to take the casualties Berlin would have cost us," Bradley said. "[Soviet Marshal Georgi Zhukov] had not yet crossed the Oder and Berlin now lay almost midway between our forces. However, Zhukov's eastern approaches were infinitely more negotiable than the waterlogged path that confronted us in the south."

Meanwhile, on the northern flank, Montgomery was making his usual slow progress and was still 60 miles short of the Elbe when Simpson got there. Eisenhower was concerned that the oncoming Russians might beat Montgomery to Luebeck and keep going into Denmark. Ike offered



Bradley (r), US commander of 12th Army Group, and Marshal Ivan Konev (l), commander of the First Ukrainian Front, confer in April 1945.

Montgomery additional forces, but the pace did not improve.

With the bridgehead on the Elbe open, Ike asked Bradley for his judgment about casualties.

"When Eisenhower asked me what I thought it might cost us to break through from the Elbe to Berlin, I estimated 100,000 casualties," Bradley said. "A pretty stiff price to pay for a prestige objective," I said, "especially when we've got to fall back and let the other fellow take over."

To Simpson's great and lasting disappointment—and a key part of the Eisenhower and Berlin legend—the US Army advance went no farther. On April 21, the Americans linked up with elements of Marshal Ivan Konev's First Ukrainian Front at Torgau on the Elbe, 65 miles south of Berlin and well inside the Soviet occupation zone.

Berlin fell to the Russians on May 2. Zhukov later said it cost him 10,000 casualties to take Berlin, but his figure may have been those killed in action, not counting wounded. Konev, attacking alongside Zhukov, probably took an equal or greater number of casualties. Various estimates set the toll for the Red Army at Berlin considerably higher, between 50,000 and 100,000 total casualties.

Germany surrendered May 7, but German forces in Czechoslovakia refused to believe the news and kept fighting. Churchill clamored for the continuation of the offensive deeper into Czechoslovakia, as did Lt. Gen. George S. Patton, commander of the US Third Army.

"From a military point of view, Prague, like Berlin, had no strategic significance," Bradley said. "Patton wanted desperately to

liberate Prague, both for political reasons and, I am certain, for the headlines."

"To avoid possible incidents, [Soviet] General Antonov asked General Eisenhower not to move his forces in Czechoslovakia east of the line Budejovice-Pilsen-Karlsbad," said historian Forrest C. Pogue Jr. "He pointedly reminded the Supreme Commander that the Red Army had stopped east of Wismar on the Baltic at his request [leaving Luebeck to Montgomery] and hoped by the same token that the Allies would stop their advance in Czechoslovakia. General Eisenhower agreed not to move farther. Thus he left Prague to be liberated by the Russians," who completed the operation May 12.

With the war over, all forces retreated without incident to the agreed-upon demarcation lines for the occupation and the Americans and British proceeded to their assigned sectors in Berlin.

Second Guessers

The recriminations began soon after the war ended. In his memoirs, Montgomery grumbled that the postwar political balance in Europe had "meant getting possession of certain political centers in Europe before the Russians—notably Vienna, Prague, and Berlin. If the higher direction of the war had been handled properly by the political leaders of the West, and suitable instructions had been given to Supreme Commanders, we could have grabbed all three before the Russians."

At least three times between 1945 and 1965, Drew Pearson's syndicated

"Washington Merry-Go-Round" column reported breathlessly that American patrols reached the Berlin suburb of Potsdam on April 13, 1945, but were ordered back to the Elbe because of demands by the Russians. In reality, US forces got nowhere near Potsdam.

The issue also arose in 1952 when Eisenhower ran for the Republican nomination for President. Supporters of opposing GOP candidate Sen. Robert A. Taft sent Eisenhower a list of questions, including: "Was it yours or the late FDR's decision to forbid Gen. George Patton from taking Prague or Gen. W. H. Simpson's Ninth Army from taking Berlin?"

"Berlin was a destroyed city," Ike said. "What was the great point in attacking it and capturing it, particularly as our political bosses had already told us that the line we must occupy was 200 miles to the west? ... Marshal Zhukov—a slightly different type of Russian—told me that he used 22 divisions, 2,500 guns, and suffered about 10,000 casualties taking this destroyed city of Berlin. Now, none of these brave men of 1952 have yet offered to go out and pick out the 10,000 American mothers whose sons should have made the sacrifice to capture a worthless city."

Then there was Henry A. Kissinger, who opined breezily in *Diplomacy* in 1994 that, "General Eisenhower took it upon himself to write directly to Stalin on March 28, 1945, to inform him that he would not advance on Berlin and to propose that American and Soviet troops meet near Dresden. No doubt astonished that a general would address a head of state on any subject, let alone a matter of such political importance, Stalin was also not in the habit of turning down free political gifts." Kissinger did not say exactly what the "free political gifts" were.

In 2008, author Robert Wilcox claimed that Patton was killed in 1945 by the American OSS and the Soviet NKVD to keep him from revealing that Eisenhower collaborated with the Russians to prevent US capture of Berlin or Prague.

"The major myth in regard to Berlin is that if the Americans had captured the city they would have held it and there would be no Berlin problem today," Ambrose has pointed out. "This is patently nonsense." Critics do not explain what difference an American capture of Berlin would have made. ■

John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributor. His most recent article, "Roosevelt Builds the Arsenal," appeared in the June Issue.



