

December 2011/\$5

Journal of the Air Force Association

# AIR FORCE

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MAGAZINE

## Life on the Pinetree Line



Raptor Ups and Downs  
Lessons From Libya  
Tora Bora



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**About the cover:** A resupply helicopter lands on Resolution Island. See "Pinetree Line," p. 44. Photo by Robert W. Knowles.

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Journal of the Air Force Association

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*Advocate for aerospace power and STEM education.*

*Support the Total Air Force family, and promote aerospace education.*

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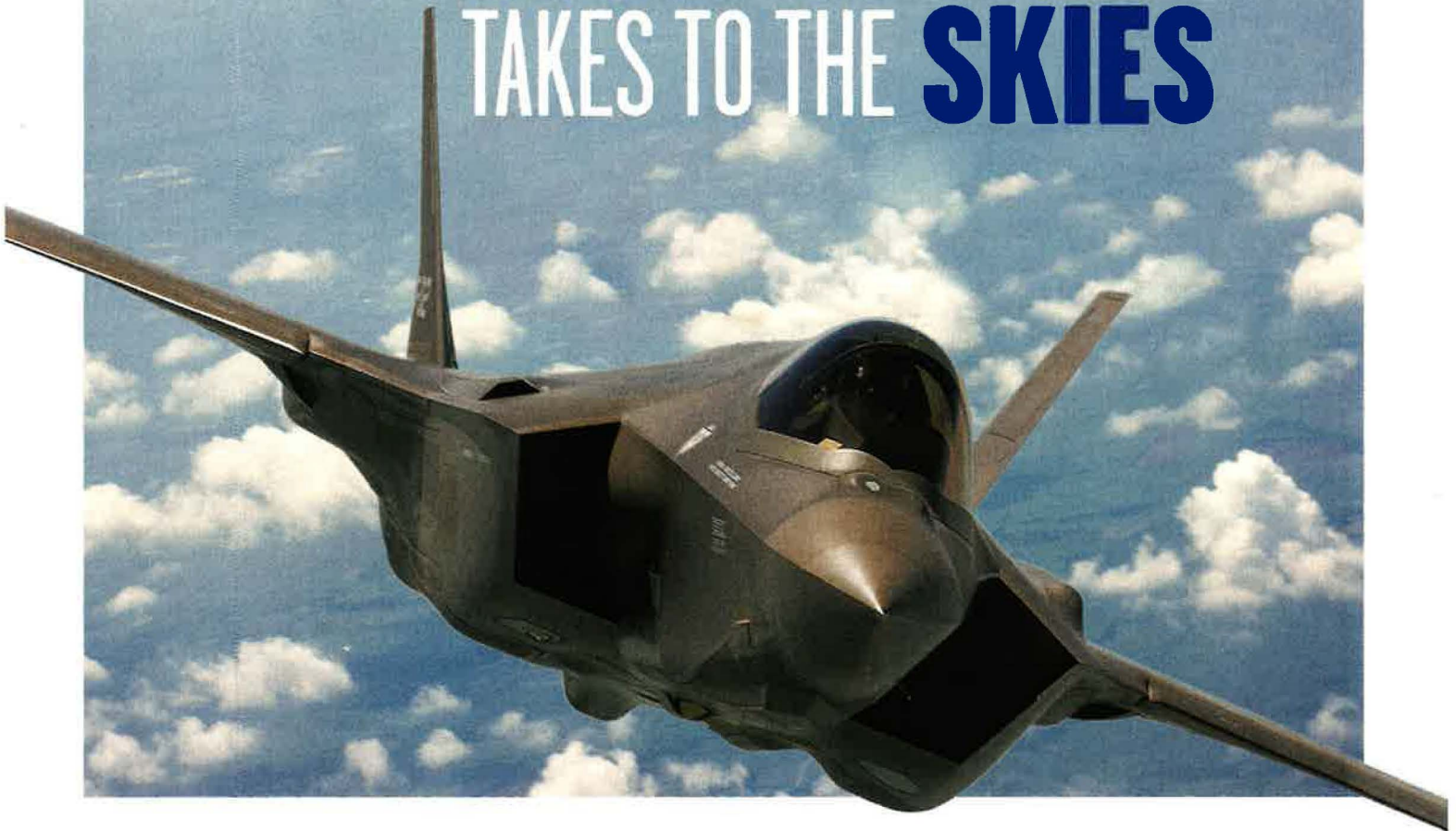
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## Libya: Victory Through Airpower

**I**F US and NATO air forces had not intervened in the Libyan civil war this year, Muammar Qaddafi would still be alive and Libya's ruling dictator. Thousands of the civilians who had protested or taken up arms against his regime, however, would all be dead.

That is airpower's contribution to the now-complete operation. In March, Qaddafi's forces were in the process of routing the rebels. Resistance forces had been pushed into an enclave at Benghazi, where many anticipated a last stand. Qaddafi himself promised no mercy to those who had opposed him. (See: "Why Qaddafi Must Go," May, p. 6.)

Then the US and NATO stepped in and saved Libya's civilians from slaughter. Attacking aircraft knocked out Qaddafi's air defenses. Libyan tanks and artillery on their way to Benghazi were destroyed from above. Government helicopters and fighters could no longer attack the regime's enemies, and pro-Qaddafi units lost their supply routes. Qaddafi's ability to menace Libya's civilians quickly faded, but for many weeks neither side was able to secure an advantage.

There was a real danger the Libya operation would become an open-ended engagement the Air Force, and the US military in general, could ill-afford.

American military interventions have a way of becoming permanent. The Air Force first responded to Iraq's invasion of Kuwait in the summer 1990. More than 21 years later, the Iraq mission is just now coming to an end. The Air Force has been in Afghanistan for a decade, and at least three more years of war are expected. And USAF still helps defend South Korea 61 years after North Korea invaded.

Critics wasted no time coming up with imaginative ways to criticize airpower's role while the operation was still in progress. "Airpower in and of itself will not be decisive," said Ohio State professor Peter Mansoor in March. "It can prevent the rebels from losing [but] it won't necessarily allow them to win." Not necessarily, but it did.

"Air forces often exaggerate what they can do," asserted *The Independent's* Patrick Cockburn. "They are always less accurate than they claim. ... Bombing works best as a blunt instrument against civilians as a generalized punishment,"

he wrote in July. Cockburn seemed to be describing the exact opposite of how airpower functioned over Libya.

Even with victory, new straw man arguments appeared, just so they could be knocked down. "Although airpower certainly contributed to Qaddafi's defeat, it cannot build a government that can operate effectively in his stead," wrote University of Kentucky professor Robert Farley—as if anyone were actually arguing that it could.

### **The Libyan rebels were as disorganized and ragtag a group of warriors as one could ever hope to find.**

Author Daniel Swift seemed willfully oblivious to the present. "Any history of bombing must also be a history of civilian casualty, for bombing saves the lives of soldiers only at the expense of other lives," he wrote in the *New York Times*. In reality, Qaddafi's troops were halted by airpower. This prevented a massacre at Benghazi and averted a humanitarian disaster.

From the brink of a bloodbath in Benghazi, the rebels regrouped and regained the initiative. US and NATO air forces tracked Qaddafi's units, so the rebels knew what they faced. Under a very liberal (and welcome) interpretation of their United Nations mandate, US and NATO aircraft helped the rebels grind down Qaddafi's forces.

The rebels pushed back across the desert, to the capital of Tripoli, and finally surrounded Qaddafi's hometown of Sirte.

It was there that Libya's civil war effectively came to an end. Airpower was there for the conclusion, showing the same persistence and accuracy it had all along. On Oct. 19, NATO aircraft spotted "a convoy of several dozen four-by-four vehicles trying to force their way out of Sirte," said Gerard Longuet, France's defense minister. A French Mirage fighter and a remotely piloted US Predator aircraft fired on the convoy "to block it, not to destroy it," in Longuet's words.

Qaddafi was forced into hiding, but it was short-lived. He was quickly captured by the opposition and was soon dead.

This mission could have gone off the rails many times. The Libyan rebels

were initially as disorganized and ragtag a group of warriors as one could ever hope to find. Until they came together as a fighting force under the umbrella of air dominance, stalemate nearly became the status quo.

Ceding US leadership to NATO was highly risky, for other members of the Alliance have traditionally shown little stomach for leading tough missions. Fortunately, the "coalition of the willing" worked out. Britain and France assumed heavy roles while Germany opted out completely. NATO aircraft flew more than 26,000 sorties. There were nearly 10,000 strike missions, 90 percent of them flown by nations other than the United States.

Several non-Alliance countries were also full partners in the mission. Islamic states Jordan, Qatar, and the United Arab Emirates made valuable military contributions with their personnel and aircraft, and their support added an important dose of political legitimacy to the effort.

Still, it was the US Air Force that largely made the mission possible. The US flew three-quarters of the intelligence-surveillance-reconnaissance missions, noted President Obama's national security advisor Tom Donilon in a *Washington Post* commentary, and the US provided three-quarters of the coalition's aerial refueling.

The operation lasted seven months, and was a relative bargain, costing the United States \$1.2 billion. More importantly, not a single American died in what was essentially a moral mission.

There is plenty of credit to share for the success in Libya. From beginning to end, this was a masterpiece of joint and coalition airpower. Eighteen nations participated. Aircraft launched from bases in several European nations and from ships in the Mediterranean.

The Air Force, Navy, and Marine Corps executed a joint operation over a nation where very little intelligence was available. Contrary to all precedent, NATO stepped up while the US played a supporting role.