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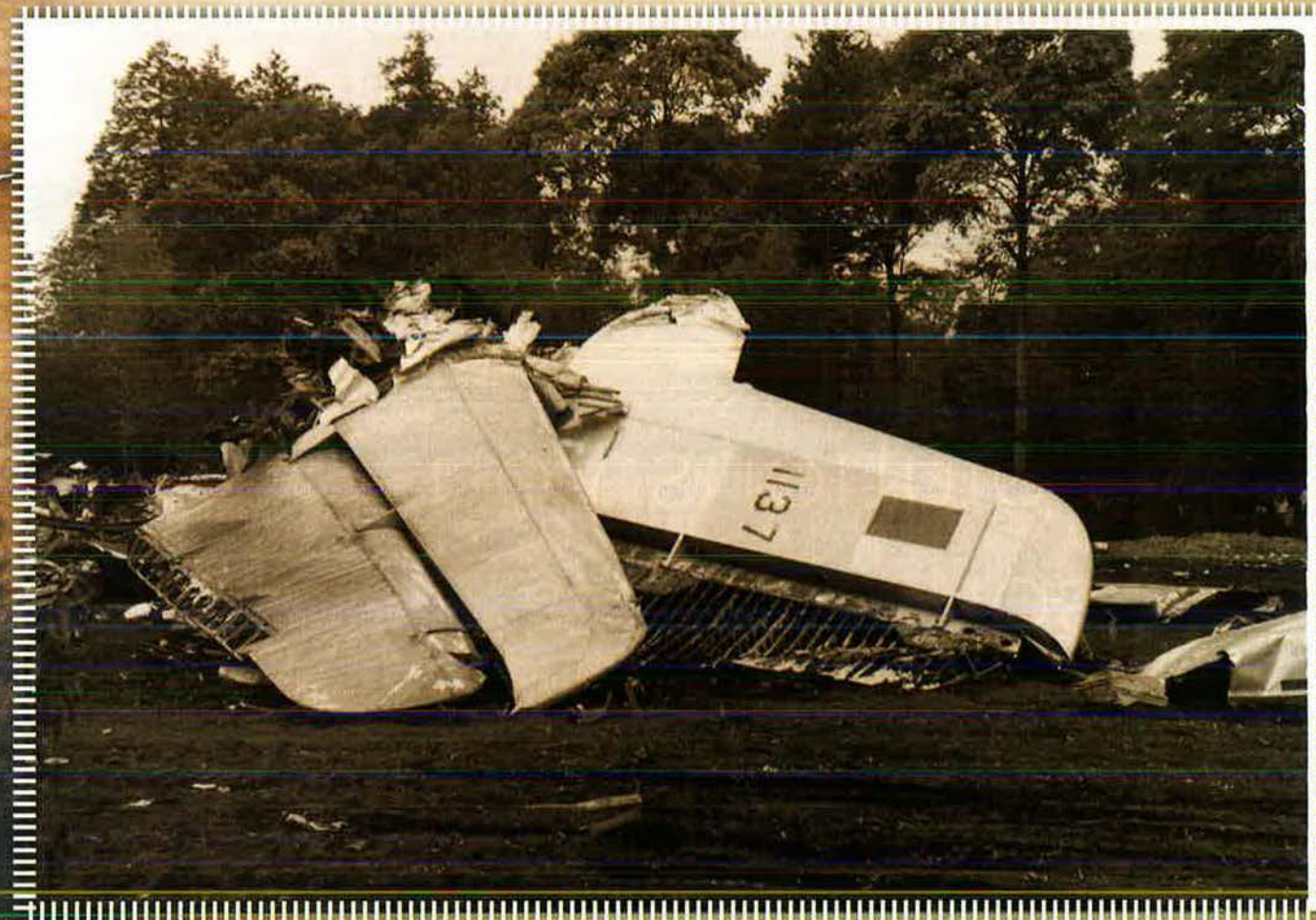


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At the time, the Globemaster II crash near Tokyo was the worst air disaster in history.