But most of all, the Libyan rebels matured quickly as a fighting force, fought the ground battles, paid the price in injuries and deaths, and secured victory—a victory made possible through the strength of airpower. ■

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## A Note From a Survivor

I read Colonel Boyne's excellent article on efforts to destroy the bridge at Thanh Hoa with great interest [*"Breaking the Dragon's Jaw," August, p. 58*]. As the only surviving C-130 navigator from Operation Carolina Moon, I thought I might be able to add a couple of details about that mission. In the fall of 1965, one C-130B from the 314th Troop Carrier Wing was modified with an experimental Ka-band radar, which was the forerunner of the Adverse Weather Aerial Delivery System. It was a high-resolution radar, coupled with an airdrop computer. I became the test navigator for that system, and for several months, our crew took the airplane to the Tactical Air Warfare Center (TAWC) at Eglin AFB [Fla.] every week for flight testing. When we weren't testing the radar, we flew other missions for TAWC, testing tandem LAPES, etc. Some of those missions involved dropping large steel tubs into Apalachicola Bay, but no one would tell us what the devices were. We only found out that they were floating mines, and how they worked, after we were told we had been picked for the mission against the Thanh Hoa bridge.

From the beginning, it was to have been primarily a radar mission, planned for a night with no moon. A second navigator, 1st Lt. "Rocky" Edmondson, was added to the crew to provide visual navigation information as well. The radar, being one-of-a-kind, wasn't totally reliable, and there were no spare parts in the field except for what we carried with us. A second crew and aircraft, with the standard APN-59 radar, was selected as backup. We trained for weeks at Eglin, gradually working our way down in altitude until we were flying 50 feet above the water at night, blacked out.

At every meeting and every briefing, a fundamental premise was that this mission depended upon achieving complete surprise, because of the heavy defenses at Thanh Hoa. It was never contemplated that the mission could be flown twice, although it was in the frag order for two or more nights to allow for weather or maintenance cancellations. On May 30, we flew the mission just as planned, returning jubilant that

months of planning and training had paid off and we had survived. The next morning, our jubilation turned to horror when we learned that the backup crew had been ordered to fly the same profile again the next night. With the element of surprise lost, there was virtually no chance of success. The decision to fly that second mission was probably the worst I ever experienced in my 21 years in the Air Force, but in defense of the officer who made it, it must be said that he most likely did not have knowledge of the details of the mission. And for the record, I was told that morning that Lieutenant Edmondson went to Maj. [Thomas] Case and volunteered to join his crew.

I was the last person to leave Major Case's aircraft before he taxied out. It was a somber moment. After a long night of waiting, it was obvious that Major Case and his crew were down. In the morning, Maj. [Richard] Remers' crew flew the mission track to within sight of the North Vietnamese coast, searching for debris or any sign of the aircraft. Of course, we found nothing, and later photographic evidence confirmed the wreckage of the C-130 near the target. Four decades later, I still can't shake the feeling that the lives of good men and two valuable aircraft were utterly wasted by a failure of leadership. The Dragon's Jaw was an important and difficult target, worthy of considerable risk, but it didn't warrant a suicide mission.

Lt. Col. Norman G. Clanton,  
USAF (Ret.)  
Bethel, Maine

## Hero in the Limelight

Thank you very much for writing the outstanding article about SSgt. Robert Gutierrez and describing in detail his extraordinary heroism displayed in combat operations at Herat province, Afghanistan, on Oct. 5, 2009 [*"Once More Unto the Breach," October, p. 26*].

I think the article reflects only a small portion of some of the dangers our USAF combat controllers encounter every day, while operating and assisting ground forces—wherever they may be. Furthermore, AFSOC rarely gets into the limelight or gets the credit it truly deserves, but

this story was truly a refreshing change from the past norm.

MSgt. Menko D. Christoph,  
USAF (Ret.)  
St. Peters, Mo.

## Dissing the Thunderbolts?

I was shocked, almost, at the omission of the P-47 Thunderbolt, "Jug," etc., from your story "Warbirds," elaborating on our World War II Army Air Forces airplanes in the October 2011 issue [p. 46]. We flew as many as two missions a day dive-bombing and strafing the Nazis and halting their drive to the west. And you left them out? Shame!

Lew Dabney  
Chestnut Hill, Mass.

■ *The story featured restored or reproduced aircraft owned and operated by the Collings Foundation. The foundation does not operate a P-47.—THE EDITORS*

## Forgotten Command?

When I enlisted in the Army Air Corps, way back in the early 1940s, and became a pilot, I was assigned to what was called Troop Carrier Command based at Bergstrom Field, Austin, Tex. Our CO was Maj. Ed Nigro.

Our assignment was to create a way to recover the gliders, which were being planned for use in dropping paratroopers behind enemy lines since those gliders were of no further use, once used on the original missions.

The Army, at that time, had an inventory of less than 400 total airplanes (of all types) and we had to use Douglas airliners, on loan from United Air Lines, plus

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their senior pilots as instructors, in this newly crafted Air Corps military concept.

Over the many, many years since then, I have written letters to your magazine about doing a magazine piece on this highly unusual entity, Troop Carrier Command, but as far as I can determine, your magazine has never even acknowledged its existence.

As an over 50-year member of the association, I would like to go on record that, although you've highlighted every other facet of the Air Force's operations, you never ever recognized TCC as one of the earliest and most basic of commands.

At 91, I'm tired of waiting, so cancel my membership as of now.

Don J. Daley  
Harrisonburg, Va.

■ *It is exceedingly rare for Air Force Magazine to publish articles on specific organizations within the Air Force. For instance, we will not publish an article "about" Air Combat Command. However, the exploits and achievements of I and IX Troop Carrier Commands have been featured in many Air Force Magazine articles, including "Loadmaster Evolution," this issue; "The Air Invasion of Burma," by John T. Correll, November 2009; "Troop Carriers of World War II" by C. V. Glines, March 1999; and "Valor: Operation Varsity," by John Frisbee, March 1996 issue.—THE EDITORS*

### Nuanced Response

John Correll obviously holds Donald Rumsfeld and Gen. Tommy Franks in contempt. So be it; it is his prerogative [*"The Campaign for Goldwater-Nichols," October, p. 68*].

As an old infantry rifleman, I am completely conversant with the words for the expression of the Anglo-Saxon pejorative for sexual intercourse. Most infantrymen of my acquaintance held the words in use for specific and particularly appropriate times. Obviously the editors of *Air Force Magazine* do not. Evidently fly boys need to speak without nuance when quoting ground troops.

Perhaps I am old-fashioned and out of touch; anyway, I am reluctant to have my wife read the article.

Larry E. Brasher  
Belton, Tex.

### Come to Papa

Thanks so much for John Tirpak's article on the Heavy Airlift Wing at Papa AB, Hungary [*"C-17s in Hungary," October, p. 38*]. This article was especially important to me, since my parting suggestion to the AIRCENT (NATO) staff, as I assumed command of the 86th Logistics Group there at Ramstein [AB, Germany] in February 1999, was that NATO ought to consider an airlift wing much like the NATO AWACS wing. Of course, people simply

dismissed my idea, stating that such a proposal would be way too expensive. Well, the same thing was probably said before the AWACS wing was planned.

My proposal came about with the realization that most of the NATO countries (16 at that time) seemed to count on US airlift to get them to the fight. Looking at the ton-miles we were capable of at that time made this thinking unsupportable. My idea was to form a NATO airlift wing that would comprise not only C-17s, but C-130s, C-160s, and/or the A400, to have a well-rounded airlift capability for NATO countries to share as they do the AWACS. I am truly pleased to see that we now have a consortium that operates the C-17, and I believe that is a great start.

Col. Frank Alfter,  
USAF (Ret.)  
Beavercreek, Ohio

### It Happened in Vietnam, Too

It was a legend in the MAC C-133 community of the late 1960s that an F-105 was carried from Udorn RTAB, Thailand, with battle damage that rendered the "Thud" nonflyable. Also, and as shown in the pages of *Remembering an Unsung Giant*, p. 267, a battle-damaged RF-4C was picked up at Da Nang, South Vietnam, and carried back to the States. That means the caption on p. 22 of the October *Air Force Magazine*, "Nose First," loading a damaged Navy F/A-18 into the hold of a C-5 does not tell the whole story [*"Air Force World"*].

We used to carry a lot of battle-damaged cargo like this: five Army Hueys to Corpus Christi; four Cobras; and many other outside things too numerous to describe here. I understand we also carried F-104s but I have no personal recollection.

Michael W. Rea  
Savannah, Ga.

### Tip o' the Hat to Colonel Melroy

In the September 2011 issue of *Air Force Magazine* there is an incorrect statement on p. 108 [*"The Shuttle Era Ends"*]. USAF Col. Eileen Collins is NOT the only woman to have both piloted and commanded shuttles. USAF Col. Pam Melroy was the pilot of STS-92 and -112 and then went on to command STS-120.

Andrew McVey  
Redondo Beach, Calif.

### Zealots, Planners, So What?

Something about Phillip Meilinger's excellent article on the United States Strategic Bombing Survey (USSBS) in the October issue bothered me [*"The USSBS' Eye on Europe," p. 75*]. After some pondering it finally came to me: service parochialism and the missing "so what" factor.

Meilinger's article reflects the service parochialism present at the time. He

describes the Army leadership over the Army Air Forces as "land warfare zealots." While I don't question the accuracy of Meilinger's description, it misses the shortsightedness of the air war planners themselves. Maj. Gen. Haywood "Possum" Hansell, in his book *The Strategic Air War Against Germany and Japan*, complained that the senior commanders were determined to "divert the power of the strategic air forces away from [their] primary objectives and apply it in a support role for the furtherance of the ground forces objective." The offending "ground forces objective" was the Allied invasion of France! This was the decisive event for the western Allies in the European theater, perhaps in the war. Hansell was so focused on achieving air forces objectives that he missed the highest priority in the theater. Congress provided the remedy to this parochialism. The National Security Act of 1947 created the Department of Defense and subordinated the services to the DOD. Congress completed the remedy by passing the Goldwater-Nichols legislation in 1986.