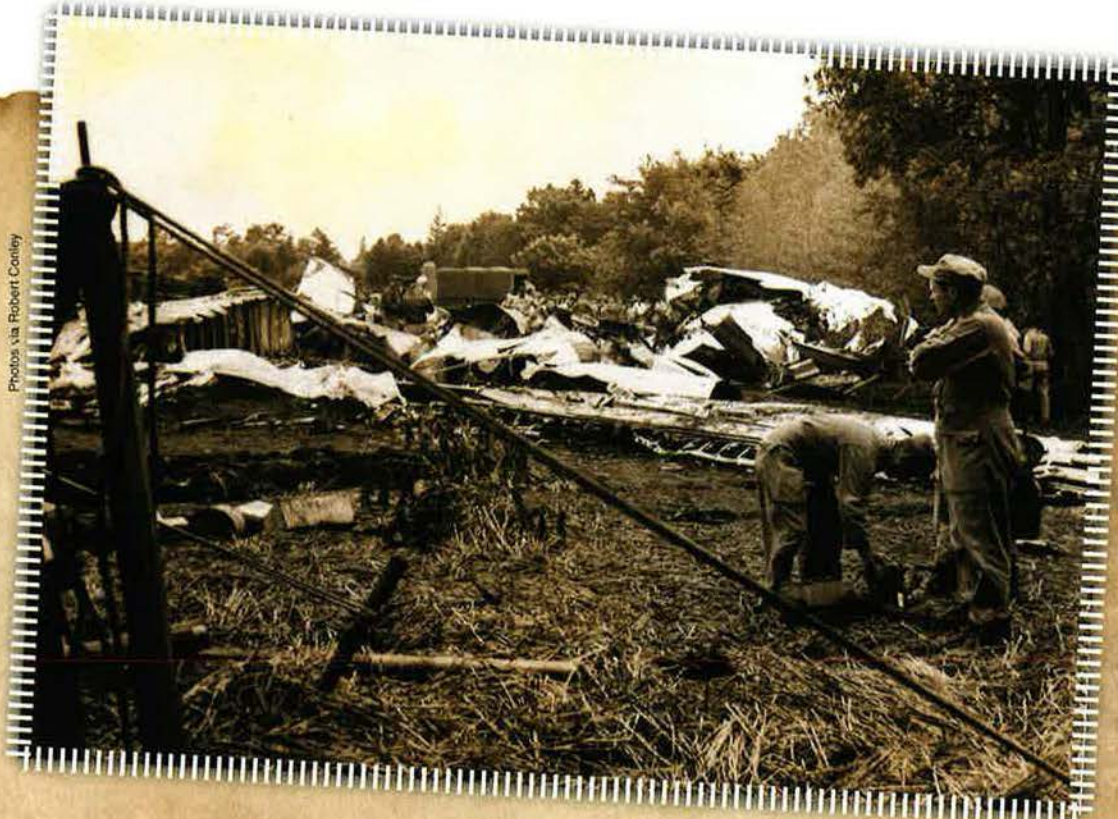
C-124 and the Tragedy at Tachikawa

By Walter J. Boyne



The vertical stabilizer was ripped off C-124 No. 51-137 when the aircraft hit the ground near Tachikawa AB, Japan.

Photos via Robert Conley



On June 18, 1953, a Douglas C-124A transport of the 374th Troop Carrier Group prepared for takeoff from the runway at Tachikawa AB, Japan. Maj. Herbert G. Voruz Jr. was the aircraft commander. At age 37, Voruz had flown more than 6,000 hours. His pilot was Maj. Robert D. McCorkle, also an experienced pilot. Another pilot, Maj. Paul E. Kennedy, was on board to log flying time.

As the Globemaster II taxied out for the pretakeoff checklist, maintenance personnel watched it with some anxiety. In recent weeks almost half of the big transports had taxied back in after their engine run-ups encountered some discrepancy—too large a magneto drop or electrical problems with the generator.

The weather report indicated low clouds and a 2.5-mile visibility.

Approximately three minutes later the aircraft crashed, killing all 129 aboard, including the seven-man crew. At the time, the crash of C-124 No. 51-137 was—by far—the deadliest air disaster in history.

Most of those killed were airmen who had just enjoyed a five-day rest and recreation leave in Japan and were reluctantly returning to their duty assignments in South Korea.

The accident immediately raised an alarm about the safety of the huge four-

engine transport, calling into question many elements of its design and equipment.

Although officially the Globemaster II, the C-124 was unofficially and affectionately called “Old Shaky” because of its vibrating, rumbling passage through the air. In 1953, no one could have forecast its 25-year workhorse career from its introduction in 1949 to its retirement in 1974.

Over time it came to be considered reliable, if slow. The C-124’s principal value resided in its unique ability to carry large size cargo intact, without requiring disassembly. Later jet transports, such as Lockheed’s C-141 Starlifter and C-5 Galaxy and the Boeing C-17 Globemaster III, had this capability designed in, but in its day, the C-124 was unique.

The Search for a New Transport

Air Force logisticians had learned from World War II and the Berlin Airlift experience that while the ability to carry heavy loads was important, it also was vital to have a long range and a large cubic capacity. The first aircraft intended to fulfill this need was the Douglas C-74 Globemaster, first flown in September 1945.

While similar in layout and appearance, the Globemaster was a far more

US military personnel stand amid wreckage after a search for human remains. Globemaster II aircraft had early problems but ultimately proved to be reliable workhorses for the Air Force.

sophisticated aircraft than the classic Douglas C-54 it was intended to replace. The C-74’s airfoil was under-cambered aft of the wing’s rear spar. This was a great benefit at low speed but resulted in excess drag above 300 mph. It also introduced an elevator aft of the wing for loading cargo, with two overhead hoists on a rail to facilitate storage. Four Pratt & Whitney R-4360 engines of 3,200-horsepower powered the C-74.

The Air Force quickly recognized, however, that the C-74 was inadequate for bulky cargo. Ultimately, of the 50 originally ordered, only 14 were built. The fifth example became the prototype for the C-124 and made its first flight on Nov. 27, 1949.

Douglas built the new aircraft with basically the same wings, power plants, and tail as the C-74, but enlarged the fuselage and greatly strengthened the landing gear to handle up to 74,000-pound loads.

The fuselage ballooned into two-decks, allowing wheeled vehicles to roll inside via its clamshell doors and hydraulically operated ramps. Even large units such



as tanks, helicopters, and bulldozers could be loaded without disassembly. The cargo bay had two overhead hoists, each with a capacity of 8,000 pounds, and like the C-74, there was an electrically operated elevator in the aft part of the fuselage.

With a combat radius greater than 1,000 miles, the C-124 could transport troops and cargo to distant bases and return without refueling. With the proper engine settings, endurance could be greatly extended. In one search and rescue mission for a downed Boeing C-97 aircraft, for example, a C-124 flew for 22 hours.

There were many teething problems. On May 23, 1951, a C-124 flown on an experimental flight by a crew from Wright-Patterson AFB, Ohio, crashed near New Castle, Ind., after its propellers reversed in flight. Seven of the 12 men aboard died.

Additional deficiencies occurred with fuel tanks, generators, anti-icing system, brakes, and instrumentation. The big 28-cylinder Pratt & Whitney R-4360 engines also were in their introductory

Above, C-124 No. 51-137 in front of the maintenance hangar at Tachikawa before the accident that killed 136 US service members.

phase. They had their own portfolio of problems, of which fire was the most dangerous.

Strategic Air Command was the first command to operate the C-124, using 50 of them in four strategic support squadrons from 1950 to 1962. They were absolutely vital to SAC's overseas deployments, carrying weapons and personnel in advance of the arrival of B-50 and B-47 bombers at foreign bases.

Tactical Air Command also employed the C-124, but the Globemaster II soon established itself as the primary transport in the Military Air Transport Service (MATs). It made resupply missions to Antarctica and supported relief operations around the world when natural disasters occurred.

The Army was gratified to have the C-124 at its disposal to transport the Strategic Army Corps with its infantry and airborne divisions. The Army found the C-124 suitable for parachute operations, as it could carry 112 paratroopers.

When the missile age arrived in the 1960s, the C-124 was used to transport Redstone and Jupiter missiles built in Huntsville, Ala., to Cape Canaveral, Fla. The Free World's first satellite, the Explorer I, made its first ascent into the air in a C-124, and Able and

Baker, the famous space monkeys, also moved around the country on flights in a Globemaster II.

The C-124 quickly encircled the globe with routes to every continent. And as was the custom of the time, the effectiveness of the aircraft was supported on the backs of the personnel crewing and maintaining what they sometimes called "a million rivets flying in formation."

Globemaster II aircrews generally liked the airplane, although it was demanding to fly in weather. Many pilots recall that it had the "usual solid Douglas feel" and that airspeed changes required appreciable elevator trim. Climb rates were low when heavily loaded or when operating from high altitudes. Because of their extremely high drag, setting the flaps required special attention in emergency situations.

The nature of the C-124's global supply mission made it difficult to maintain the aircraft at distant bases. Most trips involved daily crew duty time of 12 to 15 hours, with 12 hours' crew rest. Trips were typically three to seven days in length, but many of these became extended. One day of crew rest was prescribed for each three days away—up to a total of three days off.

Of the myriad possible itineraries, a typical flight might be a takeoff from Donaldson AFB, S.C., to Hickam AFB, Hawaii, and return with a stop at Travis AFB, Calif., on each leg. Another regular trip was from Donaldson to Rhein-Main Air Base in Frankfurt, Germany, continuing on to Wheelus AB, Tripoli, then to Lajes Air Base in the Azores, with Dover AFB, Del., as the final destination.

Overall, most of the trips were routine, but some were exotic, as in 1960, when a C-124 evacuating Belgian troops from Leopoldville in the Belgian Congo was attacked by spear-throwing native tribesmen.

Crews were sometimes deployed to an overseas location for six-month periods and were then assigned to flights everywhere in that theater. Pilots became accustomed to flying in bad weather using primitive instrument letdown procedures to bases with short runways. Flight engineers became proficient in making major repairs at bases with no facilities to help and usually maintained a "stash" of the parts most likely to be needed.

Although no one ever admitted it, any flight engineer worth his salt would be able to discover a mysterious engine malady calling for an extra day's delay in places such as Hawaii.

The \$1.7 million per copy C-124 was soon recognized for its economy of operation when figured on a cost per ton-mile basis. By the time the purchases were complete, the Air Force procured 204 C-124As and 243 C-124Cs.

The C-124A used the 3,500-horsepower R4360-20WA engine in which the gear-driven superchargers were governed by an Automatic Engine Control (AEC) unit. It automatically shifted the supercharger from low to high blower, based on altitude and throttle settings. This sometimes caused unwanted power changes on takeoff or climb out from high elevation airports. On the C-124C's 3,800-horsepower R4360-63A engines, the flight engineer manually controlled the blower selection.

All C-124s had a large Janitrol combustion heater located in the tail cone to provide heat for the tail surface anti-icing and for cabin heating. The C-124C had

Janitrol heaters installed in streamlined pods on each wingtip for wing anti-icing. It was critically important to initiate anti-icing procedures before entering icing conditions. The C model also had an APS-42 weather radar mounted in a nose-dome housing. Most C-124As were later brought up to C-124C standards.

Tachikawa, June 18, 1953

Robert Conley was a young airman first class on that hot, cloudy June 18th at Tachikawa and made careful notes on the event. Now 81, he recalls the original aircraft 51-146 assigned for the mission was scratched for engine problems and the mission transferred to the ill-fated standby aircraft.

Conley remembers watching the usual boarding drill, with the passengers assembled in loose formation with a variety of carry-on luggage. When they were

mustered aboard, they filled all of the upper deck's bucket seats and those on the right side of the main deck. Conley went on board to service the IFF (Identification Friend or Foe) equipment and noticed the experienced crew was in good spirits, especially the two pilots.

From the tower, A2C Volney L. Smith radioed that the mission aircraft was cleared to its destination: K-55, Osan AB, South Korea. Voruz, the aircraft commander, pushed the throttles forward and the big C-124 lumbered down the runway. It was airborne at exactly 4:31 p.m., climbing into the overcast.

About one minute after takeoff, in a left turn to the outbound course, the

UN troops wait to board a C-124 at a US air base in South Korea during the Korean War. C-124s transported military members for R&R in Japan and back.