Who can blame the "land warfare zealots"? The "so what" factor was missing from the air war plan. The air war planners failed to draw the connection between the targets they selected and the overall goal. In fact, as Meilinger notes, the bearings industry was the right target set; it just was not patently obvious how blowing up factories would help the disembarked invasion forces cross the beach. The effort seemed irrelevant to the current fight. The machine guns protecting the Normandy beaches still worked whether or not the factory that produced the bearings in the weapons had been destroyed—they could (and would) kill American, British, and Canadian soldiers. It would impact the future fight, however, when gunners went to replace burnt-out barrels if there were none in supply and, even if the factories could produce barrels, they wouldn't arrive because all the railroad lines were cut between the beaches and home. Today, air planners, in the first step towards producing an air tasking order, link objectives and effects with the commander's guidance and select tasks that will achieve the commander's objectives. Planners have to demonstrate how attacking a target progresses the operation toward the desired end state, providing the causal linkage between actions ordered and resulting effects.

Meilinger and the survey authors are correct: Airpower was decisive. But so was ground power and sea power. The war was won by a joint, indeed combined, force.

Alan Tuttle  
Niceville, Fla.

## An exhausted Air Force; No more manpower gimmicks; Diminished forward forces; Sequestration disaster ....

### A WHOLE NEW LEVEL OF RISK

If Congress fails to approve a deficit-cutting plan developed by the bipartisan “supercommittee” and deep, automatic defense budget cuts are triggered, expect “a whole new level of risk” for the American military, Air Force Secretary Michael B. Donley said in October.

Speaking at a Capitol Hill seminar, Donley said the Air Force has all but exhausted efforts to find efficiencies in its way of doing things, having cut personnel, force structure, and overhead for most of the past decade—even while fighting wars in Iraq and Afghanistan. The only places left to shrink are in numbers of aircraft, numbers of people, numbers of bases, and compensation, he said. If force structure is reduced, it will translate to an Air Force no longer able to do all the missions it’s being asked to perform.

“Beyond these numbers, we could face some potentially very, very significant and detrimental cuts to our military,” Donley warned.

The Air Force has long since “put the squeeze” on the personnel, financial management, and maintenance fields, has eliminated organizations, “retired over 400 aircraft,” terminated programs, reduced its number of bases, cut military construction, cut basic research, and flattened out its command structure, he explained. If the 2011 Budget Control Act kicks in and defense is required to slash up to \$600 billion over 10 years—on top of the \$450 billion it is already planning to cut—“that introduces a whole new level of risk,” Donley asserted. “We would be certainly in the position of having to cancel some programs, to terminate some programs, and delay and defer others.”

“We are the smallest Air Force since 1947,” he said, and “our sense is, there’s not much [waste] to be found there.”

Gen. Norton A. Schwartz, USAF Chief of Staff, told the House Armed Services Committee in early November the effect of a sequester cut could be devastating.

“Sweeping cuts,” he said, “would slash our investment accounts; raid our operations and maintenance accounts, forcing the curtailment of important daily operations and sustainment efforts; and inflict real damage to the effectiveness and well-being of our airmen and their families.”

Schwartz said heavier reductions would hurt training and readiness and result in a “diminished capacity to execute concurrent missions” around the world.

“We’re talking hundreds of aircraft and thousands of people,” he said. USAF would be able to “accomplish fewer tasks in fewer places in any given period of time.”

The nation “will have to accept reduced coverage in future similar, concurrent scenarios,” Schwartz told the House panel.

The need for airpower is likely about to go up. “Historically, as US forces withdraw from active combat, the relative requirement for airpower typically increases,” Schwartz

noted. After the 1991 Iraq war, and again after the 1994 and 1999 conflicts in the Balkans, USAF was tasked to enforce no-fly zones or fly air sovereignty missions long after ground troops departed.

### THE SPECTER OF BRAC RESURFACES

Although Donley stopped short of saying the Air Force will request another base realignment and closure round, the service was left with “excess capacity” in bases even after the last one. As the force shrinks, USAF will find it harder to spread its equipment around excess facilities without paying a senseless financial and operational price.



USAF photo by MSgt. Thomas Conroy

*Donley: Lying about unit strength is dangerous.*

The service has rejected the idea of going to a “hollow force,” which Donley defined as having too few people to fill the stated numbers of units, or not enough spare parts, people, and fuel to operate the amount of equipment on hand.

Having units staffed at only 75 to 80 percent—and “at even lower levels” in the reserve components—would be a dangerous lie, Donley said.

When similar actions were taken in the 1970s, “this provided a false sense of the capability available to the United States military, by having all these units on the books but not manned at adequate levels.” He and USAF senior leaders have resolved not to resort to such gimmicks during this decade’s drawdown.

### PROTECTED PROGRAMS, PERILOUS PAY

Donley said he doesn’t think the new long-range strike “family of systems” or the new bomber are in budgetary peril. At the level of the whole of the Defense Department, “I believe for the time being they are fairly settled matters” and “I don’t see us changing those decisions.”



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Likewise, there will be no letup in support for the F-35 Joint Strike Fighter or the recently launched KC-46 tanker program, though there may be some “tinkering at the margins” with the speed at which F-35 production ramps up as the program struggles to meet its overall cost and development goals.

Instead, Donley highlighted military health care and compensation costs as areas that have been going up faster than any other part of the budget. This must be addressed, he said.

“We will do what we need to do on the compensation side to get personnel costs under control,” Donley asserted. Though he waved off the idea of a pay cut, he suggested the rate at which compensation and benefits increase will have to be slowed. An overhaul of the retirement program is due and will be dealt with by a special presidential commission by 2013, he said.

## FORCE BREAKER

Deeper cuts in defense beyond those already in the pipeline will “break the back of our armed forces” and must be avoided, according to an October letter from 32 members of the House Armed Services Committee to the joint supercommittee seeking ways to reduce the nation’s budget deficit.

The Oct. 14 letter penned by HASC Chairman Howard P. McKeon (R-Calif.) to the co-chairs of the Joint Select Committee on Deficit Reduction implored the spending panel to count defense as having already paid its fair share in budget cuts.

If the supercommittee either recommends that the Pentagon reduce spending further, or fails to reach a deficit-cutting deal and a \$600 billion automatic cut is levied on defense, it would pose “a serious threat to the nation’s readiness to respond to current and future global security challenges [and] break the back of our armed forces, while slowing our economic recovery, and do little to resolve our debt crisis,” McKeon wrote.

The Defense Department has already made \$178 billion in program terminations, assorted reductions, and efficiencies since 2010, McKeon noted, with \$78 billion of that figure offered up as deficit reduction. Given various threats to national security and necessary reset from the wars in Southwest Asia, the 2012 defense spending request is deemed by the HASC to be “the minimum amount necessary to support our national security requirements,” he wrote. “In fact, many members advocated for additional investment.”

Even without any further reductions, spending plans already in place will reduce the size of the Army and Marine Corps to “pre-9/11 levels,” McKeon wrote, and further shrink the Navy and Air Force, which are “already smaller than they were 10 years ago.” Forward based forces “will likely be diminished,” offering fewer options to help with humanitarian crises and increasing “the risk of combat casualties.” Future conflicts “will likely be longer and more expensive,” he added.

McKeon also predicted that the health of the strategic triad “could be jeopardized,” as could the ability of the US to meet its deterrence commitments to allies.

He anticipates civilian personnel cuts of nearly 110,000 under current budgeting and that the Air Force will “lose more than 10 percent of its fighters, strategic bombers, and airlift.”

If the sequester kicks in, defense would see as much as an 11 percent drop in its budget versus Fiscal 2011 levels, McKeon said. If the President exempts military personnel pay and benefits from this cut, the result would be a hit of “15 to 25 percent” on operating and investment accounts, he wrote, citing figures provided by Defense Secretary Leon E. Panetta. He quoted Panetta as characterizing the sequestration as a “doomsday mechanism.”

Although military compensation is the biggest driver of the increases in defense costs over the last 10 years, McKeon urged the supercommittee not to slash existing



Boeing photo illustration

The KC-46A program should be safe.

troop pay, retirement, or health care. He argued that uniformed personnel are under extreme pressures with regard to deployments, physical danger, and prolonged separations from their families and deserve the benefits they receive. Cutting benefits would be “breaking faith” with the troops and potentially cause difficulties with recruiting and retention, he said.

McKeon specifically asked the committee to disregard recommendations from the Simpson-Bowles bipartisan deficit reduction panel regarding the Tricare program, arguing that the panel’s recommendations would unfairly hurt the benefits of retirees.

## INCREASE REVENUE TO CUT NOTHING?

Rep. Adam Smith (D-Wash.), ranking member of the HASC, in a separate letter to the supercommittee, said he believes “further reductions could undermine national security” and recommended no deeper cuts to defense spending. “Sparing the national defense budget, while simultaneously slashing discretionary and nondiscretionary federal spending ... would also be damaging to the country,” he added. He suggested that rather than pay for necessary military programs by cutting nondefense spending, the committee instead “include significant revenue increases among its recommendations for satisfying deficit-reduction requirements.”

Smith noted that, as operations in Iraq and Afghanistan rapidly wind down, overseas contingency funding will decrease by about \$100 billion annually, and while “these reductions may not represent budgetary savings, we should acknowledge that they will represent a significant departure from the deficit-spending patterns of the past decade.”

Senate Armed Services Committee Chairman Sen. Carl Levin (D-Mich.) also wrote the supercommittee, and without going into programmatic details, said, “I am unable to recommend further discretionary cuts to DOD’s budget” as part of the deficit reduction plan. Levin supported previously approved defense spending levels and agreed with Panetta that “any sequestration which could trigger as much as an additional \$600 billion in DOD cuts ... would be disastrous.”