Photo via Air and Space Museum



C-124s transported POWs from North Korea, to Japan, and ultimately home to the United States during Operation Little Switch, shown at left.

No. 1 engine burst into flames. Voruz called that he had just shut down an engine and was returning to Tachikawa. Asked if he wanted a ground controlled approach (GCA), Voruz replied, "That is affirmative" and was heard to yell, "Give me more power" to his flight engineer. When ground control asked if he could maintain his altitude Voruz said, "Roger."

Ground control asked if the aircraft was declaring an emergency, but there was no answer.

Radar contact was lost at a point 3.25 miles east northeast of the field.

The C-124 crashed into the earth in a slight nose-down attitude, burying itself in the soft earth near the village of Kodaira and killing almost everyone aboard instantly. The wreckage was smeared across a watermelon farm next to a busy highway that led to Tokyo.

SSgt. Robert D. Vess was driving from Tokyo with his wife when he saw the crash. He stopped and ran through a clump of trees to pull the radio operator, A2C John H. Jordan Jr.—alive—from the twisted aluminum. Sadly, Jordan died in the next few minutes. Vess, who was later decorated for his heroism, continued the search for survivors with

others for another 30 minutes until the mishap aircraft's fuel tanks exploded. Some of the ground rescue personnel on the scene reported that the engines on the right wing had continued running after the crash.

At 4:50 p.m., Tachikawa GCA called the 36th Air Rescue Squadron at Johnson AB, Japan, some 11 miles north. A Sikorsky H-19, flown by Lt. Col. Theodore P. Tatum Jr., a co-pilot, and a two-man pararescue team was dispatched. They arrived at 5:13 p.m. and landed about 150 feet from the wreckage. Their inspection confirmed there were no survivors.

Both the base and local fire departments arrived within minutes, managing to save the crew compartment from destruction by fire. Chaplains and an identification team were dispatched. Working under floodlights, a temporary morgue was set up as the victims were recovered from the wreckage. One crew

member, A1C Carl C. Steele, was found in the small compartment behind the No. 1 engine. He apparently had gone through the narrow wing passageway to check on the fire.

An excerpt from the accident report indicates that a combination of airspeed and flap setting errors led to a loss of control, causing the crash.

The grievous effect of the crash on the victims, their families, and the Air Force was immense. Although the crash has largely been forgotten today, it is memorialized at the site by a small monument erected by the citizens of a nearby village.

This was the first aircraft crash in which more than 100 people were killed, so there was an unusual flurry of publicity around the world. Yet it also occurred at a time when aircraft accidents were so common that not much more was made of the tragedy.

In 1953, Maj. Gen. Victor E. Brandias, Air Force deputy inspector general for technical inspection and flight safety research, reported that in 1951 and 1952 alone, there were a total of 107 cargo-type aircraft destroyed—about one per week during that period. The human loss was terrible, with 685 personnel killed in the scores of accidents.

Despite its "Old Shaky" moniker and the negative publicity arising from the Tachikawa disaster, the C-124 was never regarded as a particularly dangerous aircraft during its long operational life. Nonetheless, 62 of the 447 built were destroyed in use, a loss rate of approximately 14 percent. A total of 589 personnel were killed in these Globemaster II accidents.

Times changed, and Air Force safety records steadily improved over the years and decades after the crash. The C-124 was not just an indispensable aircraft for its time, it essentially set the capacity requirements for future airlifter designs, and today's workhorse C-17 continues the C-124's lineage by carrying the Globemaster III name. ■

Walter J. Boyne, former director of the National Air and Space Museum in Washington, is a retired Air Force colonel and author. He has written more than 600 articles about aviation topics and 40 books, the most recent of which is How the Helicopter Changed Modern Warfare. His most recent article for Air Force Magazine, "The B-47's Deadly Dominance," appeared in the February issue.

By Frances McKenney, Assistant Managing Editor

Cake, Coffee, Awards

In California, the **Robert H. Goddard Chapter** hosted its annual awards ceremony for airmen from Vandenberg Air Force Base.

It took place in April, only two months after the base held its own annual awards ceremony at the same venue, the Pacific Coast Club. So what made the AFA event unique?

Chapter President Juan E. Cruz explained that the chapter's ceremony fills a gap: Along with awards to airmen it also presents honors to defense contractors, something the base can't do.

The event is free. The chapter had been losing money with the regular awards-luncheon approach because more guests were showing up than were covered, so Cruz said the chapter decided, "Why don't we just make it free?" A cake 'n coffee reception was born.

Scaling back hasn't affected attendance: At the latest event, more than 200 airmen filled every table, paying tribute to winners in 18 categories. This included military personnel, civilians, and contractors. Katie Burke and David Yundt accepted Outstanding Contractor Team awards for the large and small units, respectively.

Among airmen receiving awards were TSgt. Benjamin Hofbauer, SMSgt. Greg Morgan, and Capt. Joshua McCullion, who earned the top honors for space and missile operations in the NCO, senior NCO, and officer categories.

See photos of the Goddard Chapter officers at the reception in "AFA National Report" online, at airforcemag.com.

Bring In the Rock Stars

The **Richmond Chapter** and **Tidewater Chapter**, with help from the **Langley Chapter**, **Gen. Charles A. Gabriel Chapter**, **Donald W. Steele Sr. Memorial Chapter**, and Virginia State AFA carried out the eighth annual Virginia AFJROTC State Drill Championship.

Richmond Chapter's Chip Moran described it as the biggest AFJROTC state championship drill meet sponsored by AFA, with more than 500 competitors this year from 26 schools. The cadets of E. C. Glass High School in Lynchburg, Franklin County High School in Rocky Mount, and Stonewall Jackson High School in Manassas took home the top trophies.

For the past two years, a special group has dazzled those at the event: the USAF Honor Guard Drill Team. "These guys are treated like rock stars" by the youngsters competing in the meet, said Moran. The airmen show up early to mingle with the young cadets, sign autographs, and pose for photos. Their presence inspires the high school students to "pick it up," Moran commented.

Tidewater Chapter's Gordon Strong said the airmen not only conduct a demonstration at this meet but some serve as judges, as do airmen-volunteers from JB Langley-Eustis, Va.

Strong, an AFJROTC instructor at Grassfield High School in Chesapeake, handles the actual drill meet, while Moran organizes the venue, Atlee High School. The event costs some \$5,000, he said.

And here's something to note: Atlee High School's Booster Club runs a concession at the meet. It "makes a killing," Moran said.

Happy To Make It Happen

They're blue in a sea of green at Fort Lee in Petersburg, Va., but airmen training at the Army facility just south of Richmond now have artwork to remind them of their Air Force ties. They can thank the **Leigh Wade Chapter**.



TSgt. David Peria and SSgt. Jaime Escobar (background), both from the 4th Space Launch Squadron, attended the Goddard Chapter's awards ceremony at Vandenberg AFB, Calif. Chapter President Juan Cruz said it had been a stressful day because of sequestration announcements, so airmen looked forward to relaxing at the Pacific Coast Club reception.



Grassfield High School's Christian Coyne carries the third-place trophy for rifle exhibition after competing in the Virginia AFJROTC State Drill Championship. Grassfield cadets, led by Tidewater Chapter's Gordon Strong, came in fourth overall.

In April, the chapter debuted a collection of Air Force-related photos and photo montages, gathered by its members and Community Partners for display in the hallways of a Fort Lee dormitory.

Navy personnel live in the bottom two floors of this dorm, while airmen—assigned to the 345th Training Squadron—occupy the top three floors.

Chapter President Gary D. Metzinger said 1st Lt. Blandon L. Prowse, military training flight commander, came up with the

See more photos from events at: airforcemag.com.
Choose "This Month's Table of Contents."



L-r: 1st Lt. Blandon Prowse, Karen Cundiff, and AFA Vice Chairman for Field Operations Scott Van Cleef admire a photo montage. The Leigh Wade Chapter assembled it for the Air Force section of a Fort Lee dorm.

idea of how the chapter could brighten up the bare hallways of the airmens' dorm.

Prowse also offered use of a conference room for chapter meetings and for displaying chapter memorabilia. "I'd be happy to make that happen," Metzinger told him, particularly delighted because at that point, the chapter's awards plaques and certificates lay in boxes stored in his garage.

Metzinger pieced together and nudged along these dual dorm and conference room projects over a 15-month period. The JAG office cleared use of the items, declaring them "on loan to the 345th Training Squadron." Graphic designer and Community Partner Karen Cundiff chose photos, with input from chapter of-

ficers Cordell Hopper, Jim White, and Albert Pianalto. Mapcom Systems and Davis Consultants, both Community Partners, donated \$500 each. Some two dozen photos were enlarged and printed, mounted on solid backing.

Chapter volunteers and several airmen went to the dorm on a Saturday in March, used screw drivers and levels, and placed the photos and plaques on the walls.

The dorm residents "thought it was phenomenal," Metzinger said of the reaction to the chapter's gift.

Science Fair Winners

Florida's **Sarasota-Manatee Chapter** recognized several area students for their science fair projects on aviation and space topics.

Mason Rademaker from Haile Middle School investigated how variations in wing angle of attack affects distance of travel. His project had been entered in the Lockheed Martin Manatee Regional Science and Engineering Fair in January.

The chapter also singled out Sarasota Middle School student Michael Moran and North Port High School student Brandon Uveges for their entries in the Sarasota Regional Science, Engineering, and Technology Fair.

Moran studied how wing shapes and positions affect flight. Uveges titled his project "Electrodynamics of Black Hole Magnetospheres." Chapter President Michael E. Richardson selected these two students for one of the Sarasota fair's Special Awards.

Rademaker, Moran, and Uveges each received a chapter achievement medal, chapter certificate of recognition, an AFA calendar, the book *New Space Discoveries*, and a backpack of Air Force promotional items donated by the local recruiting office.

Hostage

In May, Vermont's **Green Mountain Chapter** members heard a first-person account of a tale that had been headline news four

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Sarasota-Manatee Chapter President Michael Richardson with science fair award winner Brandon Uveges. Richardson designed and arranged for a local trophy shop to create the medal Uveges is wearing.



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years ago—and that will be again, when it's released this fall as a movie starring Tom Hanks.

Richard Phillips, captain of a Maersk Line cargo ship, addressed the chapter's meeting in Burlington, describing how four Somali pirates with AK-47s boarded his US-flagged vessel in April 2009. Phillips surreptitiously cut off radio communication with their controlling ship, and before escaping to safe rooms, his crew shut down the 17,000-ton ship's engines and power supply. Unable to gain control of the cargo ship, the pirates retreated to a motorized lifeboat with Phillips as a hostage.

Five days into this ordeal, Phillips' life appeared to be in imminent danger, and Navy SEAL snipers on the US Navy destroyer *Bainbridge* picked off his captors.

Phillips' story has been made into a movie, to debut in October, called "Captain Phillips." Tom Hanks plays the title role.