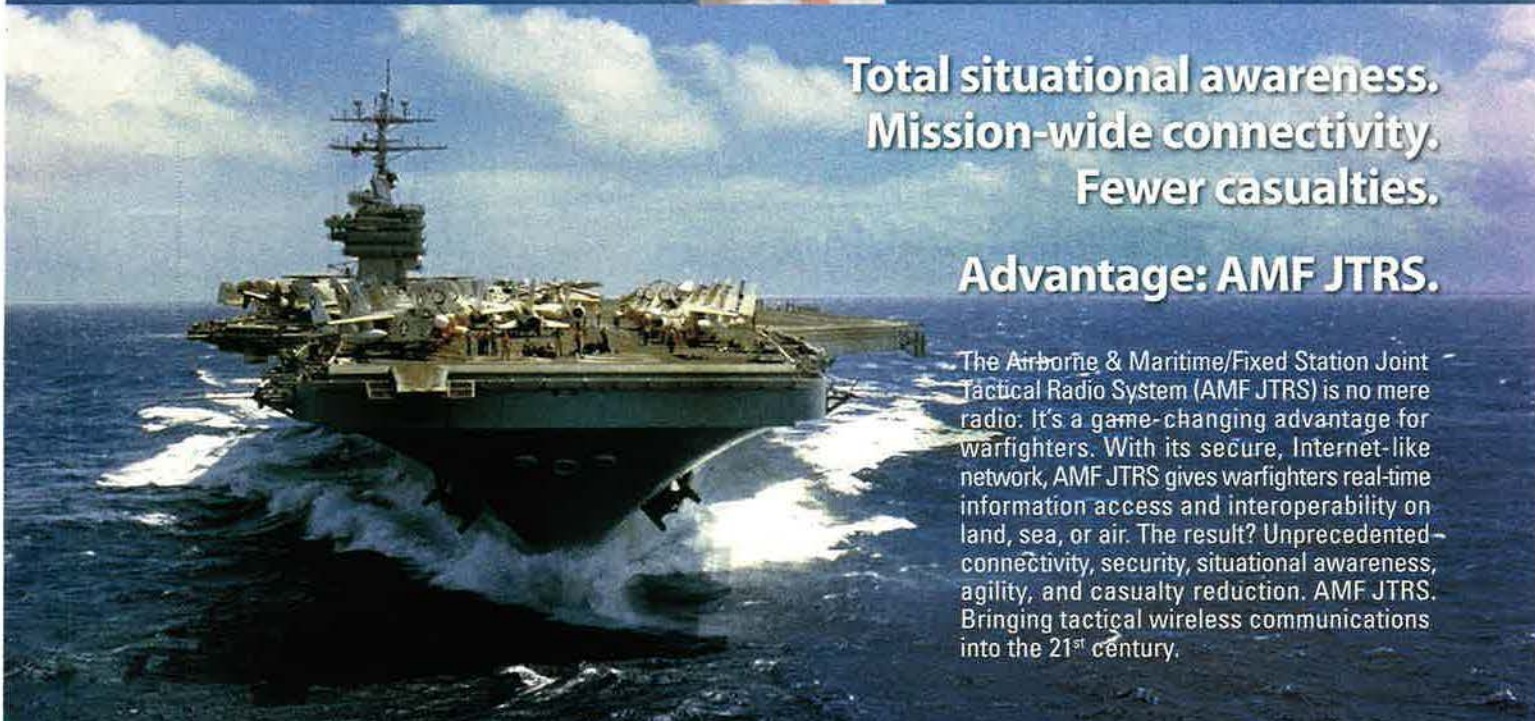
However, Levin supported President Obama’s plan to launch a commission to evaluate military retirement and other forms of compensation, particularly military health care, in their entirety. He specifically endorsed asking beneficiaries to bear a new annual Tricare for Life fee of \$200, going up as military health care costs escalate. However, Levin said the fee increase should be the same for both working-age retirees and over-65 Tricare participants. ■



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## Back in the Air (Again)

F-22 Raptors at JB Langley-Eustis, Va., and JB Elmendorf-Richardson, Alaska, were briefly grounded for a second time this year, following the fleet's return to the skies in September after a lengthy down period.

Two pilots from Langley's 1st Fighter Wing reported suffering hypoxia-like symptoms on a training sortie from Langley, Oct. 20. F-22s at both Langley and Elmendorf were temporarily grounded while the reports were investigated, as a precautionary measure.

Alaskan Raptors resumed flight operations four days later, followed by the Virginia-based aircraft Oct. 25. Langley fighters were immediately flying the "same number of sorties as before the brief pause," said a spokeswoman. The 1st FW commander "continues to closely monitor operations," she added.

Service officials had yet to identify the cause of the F-22's oxygen issues, but allowed flying to resume in September under enhanced safety and monitoring measures.

## Airless National Guard?

House legislators expressed concern that belt-tightening measures under consideration by the Air Force may seriously threaten the Air National Guard.

Representatives cited their concern about possible elimination of the Guard's C-5A fleet, divestment of three F-16 wings, and reduction of the C-130 force by some 76 airframes, in addition to A-10 cuts and even termination of C-27J acquisitions.

Pressed on the consequences of such cuts, Lt. Gen. Harry M. Wyatt III, Air National Guard director, said it is "too early in the budgeting process to reach any conclusion as to what may or may not survive."

However, he added sternly, "if those platforms were removed, ... in essence, ... you would have the air being taken out of the Air National Guard."

Softening his remarks only slightly, he noted that theoretically the Air Guard could be fundamentally reoriented to assume missions such as cyber, engineering, communications, and security forces, as well as participate more heavily in remotely piloted aircraft operations.

## Silver Star for Combat Controller

TSgt. Ismael Villegas was awarded the Silver Star medal for gallantry in action in Afghanistan.

Villegas was the lone combat controller assigned to an Army Special Forces team charged with clearing a road of improvised explosive devices near Bagh Khosak in September 2009.

After insurgents ambushed the team, Villegas, who was assigned at the time to the 21st Special Tactics Squadron at Pope Field, N.C., ran 200 feet across an exposed mine field to return fire while directing close air support from a better vantage point.

He directed "precision firepower from artillery, as well as fixed- and rotary-wing assets" that resulted in 32 insurgents killed during the 16-hour firefight and saving the lives of his teammates, according to Air Force Special Operations Command officials.

Villegas accepted the Silver Star, saying the medal was for his comrades. "They put their lives on the line each day. I'm taking this on behalf of all of those guys out there," he said, after Air Force Chief of Staff Gen. Norton A. Schwartz pinned the medal on him Oct. 27.

## Last B53 Nuclear Bomb Dismantled

Workers at the Pantex weapons plant in Amarillo, Tex., dismantled the final B53 nuclear bomb in the US inventory under the watchful eye of National Nuclear Security Administration officials Oct. 25.

Last October, NNSA announced plans to dismantle the US arsenal of B53 nuclear free-fall weapons, which were retired in 1997.

Designed to be carried by Strategic Air Command's B-47, B-52, and B-58 bombers, each B53 was roughly 10,000 pounds and the size of a minivan.

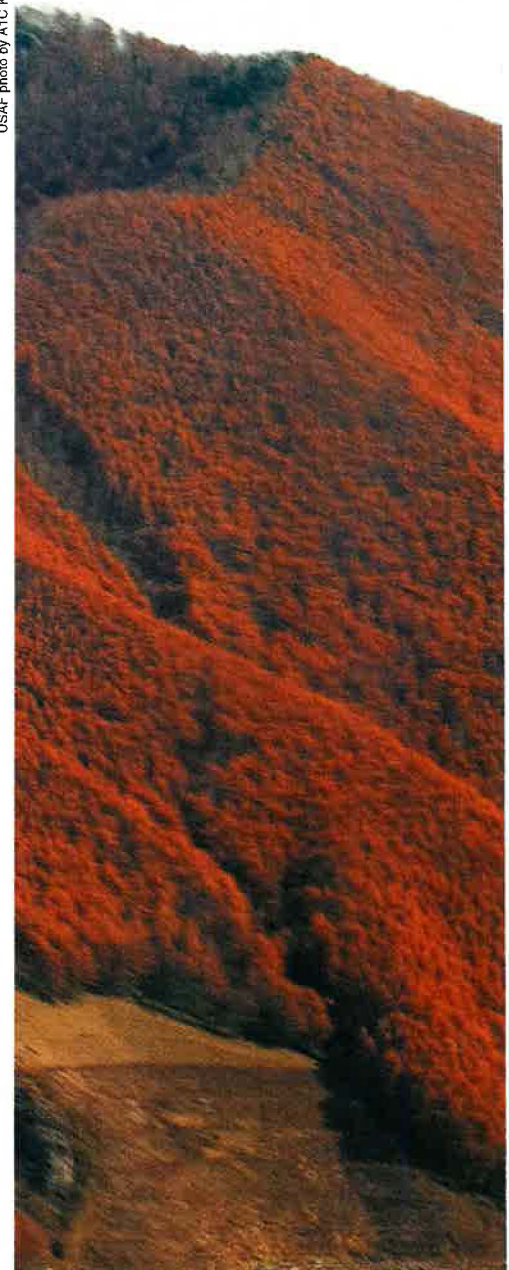
Each B53 had a reported nine-megaton yield.

A week before the dismantlement of the final B53, the NNSA announced its intention to complete dismantlement of the US entire store of W70 tactical nuclear weapons, deployed atop the Army's Lance missile system during the Cold War.

NNSA officials said the elimination of the last B53 is a significant step in

USAF photo by ATC Krystal M. Garrett

 screenshot



President Obama's nuclear security agenda aimed at reducing the size of the US stockpile.