Green Mountain Chapter's Membership and Communications VP Richard R. Lorenz reported that many 158th Fighter Wing members from Burlington Airport turned out to hear Phillips, and two TV stations covered his appearance. WCAX TV's video segment is on their website under "Capt. Richard Phillips shares his story of survival."

Phillips resides near Burlington, in Underhill, Vt., and Chapter President Raymond Tanguay had been after him since last fall to speak to the chapter.

More Chapter News

- "Thank you and the Air Force Association for being a part of our students' academic success!" wrote Mecklenburg County High School AFJROTC instructor Paul Pelletier to the **Leigh Wade Chapter**. The retired senior master sergeant explained that his unit received an AFA Educator Grant, using the \$250 for a model-rocket program, from planning, design, construction, and safety phases to launch and recovery. "Without the ... Educator Grant, this would not have been possible," he said.

- Sounding like she was echoing the US Postal Service slogan, New York State President Maxine Rauch wrote that she made it to Clarkson University "despite the rain, sleet, and sometimes snow." The **Iron Gate Chapter** member traveled some 350 miles from Long Island to Potsdam, N.Y., in April to present an AFA Outstanding Cadet award to Justin Harrington of AFROTC Det. 536. She reported meeting with AFA members and cadets in the area with an eye on starting a chapter.

- Also in New York, **Albany-Hudson Valley Chapter** President Michael A. Szymczak presented a Civil Air Patrol Outstanding Squadron Cadet of the Year award to Morgan Wynkoop of the Sullivan County Cadet Squadron. Chapter Treasurer Ron Campbell presented a similar award to Samuel O'Brien of the Vedder Composite Squadron of Latham, N.Y.



With CAP cadets from the Mount Airy Composite Squadron, Md., Keith Lohoefer (second from right) shows pride in his Cadet of the Year Award. Maryland AFA leaders attended this event.



Central Maryland Chapter's Bob Roit, CAP legend Mary Feik, and Maryland State President Shedrick Roberts (l-r). Feik taught AAF aircraft maintainers during World War II.

■ Robert Kjar, San Jacinto Chapter communications VP, and Chapter President Donald E. Keltner helped organize a reunion in Houston in May for former missileers from Minot AFB, N.D. Among events, Gene Kranz, moon landing and Apollo 13 missions director, spoke to the group as they toured the original Apollo mission control center. "Most charismatic," said Kjar of Kranz. "I would hope that AFA would use him in things like the space symposium."

■ "Shedrick Roberts and Bob Roit worked hard to keep the Central Maryland AFA Chapter open," wrote Central East Region President Joseph L. Hardy in an e-mail. Roberts, the Maryland state president, and Roit, from the Central Maryland Chapter, attended an awards banquet

recently for the Mount Airy Composite Squadron. They presented awards and even recruited new members: parents of the young CAP cadets. A VIP guest at the banquet was CAP legend Mary Feik, who presented an achievement award named in her honor. ■

SPOTLIGHT ON . . .

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Teacher Cheyenne Rust (r) once handed classroom volunteer Lt. Col. Jason Brock (l) a laptop to carry out a reading comprehension test for these youngsters. Such use of technology—the kids are lined up in front of an interactive white board, here—led the chapter to select Rust as its Elementary School Teacher of the Year.

How To Wow the Kids

The first-graders in teacher Cheyenne Rust's classroom at Eaton Elementary School knew Jason Brock; he regularly volunteered at their Lenoir City, Tenn., school. But when the ANG lieutenant colonel showed up in April to present the Gen. Bruce K. Holloway Chapter's Elementary School Teacher of the Year award to Rust, he surprised them. He was wearing his Air Force service dress uniform.

The youngsters got "really excited," Brock said. They asked if he was a pilot. (He commands the aircraft maintenance squadron for the 134th Air Refueling Wing at McGhee Tyson Arpt., Tenn.) They asked about his rank, the 26 ribbons on his uniform, his maintenance

and logistics badges—and Brock knew how to channel their curiosity:

■ He asked, "Who likes airplanes?" After the students finished "jumping up and down," he told them that studying science, technology, engineering, and math would help them become pilots.

■ He tied the ability to fly airplanes to subject matter they knew about firsthand: a recent math test.

■ He asked a local newspaper to cover the award presentation. (That's who everyone is posing for, above.)

Brock said high schoolers are already familiar with military uniforms because of JROTC and recruiters, but this was an opportunity to wow an impressionable younger audience.



Cargo ship Capt. Richard Phillips (left) related to the Green Mountain Chapter his experience as a hostage of Somali pirates. Chapter President **Ray Tanguay** is at right.



Bill Burns, president of the Lt. Col. B. D. Buzz Wagner Chapter, and Secretary **Bob Rutledge** (both in the back row, right) presented a custom-made banner to Bishop McCort High School's CyberPatriot V Team in Johnstown, Pa. The students finished third in the state.



Sarasota-Manatee Chapter President Michael Richardson with Riverview High School's CyberPatriot V team at the Sarasota County Military Ball in Florida. The team placed second in Florida. L-r: **Jonathon Higham, Benjamin Williams, Richardson, Erica Tenorio, Eric Chen, and Jacob Nanfito.**



Nation's Capital Chapter Secretary Harvey Dahjelm (second from right) presented the chapter's Malcolm Grow Medical Award to **James Covelli** at the May graduation for the Uniformed Services University of the Health Sciences. L-r: **USUHS President Charles Rice, Covelli, Dahjelm, and the School of Medicine's Acting Dean John McManigle.**

4th Special Ops Sq, current and former AC-47 and AC-130U crews. July 11-13, Fort Walton Beach, FL. **Contact:** Ron Knight (850-884-8419).