#### **CYBERCOM Guarding Networks**

The computer networks of critical US defense contractors—often guarding technological secrets key to military security—will soon fall under the direct protection of the Defense Department.

US Cyber Command announced it is extending protective protocols beyond

“dot mil” domains, to the networks of key defense companies, according to Gen. C. Robert Kehler, commander of US Strategic Command.

A pilot program was already under way in October to extend CYBERCOM protection to “part of the industrial base,” Kehler told defense reporters in Washington, D.C., Oct. 18.

“We are seeing some good success” with the effort and it will be “extended for a period of time,” he said.

CYBERCOM is a subunified command under US Strategic Command.

#### **Super Galaxy Blazes New Air Trail**

A C-5M Super Galaxy inaugurated a new nonstop supply route from the United States to Bagram Airfield, Afghanistan. The 436th Airlift Wing aircrew from Dover AFB, Del., lifted off from the East Coast base, crossed the Atlantic, overflew Europe, and continued on into Afghanistan.



**11.02.2011**

*C-130s fly in formation over a mountain range in Japan during a mission for Samurai Surge, an exercise designed to test and demonstrate USAF's airlift capability in the Pacific. Six C-130s were launched for the one-day exercise, which taxed the efforts of maintainers and aircrew who, during their normal flying and training schedule, launch one to three aircraft a day. Based at Yokota AB, Japan, C-130s are the only tactical airlift fleet supporting Pacific Air Forces.*

The new route, which debuted in September, “provides invaluable options and increased flexibility, so air mobility assets can arrive where they’re needed faster and more efficiently,” said Brig. Gen. Carlton D. Everhart II, commander of the 618th Air and Space Operations Center (Tanker Airlift Control Center), Scott AFB, Ill.

Total flight time was less than 14 hours, sufficiently shorter than previous routes to avoid the traditional overnight stay in Germany for mandatory crew rest.

The Galaxy rendezvoused with a KC-135 tanker from RAF Mildenhall, UK, for a refueling over England before continuing on to Bagram. Another C-5M proved the feasibility of flying from Dover to Bagram over the Arctic Circle during a similar route-shaping flight early this summer.

**Reapers Begin East Africa Ops**

The United States recently began operating unarmed MQ-9 Reaper remotely piloted aircraft over Somalia from a forward airfield in neighboring Ethiopia. They had been operated from the Seychelles.

Last year, the Air Force began upgrading Arba Minch Airport in southwestern Ethiopia to support then-undisclosed operations in the region. With increasing US military involvement in East Africa, the Reaper surveillance flights currently provide “operation and technical support for our security-assistance programs,” said MSgt. James Fisher, 17th Air Force (Air Forces Africa) spokesman, quoted in the *Washington Post*.

Seventeenth Air Force advises and supports regional partners such as Ethiopia and Kenya that are fighting



USAF photo by SSGT. Mike Meares

**Keep in Touch:** SrA. Jarod Bierman (l) and SrA. Drew Wilshire assemble pieces of a ground multiband terminal, a tactical satellite communications system, at Sather AB, Iraq. A communications network is being placed in preparation for the scheduled US military withdrawal from the country.

militant groups such as the Lord’s Resistance Army, al Shabab, and al Qaeda affiliates.

Reaper sorties “will continue as long as the government of Ethiopia welcomes our cooperation on these varied security programs,” said Fisher in late October.

**Broken Eagle**

An F-15C on a sortie from Nellis AFB, Nev., crashed in a remote area approximately 115 miles north of Las Vegas in late October.

The pilot ejected without injury and was rescued by a helicopter 30 minutes later as he hiked from the crash site.

He was subsequently flown to Mike O’Callaghan Federal Hospital for examination and released.

Lincoln County Sheriff Kerry Lee told the Associated Press that the crash site—on federal land northwest of Alamo—was “really hard to get to,” and much of the airframe remained intact after the crash, but was soon enveloped in flames that consumed the wreckage on the ground.

The Air Force investigators immediately launched an investigation to determine the cause of the crash.

**Guard Is Top Cover for Withdrawal**

A combined squadron of F-16 pilots and support personnel from Arizona, Ohio, and Oklahoma Air National Guard units deployed to Iraq to cover US forces withdrawing from the country this year.

“We’re providing close air support for more than 40,000 troops leaving Iraq by the end of the year,” said Lt. Col. Rick Poplin, commander of the combined 125th Expeditionary Fighter Squadron, which deployed to Iraq in October.

“During this historic undertaking to reposture personnel, equipment, and bases, force protection remains inherent in every operation we undertake,” said Poplin.

**Iraq Regains Airspace Control**

Early this fall, the Air Force handed over control of the last sector of Iraq’s airspace to the country’s civil aviation authority, restoring airspace sovereignty to the nation for the first time since 2003.

Iraqi air traffic controllers took full responsibility for managing the country’s

**Start Date for F-35 Training at Eglin Under Review**

A senior Pentagon official expressed “serious concerns” about starting F-35 training on USAF’s F-35A variant at Eglin AFB, Fla., this year as planned. The Joint Strike Fighter program has yet to address some safety-related issues that could take up to 10 months to properly address, said J. Michael Gilmore, director of Operational Test and Evaluation.

“Initiation of training in an immature aircraft risks the occurrence of a serious mishap. The consequences of a mishap at Eglin would overwhelm the very modest benefits of beginning flight training this fall,” wrote Gilmore in a memo to the undersecretary of defense for acquisition, technology, and logistics, Oct. 21.

High-level JSF program officials disagreed with Gilmore, posting a rebuttal memo to the same Project on Government Oversight blog that originally released the memo airing Gilmore’s concerns.

Vice Adm. David J. Venlet, JSF program executive officer, and Air Force Lt. Gen. Thomas J. Owen, commander of the Aeronautical Systems Center at Wright-Patterson AFB, Ohio, said that the risks asserted in the memo were “covered at length during the three-star risk assessment board as part of the airworthiness process.”

In a third memo, Frank Kendall, acting USD (ATL), requested that the Air Force review the topic and provide satisfactory resolution to the issue.



## Malware Spares RPAs

Remotely piloted aircraft controlled from Creech AFB, Nev., were unhindered by a computer virus detected in the RPA ground control system there in September, according to 24th Air Force officials.

"We felt it important to declassify portions of the information associated with this event to ensure the public understands that the detected and quarantined virus posed no threat to our operational mission and that control of our remotely piloted aircraft was never in question," said Col. Kathleen Cook, Air Force Space Command spokeswoman at Petersen AFB, Colo.

After malware was discovered on portable hard drives used to transfer information between systems, USAF analyzed the systems, isolated and traced the code to its source, and then cleaned the computers.

The infected ground control systems support RPA operations but are separate from the Predator and Reaper flight control systems, used to guide RPAs in the air over Afghanistan and Iraq, officials said.

Designated a "credential stealer," rather than a key-logging program as initially reported by the press, the bug was "considered more of a nuisance than an operational threat," officials noted.

The virus "entered from the wild," probably during a manual hard-drive replacement, noted US Strategic Command Commander Gen. C. Robert Kehler, speaking in October.

busiest section of sky, fully directing all commercial traffic to Iraq's five international airports.

The transfer of Baghdad-Balad airspace sector is "the culmination of a multiyear effort ... to help Iraq develop a self-sufficient, national air traffic control system," stated an Oct. 1 US Embassy-Baghdad news release.

Iraqi aviation infrastructure still lacks modern equipment—something the government must continue to improve upon, according to embassy officials, but the event is "a significant step forward in providing an essential service to the people of Iraq," stated the release.

The Air Force reopened the Baghdad Area Control Center in 2007, and US and British civilian advisors tutored Iraqi controllers up to the recent handover.

### Reapers Over Fort Drum

MQ-9 Reaper remotely piloted aircraft began training sorties over New York state, flying from Wheeler-Sack Army Airfield at Fort Drum.

Members of the New York Air National Guard's 174th Fighter Wing in Syracuse began RPA operations at Fort Drum after the Federal Aviation Administration approved flights early in October.

Beginning with the first sortie, Oct. 18, the wing has launched approximately three training sorties a week from Wheeler-Sack, flying orbits over a designated range in the Adirondack Mountains of northeastern New York.

With the stand-up of a new MQ-9 formal training unit at the wing's headquarters at Hancock Field, the wing was scheduled to begin supporting RPA training at the schoolhouse in November.

Eventually, the cadre of Air Guardsmen manning the formal training unit will train MQ-9 pilots and sensor operators from across the active duty, ANG, and Air Force Reserve components, as well as foreign military operators.

Fort Drum is north of Syracuse, near Watertown and the eastern shore of Lake Ontario.

### Ramstein Opens Super AOC

The newly consolidated 603rd Air and Space Operations Center, tasked with air control of Europe and Africa, inaugurated a new 60,800-square-foot combined command facility at Ramstein AB, Germany.

Officials announced plans to merge the two AOCs located in Europe—the 603rd AOC supporting US European Command and the 617th AOC supporting

US Africa Command—as an efficiency measure earlier this year.

Completed this fall, the facility provides the 400 AOC personnel with 553 workstations, 1,500 computers, and 40 communication systems for the center's dual airspace monitoring and operational command and control missions.

Engineers broke ground on the facility in 2008, completed the building's structure last summer, and finished final integration this year.

Gen. Mark A. Welsh III, US Air Forces in Europe commander, oversaw the ribbon cutting at Ramstein Oct. 7.

### A Libya Mercy Flight

Three days before the end of NATO operations over Libya, a 37th Airlift Squadron C-130J from Ramstein AB, Germany, ferried 32 injured Libyan rebels from Tripoli to Germany for advanced medical treatment.

The aeromedical flight marked the first time that US aircrews evacuated Libyan casualties since chaos erupted in the North African nation in mid-March.

"All of these patients were injured as a result of recent fighting and suffer from conditions that cannot currently be treated in Libya," explained Defense Secretary Leon E. Panetta and Secretary of State Hillary Rodham Clinton in a joint statement.

The Secretaries called the gesture a "small token of our support," underscoring US commitment "to Libya's future." Medical personnel from Ramstein and nearby Landstuhl Regional Medical Center ministered to the Libyans, 28 of whom were subsequently transferred to undergo treatment in the United States Oct. 29.

The four remaining rebels were ferried to a German hospital on a chartered Canadair business jet aircraft, tended en route by a USAF critical care air transport team.

### Engine Failure Doomed ANG F-16

Air Combat Command accident investigators found "clear and convincing evidence" that engine failure led to the crash of a Wisconsin Air National Guard F-16C in June.

The report issued by the ACC accident investigation board in October stated that "a failure of the power takeoff shaft forward main bearing assembly within the accessory gearbox" caused by inadequate lubrication from a blocked oil line doomed the F-16.

Assigned to the 176th Fighter Squadron at Truax Field, the F-16 took off on a training mission June 7. Approximately one hour and 23 minutes later, the aircraft experienced a sudden loss of thrust. Unable to restart the aircraft's

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## Talon vs. Raptor at Langley

T-38 adversary aircraft with the 27th Fighter Squadron at JB Langley-Eustis, Va., attained initial operational capability shortly after Langley's F-22s returned to the skies in September.

"Our whole mission requires us to train against the Raptor," said Col. Derek Wyler, 27th FS director of T-38 operations. With the fleetwide F-22 grounding lifted, squadron T-38 pilots were quickly able to gain their required mission qualifications, sprinting to T-38 IOC in under a month.

With the T-38s now up and running, the 1st FW now gets "more training at a much lower cost," said Col. Kevin Robbins, wing commander. The benefit comes primarily by eliminating the use of F-22 in the opposition role.

With seven T-38s, the 27th FS is working to push daily sortie averages from six to eight, despite a tiny pool of pilots. The squadron has only two full-time pilots assigned. "You're looking at it," said Wyler, gesturing to his assistant ops director, Lt. Col. Brian Kelly.

"We didn't get any additional bodies to fly T-38s," forcing the squadron to innovate an elaborate solution, explained Robbins. The squadron draws on a pool of dual-qualified F-22 pilots, as well as staff pilots from Air Combat Command headquarters (also at Langley), and pilots from the 1st FW's associate unit, the Virginia Air National Guard's 192nd FW—each pilot chipping in five sorties on average per month.

With the success thus far, Langley's T-38 program could potentially expand to 14 airframes, depending on Fiscal 2013 funding, according to Robbins.

engine, the pilot ejected, sustaining only superficial injuries.

The F-16 crashed next to an unoccupied summer cabin 66 miles northwest of Truax, in a rural area near New Chester, Wis. Both the aircraft and residence were completely destroyed.

### Bears Drop In on NATO

A pair of Russian Air Force Tu-95 strategic bombers breached NATO airspace, triggering an Oct. 11 scramble of Alliance fighters from the UK.

Typhoon fighters on quick-reaction alert at RAF Leuchars, Scotland, launched to intercept and identify the Bear bombers.

According to the RAF, the aircraft entered UK airspace unannounced to civil or military air traffic control. The bombers failed to transmit a radar-tracking "squawk" code or to submit a required international flight plan.

The Typhoons escorted the bombers until they cleared UK airspace. The Bears were assigned to Russian Long Range Aviation, the rough equivalent of Air Force Global Strike Command's bomber force. NATO members police Alliance airspace under a common command and control structure to track and interdict potential air threats.

Reversing a post-Cold War lull, unannounced Russian incursions have become increasingly common in NATO airspace over the past five years.

### Stuck on the Sunny Side

F-15s from the Montana Air National Guard will continue to guard Hawaiian

skies for another year, extending their mission at JB Pearl Harbor-Hickam, Hawaii, through next September.

Six F-15s of the 120th Fighter Wing in Great Falls deployed to Hickam last August to cover the Hawaii ANG's alert mission as Hickam's 199th Fighter Squadron transitioned to the F-22 Raptor.

Upon returning to Montana, the 120th FW's Eagles were slated for transfer to the California ANG's 144th FW at Fresno Yosemite Airport.

According to the *Great Falls Tribune*, environmental assessment delays at

Fresno prompted the National Guard Bureau to postpone transferring the F-15s by eight months.

Instead of returning briefly to their home base at Great Falls Airport, the 120th's 12 deployed and rotating pilots and 35 maintainers will remain in Hawaii.

Next September, the Montana ANG will transition to its new missions: flying C-27J transports and supporting geospatial intelligence operations.

### Reaper Crash Landing at Holloman

An MQ-9 Reaper assigned to the 29th Attack Squadron crashed on final approach to Holloman AFB, N.M., in the fifth such incident since Air Combat Command established RPA training at the base in 2009.

Operated by one of ACC's RPA flight training units, the Reaper had just completed a local training sortie when the Oct. 7 incident occurred.

There were no injuries or damage to private property, according to the base release, and a board will convene to investigate the cause of the accident.

### Stealthy Academy Target

A stealthy, twin-engine drone designed by cadets at the Air Force Academy for fifth generation aerial target training recently won the attention of USAF officials.

The project was selected as a finalist in the Air Force's competitive search for a threat-representative aerial target drone suitable for F-22 and F-35 air combat training.

If selected, it would be the first academy-designed airplane meant for



**Sniffin' Out Trouble:** SSgt. Martin Ratkowski holds the tether attached to his military working dog, Tosca, as Tosca investigates a home in Mizan, Afghanistan, in search of homemade explosives. Ratkowski and Tosca are with the Provincial Reconstruction Team Zabul, which conducts civil-military operations in Zabul province in support of the Afghan government.

USAF photo by S/A Grovert Fuentes-Contreras

### Operation Enduring Freedom

#### Casualties

By Nov. 16, a total of 1,826 Americans had died in Operation Enduring Freedom. The total includes 1,823 troops and three Department of Defense civilians. Of these deaths, 1,452 were killed in action with the enemy, while 374 have died in noncombat incidents.

There have been 14,837 troops wounded in action during OEF.

#### DC Vipers Deploy to Afghanistan

The District of Columbia Air National Guard's 113th Wing recently launched the first ANG F-16 deployment to Afghanistan, dispatching several aircraft to Bagram Airfield there.

"This is the first F-16 package the Air National Guard will send to Afghanistan, so it presents some new challenges for us," said Brig. Gen. Jeffrey R. Johnson, 113th Wing commander.

Departing from JB Andrews, Md., Oct. 11, the deployment to Bagram follows a tour in Iraq that concluded some 18 months ago. The unit also leads the NORAD mission to provide air defenses for the National Capital Region, rendering planning all the more complex, noted Johnson.

"Even though we are deploying our forces forward to Afghanistan, we still maintain a constant homeland defense mission here at home." More than 175 aircrew, maintainers, and support personnel deployed with the first ANG F-16 package.

#### Keeping Busy in the Name of Liberty

MC-12 reconnaissance aircraft assigned to the 4th Expeditionary Reconnaissance Squadron recently surpassed 10,000 sorties and 50,000 flight hours since deploying to Bagram Airfield, Afghanistan, two years ago.

Lt. Col. James Thompson, 4th ERS commander, said the MC-12s—which also operate with the 362nd ERS of JB Balad, Iraq, and 361st ERS at Kandahar Airfield, Afghanistan—"are flying at the greatest rate" of any manned aircraft in the Air Force. Liberty aircrew with the 4th ERS routinely reach the maximum authorized flying hours permitted in a month, according to unit officials.

Providing live video and signals intelligence to ground troops, the unit contributed directly to the elimination or capture of 4,000 targets by October.

#### Investigation Confirms RPG Downed Chinook

US Central Command investigators conclusively determined that an insurgent-fired rocket-propelled grenade brought down an Army CH-47 helicopter in an attack that killed 30 US servicemen and eight Afghans in Southwest Asia this August.

Based on wreckage, witness accounts, and full-motion video footage, CENTCOM officials determined an RPG struck the helicopter's aft rotor as it approached the landing zone, severing a blade and disintegrating both of the helicopter's two rotors.

According to the investigation team findings, the aircraft's "main fuselage dropped vertically," exploding on impact.

"This mission, and the tactics and resources employed in its execution, were consistent with previous US special operations missions, and the strike forces selected ... were appropriate," investigating officer Army Brig. Gen. Jeffrey N. Colt wrote in the official summary, released Oct. 12.

Three airmen were among the victims killed during the night mission to kill or capture a Taliban leader in Wardak province, Afghanistan, Aug. 6. The Air Force deceased, all from the 24th Special Tactics Squadron, Pope Field, N.C., were TSgt. John W. Brown, 33, of Tallahassee, Fla.; SSgt. Andrew W. Harvell, 26, of Long Beach, Calif.; and TSgt. Daniel L. Zerbe, 28, of York, Pa.

has worked with cadets on the airplane since 2003.

Recent wind-tunnel tests with a scaled model demonstrated positive flight characteristics, meaning a full-scale aircraft could potentially be constructed and airworthy within about two years.

#### Short Order AWACS

An Air Force engineering team successfully demonstrated several new capabilities for E-3 AWACS aircraft, proving a trio of new concepts in a demonstration test at Tinker AFB, Okla.

First on the list of requests from the war zones was a modification to the Sentry's Situational Awareness Data Link. Operating on the Link 16 network, the E-3 can currently only send airspace information directly to other Link 16-capable aircraft, which excludes types such as the A-10 and many Air National Guard fighters.

The new SADL pioneered by the demo team "lets us use the E-3 as an opportunistic aerial gateway ... to provide direct communication and send the air picture" to those other platforms, said Jonathan Lee, AWACS lead project engineer.