6th BG, Tinian (1944-1945). Oct. 3-6, Milwaukee. **Contact:** William Webster (651-345-4575) (wbw-ejw@mchsi.com).

61st Fighter-Interceptor Sq, Selfridge, Harmon, and Truax. Oct. 24-26, Branson, MO. **Contact:** Charles Christianson (763-295-2861) (cncask4it@hotmail.com).

98th BG/Bomb Wg and successor units. Sept. 15-19, Charleston, SC. **Contact:** Bill Seals (281-395-3005) (colbillyseals@hotmail.com).

100th BG (1943-1945), Thorpe Abbots, UK. Oct. 17-20, Embassy Suites Savannah Airport, Savannah, GA. **Contact:** Nancy Putnam (414-339-2818) (nputnam51@gmail.com) (100thbg.com).

Berlin for Lunch Bunch. Oct. 11-13, Albuquerque, NM. **Contact:** Gene Trosterud (creekmisty@hotmail.com).

F-106 reunion, all welcome. Sept. 11-15, National Museum of the US Air Force, Dayton, OH. **Contact:** Bob Kwiecinski (734-429-0772) (734-771-9501) (bobski9933@aol.com).

Johnson AB, Japan, veterans or dependents (1946-mid-1960s). Oct. 3-6, San Antonio. **Contact:** Keith Swinehart (303-814-0800) (keith.swinehart@gmail.com).

Misty Fast Forward Air Controllers. Oct. 27-30, Ramada Plaza Beach Resort, Fort Walton Beach, FL. **Contact:** Jack Doub (229-415-3579) (jack.doub@gmail.com).

Phan Rang AB, Vietnam, all units, all years. Oct. 3-6, San Antonio. **Contact:** Doug Severt (dougsevert@cox.net).

USAF Air Weather Recon Assn. Sept. 25-29, McClellan AFB, CA. **Contact:** Bernie Barris (210-274-9974) (bcbarris@aol.com).

UPT Class 68-A, Webb AFB, Tex. Sept. 12-15, Air Force Museum and Holiday Inn-Fairborn, OH. **Contact:** Larry Bowers (540-828-4858) (ldbowers65@gmail.com). ■

E-mail unit reunion notices four months ahead of the event to reunions@afa.org, or mail notices to "Unit Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

MiG-19 Farmer



The MiG-19—NATO code name “Farmer”—was the first supersonic fighter developed by the Soviet Union and the first operational supersonic jet aircraft in the world. The Mikoyan-Gurevich design was a twin-engine follow-on to the MiG-17 and thus was a second generation fighter comparable to the US F-100. It performed well, though, when pitted against USAF F-4s and F-105s in the Vietnam air war.

The MiG-19, an all-metal aircraft, featured mid-mounted wings with 55-degree sweep and wing fences. Its two turbojet engines used afterburners. It was not a particularly handsome aircraft, and its components—especially the engines—were difficult to maintain. Still, designers paid great

attention to pilot comfort and safety. The cockpit was pressurized and air-conditioned. It contained an advanced ejection seat. Moreover, its tricycle-style landing gear allowed a pilot to take off and land from short, minimally prepared airfields.

The early MiG-19 had no mounts for air-to-air missiles, but in the Vietnam air war, it had an advantage: It had a cannon (F-4s did not). North Vietnamese air force pilots often got close enough to let off deadly cannon bursts. Indeed, the NVAF claimed seven MiG-19 victories, all against F-4s. The MiG-19 also saw extensive action against USAF aircraft during the Linebacker I and Linebacker II operations in 1972.

—Walter J. Boyne

This aircraft: Soviet Air Force MiG-19S *Bort 24 red* as it appeared in March 1964 when assigned to SAF 33rd Fighter Aviation Regiment, Wittstock AB, East Germany.



The MiG-19 sported deadly rockets and cannons.

In Brief

Designed, built by Mikoyan-Gurevich ★ first flight Jan. 5, 1954
★ crew of one ★ number built up to 10,000 (USSR, China, Poland, Czechoslovakia) ★ **Specific to MiG-19S:** two Luman-sky RD-9 turbojet engines ★ armament three 30 mm NR-30 cannons ★ load up to 550 lb of bombs, plus rockets ★ max speed 903 mph ★ cruise speed 520 mph ★ max range 860 mi ★ weight (loaded) 16,600 lb ★ span 30 ft 2 in ★ length 40 ft 3 in ★ height 12 ft.

Famous Filers

Notables: Pham Hung Son, Nguyen Manh Tung (North Vietnam).
Test Pilots: K. K. Kokkinaki, S. A. Mikoyan, V. A. Nefyedov, G. A. Sedov, Wang Youhuai.

Interesting Facts

Shot down US RB-47H in international airspace on July 1, 1960
★ broke sound barrier on second flight ★ saw service in air arms of Soviet Union, China, North Vietnam, Egypt, Cuba, Pakistan, North Korea ★ used in odd combination of high-altitude interception and ground attack ★ produced in China as J-6 fighter ★ went into action against a U-2 spyplane in fall 1957 ★ suffered from high-G pitch-up when air brakes were deployed at high speeds ★ used by Pakistani Air Force in 1971 Indo-Pakistani War ★ developed by China into Q 5 attack aircraft.



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