The two other low-cost and minimally invasive modifications recently demonstrated the AWACS ability to extend Link 16 beyond line of sight using a satellite mobile telephone, and to switch between USAF and Army networks in flight without rebooting.

#### B-1 Upgrade

USAF awarded Boeing a \$57 million contract to begin the next phase of upgrades on Air Combat Command's B-1 bomber fleet.

The planned tweaks will enhance the navigation, weapons delivery, radar, diagnostics, communication and navigation-management system software, and controls and displays, according to Boeing representatives.

"Keeping the platform relevant and ready is more important now than ever. These annual software block upgrades enhance the sustainability of the B-1s and provide needed capabilities that aid this nation's defenders," said Rick Greenwell, Boeing's B-1 program director.

Block 16A upgrades complement the B-1's recently completed color cockpit displays, data link, and sensor enhancements, boosting the aircrew's overall situational awareness, stated a Boeing release in October.

#### Candidate Bases Identified

Three bases made the Air Force's list of candidates to host an active duty MQ-1/MQ-9 remote split operations squadron.

Davis-Monthan AFB, Ariz.; JB Pearl Harbor-Hickam, Hawaii; and Shaw AFB, S.C., are all in the running for the MQ-1/MQ-9 RSO unit, which would bring

large-scale production to join the Air Force's fleet, reported the Colorado Springs *Gazette*.

Powered by jet engines from a T-38 trainer, the design is 40 feet in length, with a wingspan of 24 feet.

The cadets are still competing against one other team, with selection of the winner possible by the end of the year, according to the report. "There are still a lot of people who have to say yes," said academy professor Steve Brandt, who

## Senior Staff Changes

**RETIREMENTS:** Lt. Gen. Vern M. **Findley II**, Maj. Gen. David W. **Eidsaune**, Maj. Gen. Patrick D. **Gillett Jr.**, Maj. Gen. Michael A. **Snodgrass**, Brig. Gen. Larry K. **Grundhauser**.

**NOMINATION: To be Lieutenant General:** Ronnie D. **Hawkins Jr.**

**SENIOR EXECUTIVE SERVICE CHANGES:** James J. **Brooks**, to Assoc. Dir., Strat. Planning, DCS, Strat. Plans & Prgms., USAF, Pentagon ... Michael D. **Petersen**, to Asst. Auditor General, Spt. & Personnel Audits, AF Audit Agency, Randolph AFB, Tex. ... Glenda H. **Scheiner**, to Dep. Dir., Financial Mgmt., AFMC, Wright-Patterson AFB, Ohio ... Jeffrey H. **Stanley**, to Dep. Dir., ISR & Rqmts., AFMC, Wright-Patterson AFB, Ohio.

with it 280 personnel and their associated equipment, officials announced in October.

No MQ-1 Predator or MQ-9 Reaper remotely piloted aircraft will be physically assigned to any of the locations. Instead, the selected base would host an RPA ground control station to operate Predator and Reaper drones forward located in places such as Afghanistan via satellite data link.

"These candidate bases will be analyzed to determine which location will best host this mission," said Kathleen I. Ferguson, USAF's deputy assistant secretary for installations.

The Air Force's final base selection is slated for this month.

### AEHF-1 Reaches Operational Perch

The Air Force's first Advanced Extremely High Frequency military communications satellite finally achieved its intended orbit after more than a year of wandering.

AEHF-1 reached its perch on geosynchronous orbit Oct. 24. Shortly after launch last August, the satellite suffered a thruster malfunction which forced the Air Force and industry minds to craft an alternate plan using different thrusters to boost the satellite into position.

The team managed to raise the satellite to its functional orbit, without depleting onboard fuel stores to the point of shortening its planned 14 years of mission life, according to USAF officials.

### Rifle Training Intensified

Beginning this month, airmen can expect a longer, more challenging rifle course. Aimed at better preparing airmen for deployments downrange, the new course is tailored with current combat in mind.

Combatant commanders identified the need to move away from Cold War-era qualification and "give our airmen quality training," said MSgt. Scott Brown, US Air Forces in Europe combat arms program manager.

Requirements differ based on an airmen's specialty code and the course varies in length from nine hours to 11 hours. Airmen in combat-focused Group A career fields fire 280 rounds of ammunition, including a night shooting course aided by laser aiming devices, illuminating scopes, and barrel-mounted lamps.

The majority of career fields, designated Group B, now fire a 200-round course including semi-automatic and three-round burst fire, combined with

instruction in threat discrimination and tactical target engagement.

Both A and B groups must score 70 percent or higher for basic qualification, instead of the previous accuracy requirement of 50 percent or better.

### Evasion Training Center Opens

A new \$6 million survival training facility opened for business at Lackland AFB, Tex., consolidating all USAF Evasion and Conduct After Capture training to one location.

Overseen by instructors from Lackland's 22nd Training Squadron, roughly 6,000 students per year are expected to pass through the new facility for specialized predeployment preparation. Aircrew members still undergo survival training at Fairchild AFB, Wash.

The facility incorporates an urban-evasion laboratory designed to train airmen to overcome the unique challenges of avoiding capture within the confines of a city.

"When they leave this course, if they become isolated in any environment in any part of the world, they'll have the skills necessary [to] adapt and overcome" the threats around them, said TSgt. James Davis, the detachment's ECAC course manager.

Students going through the Combat Skills Training Course and Basic Combat Convoy Course at nearby Camp Bullis also will train at the facility, which opened Oct. 3.

**Patrolling the Skies: An F-15E takes off on a base defense mission from Bagram Airfield, Afghanistan. Strike Eagles deployed to the 455th Air Expeditionary Wing, such as this one from Seymour Johnson AFB, N.C., can quickly provide a critical aerial base defense capability.**

USAF photo by TSgt. Matthew Hecht



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The F-22 was grounded five months for a vexing oxygen supply problem. Maintainers made the most of the difficult situation, and now pilots are rebuilding their skills.

# Raptor Return

By Aaron Church, Associate Editor



USAF photo by MSgt. Andy Dunaway

**T**he Air Force's F-22 pilots are rebuilding their proficiency, shaking off the dust that accumulated during a nearly five-month grounding because of problems with the Raptor's onboard oxygen-generating system (OBOGS).

During what proved to be the longest flight suspension the Air Force has ever had to endure for a frontline fighter, the 1st Fighter Wing at JB Langley-Eustis, Va., made the most of the difficult situation. The grounding offered unheard-of training opportunities for maintainers and permitted aircraft to be upgraded to the latest configuration on an accelerated schedule.

The grounding began in early May. Gen. William M. Fraser III, then head of Air Combat Command, halted F-22 flying because oxygen supply problems had led to some dangerous close calls and might have contributed to a crash. Raptor pilots had reported an unusually high incidence of "in-flight physiological events" symptomatic of oxygen deprivation.

They noted hypoxic symptoms at a rate three times higher than crews from other similar aircraft, a USAF official said. A

dozen incidents were reported over three years. In one event, a pilot flying an F-22 clipped a tree while landing at JB Elmendorf-Richardson, Alaska, and later couldn't recall the event.

Another Elmendorf F-22 crashed during a night training sortie, killing pilot Capt. Jeffrey A. Haney. The cause of the November 2010 mishap had not been identified by press time, but investigators were able to rule out a problem with that aircraft's oxygen system. "We do not have a smoking gun here," Gen. Norton A. Schwartz, Chief of Staff, said in September.

The Air Force Scientific Advisory Board investigated the OBOGS situation and looked to identify potential remedies. Although a definitive solution had not been found when the Raptors returned to flight, "we now have enough insight from recent studies and investigations that a return to flight is prudent and appropriate," Schwartz said when lifting the grounding in mid-September.

He left some restrictions in place, but allowed Raptor pilots who had lost their type certifications to return to flight, rebuild their piloting "muscle memory," and restore their proficiency. For the time being, Schwartz said F-22 pilots would wear "certain



*A1C Aaron Tate enters Raptor data into a portable maintenance aid at Kadena AB, Japan. The stand-down offered maintainers an unprecedented opportunity to mentor trainees.*



protective equipment” on their missions, receive new emergency procedure training and be monitored for physiological changes.

By mid-October, all the instructors and half the line pilots were back up to snuff.

“The stand-down was something that we would have preferred not to do, of course, but at the same time it was ... required for confidence in the aircraft,” explained Col. Kevin Robbins, 1st FW commander at Langley. He said the Raptor pilots are “completely confident that the Air Force did exactly what they needed to do.”

### Knocking Off Rust

While investigators found “no indication” the OBOGS was flawed, modifications should mitigate pilot risk if a malfunction occurs in flight. “We’ve done a bunch of inspections. ... We’ve done baseline bio-testing on the pilots, and if there [are] any incidents at all, we do more bio-testing,” explained Robbins. “There are systems in place to gather data, there are systems in place to protect the pilots, and then we still have more testing going on out at Edwards Air Force Base” in California.

The safety and review procedures were quickly tested when a pilot reported hypoxia-like symptoms on a training sortie from Langley on Oct. 20. As a precaution, Raptors at Langley and Elmendorf suspended flying over the weekend to investigate the incident. “Part of our protocol is to allow units to pause operations whenever they need to analyze information collected from flight operations to ensure safety,” explained Air Combat Command spokeswoman Capt. Jennifer Ferrau.

Three days later, the Raptors were once again airborne, with Langley’s reconstitution plan returning to full swing.



**Top:** F-22s are readied for flight during an April operational readiness inspection at JB Langley-Eustis, Va. A maintainer pulls the chocks on an F-22 at Holloman AFB, N.M., Oct. 1, where some 20 Raptors were grounded for more than four months.

“We’re not combat-ready yet, ... but we are working on getting our qualifications back,” said Lt. Col. Jason Hinds, director of operations for Langley’s 27th Fighter Squadron. “Obviously, the stand-down for the pilots was painful when it comes to proficiency.”

Normal training is focused on air dominance—the skills needed to defeat an adversary in the air. However, reconstitution is “not so much looking at that combat capability” but regaining basic proficiency—“the kind of things we can’t really do in a simulator,” Hinds stressed.

The first sorties in September and October focused on skills as basic as instrument flight, aircraft handling, and reacclimation to G forces. “That’s knocking off rust; that’s not getting them better,” he said.

Weather permitting, basic requalification was slated to wrap up in November. “We’re probably looking maybe another two months beyond that to where we’ve actually got the repetitions—the scrimmage games to get us back to where we were” before the grounding, said Maj. Darren Gray, 149th FS assistant director of operations.

When the grounding was ordered in May, wing leadership didn’t know whether to expect it to last weeks or months.

“The next day, ... everyone ... came to work with a mindset to train to deploy and to fight,” said Robbins, setting the wing’s tone for the duration of the

flight ban. “As I started to formulate my ideas on how we ought to be conducting ourselves, in a lot of ways it was just a reflection on what the men and women in the 1st Fighter Wing were already doing,” he said.

For maintainers, the stand-down offered an unprecedented “opportunity ... to shine,” said MSgt. Christopher Baldwin, 1st Maintenance Squadron structural maintenance chief. Paradoxically, with the jet aircraft on the ground, “our workload seemed to increase,” he observed.

As it became apparent the grounding would be extensive, the maintenance group intensified training, having a bounty of aircraft to work on. This was combined with tackling heavy maintenance projects that normally





**A Raptor takes off from Langley. During the months-long grounding, Langley's F-22 pilots made heavy use of simulators to keep some semblance of polish.**

would take an aircraft out of service for a long period.

"Instead of training being what we could fit between fixing the jets for the sorties, we were allowed to slow down and really work with airmen," explained TSgt. Ryan Martin, an avionics craftsman assigned to 1st FW's associate unit, the Virginia Air National Guard's 192nd Fighter Wing.

The grounding allowed experienced hands to mentor newer maintainers on time-intensive fixes and other procedures they'd seldom get to practice unless the aircraft was actually broken—the stress of which makes for poor training. Opportunities for heavy maintenance procedures such as removing and replacing landing gear, flight-control surfaces, stabilizer actuators, and horizontal stabilizers are rare in an operational unit, explained Michael Wise, a propulsion equipment specialist at Langley. Replacing an F-22's horizontal stabilator, for example, is a labor-intensive task requiring five or six days.

"A guy might go through his time at Langley and never see how to do that job," said Lt. Col. Pete Fesler, commander of Langley's 27th Fighter Squadron. He added, "You have very few people qualified" on such a procedure, "because they've not seen it," so the group took advantage of the downtime to "essentially break and put back together parts of that airplane that don't normally break in order to get a broader set of guys the skill sets needed to deal with just about anything."

Langley's F-22 shop, however, focused on much more than just training during the operations hiatus. Like any aircraft, especially one as new as the F-22, the Raptor fleet is subject to an unceasing series of technical change orders meant to enhance its capabilities and remediate long-term issues. In just the first two months of the grounding,

technicians worked their way through an entire year's worth of tech orders designed to upgrade performance and maintainability.

"We did a total of 858" upgrades, roughly nine times the normal rate, said Maj. Matthew Hummel, ANG maintenance operations officer with the 192nd FW. "A lot of these were heavy maintenance... They're intrusive," demanding long downtime. By focusing on these upgrades, the support groups were able to get ahead of themselves "at least a year, if not a year-and-a-half."

### Time-in-Cockpit Essential

The most formidable task was reworking 97 skin panels—which have special stealth treatments—that allow access to the aircraft's innards.

While it takes a mechanic just minutes with a screwdriver to get into an F-16, F-22 technicians had to spend hours sanding through layers, chipping out filler putty, and pulling seals in order to gain access to some areas of the Raptor. After a repair, specialists then had to reapply the 20-coat layers in a tedious

task requiring 24 to 48 hours to fully cure. According to Lt. Col. Gregory Hutson, the 1st Maintenance Group deputy commander, before the grounding, the coatings alone were responsible for "50 percent of our nonmission-capable time due to maintenance."

Maintainers have been "beating down Lockheed's door for the last few years" demanding a less labor-intensive process, Hutson said, and the company "responded beautifully" with a time-saving fix.

Guessing the grounding would continue for some time, Langley's shop set to work cranking out precoated panel sets for the entire fleet, based on Lockheed's change order.

"It's the same panel being used, except now the panel's being coated differently, so all they have to do is remove screws like they would a traditional panel and they can access it and put it back on as much as they want," explained TSgt. Charles Echols, a coating specialist with the 1st MXS. "We're able to manage the fleet health regarding the radar cross section ... and not have to spend all that time to remove all that coating," accomplish the repair, and restore the finish, said Echols.

Hutson estimated the time will really add up, saving an average 200 to 300 man-hours each month, as well as returning the aircraft to duty days earlier than before.

"What would have taken well over 120 maintenance hours has only taken us about 10 on some component replacements because of the low observable form-in-place panels that we ... made during the stand-down," he reported.

Pilots faced a tougher challenge during the grounding. Type proficiency demands flying time in a real aircraft, regardless



**A1C James Haubrich, a crew chief, tracks maintenance on an F-22. In the first two months of grounding, technicians handled an entire year's worth of upgrade tech orders.**



**Raptors line up at Langley. Although the F-22s are cleared to resume flight throughout the combat envelope, the aircraft and pilots will be closely monitored.**

of the fidelity of simulators, and pilots had to be able to get back up to speed as quickly as possible when the grounding was lifted.

Accordingly, Langley's F-22 squadrons—the 94th Fighter Squadron, 27th FS, and 149th FS—made heavy use of simulators and spent the downtime on tactics and employment strategies.

“We spent a lot of time here at Langley using our simulators; the other bases aren't that lucky,” noted 27th FS boss Fesler. “Our guys were getting two to three simulator [sorties] per week to try to maintain some semblance of currency and combat capability,” while F-22 pilots at Elmendorf and Holloman AFB, N.M., “had to fly out here and use our simulators, so they were getting maybe two to three simulator [sorties] a month.”

Pilots traveled to Marietta, Ga., to take advantage of high-fidelity combat simulators at Lockheed Martin facilities there, which also permitted the chance to confer with F-22 pilots from across the force.

“What it allowed is that free-flowing exchange of tactics and lessons learned,” Robbins said. While the pilots wouldn't have planned it that way, “we may be better because of it,” he admitted, adding upon reflection, “guaranteed we are.”

Back at Langley, “we spent a lot of time teaching academics and doing tactics talks to try to get into the books a little bit more than we would during flight operations,” Fesler noted.

Some pilots came to the F-22 directly, having no previous experience in another kind of fighter. The grounding allowed such rookies time to fly in F-15s and F-16s. That experience gave them insight into those aircraft, “so they can see ... some of the challenges ... and how they fit together with Raptor integration,”

said Hinds. “They got their eyes opened, which was awesome,” he added.

As the grounding wore on, it became clear the F-22 units would need a plan to reconstitute pilot proficiency when the time came. ACC leaders had each wing generate a tailored reconstitution plan based on its unique pilot certification and training cycles.

#### Hurrevac

On Aug. 25, Hurricane Irene, having battered the Bahamas, took a turn toward Langley. The wing received orders to get the Raptors out of harm's way and had only 24 hours to get the 28 flyable F-22s ready to go. “It's a stand-down. It's not that the jet can't fly; we could go do our mission tomorrow and we better be ready to go do it,” asserted Robbins. And so “Friday morning, we had one shot,” he said. “Saturday, the winds were going to be too high.”

The reconstitution plan was already spelled out, making it much easier to accomplish what was officially termed a “hurrevac”—getting capital gear out of the way of an approaching major storm.

“It was really easy to tell the boss, ‘Everyone who is going to fly is in line with ... our reconstitution plan,’ ... because it had already been coordinated,” Robbins noted.

Eight of Langley's F-22 were already out of danger, stranded at Hill AFB, Utah, in May when the grounding order was imposed. At Langley, four F-22s were down for corrosion repairs so “we had ... 28 jets that were possible to fly, and we generated all 28,” said Robbins. That was unheard of, even for aircraft already on flight status.

Friday morning, the fly-out evacuation to shelter at Grissom ARB, Ind., was “the largest launch of F-22s in history,” he said.

“It was amazing to me all day watching the guys, because we hadn't flown in three-and-a-half months. The maintainers just went out there like another day at work,” Robbins said. “It could have easily been, ‘We need you in Guam—go,’ and we would have done that the same way we did the hurrevac.”

Cleared for the straight-shot ferry flight to Indiana and back, the evacuation was “just about getting the jets safely out of the way of this hurricane and bringing the jets safely home,” Robbins added.

At the end of September, a month later, ACC officials cleared the F-22 to resume largely unconstrained flight throughout the combat envelope—albeit with ongoing monitoring of the aircraft and pilots.

The near-term goal is to get ready for a February Red Flag at Nellis AFB, Nev.

“We want to spin up to get to that point” as soon as the wing returns to a regular training plan, Hinds noted. Longer term, Robbins sees the wing making worldwide strategic deployments with increasing frequency. This may be hard on Langley's Air Guard associate unit.

The 192nd's association is a boon to Raptor operations at the base, but raises some long-term questions.

“It's a great partnership, and the Guard brings exactly what they're supposed to bring to the fight, which is experience, continuity, longevity, ... but a lot of them have full-time jobs,” explained Robbins. Unlike wartime activation of the Guard, ANG members deploy in peacetime on a strictly volunteer basis. “They're ready to go when the flag goes up, but if the flag only goes partway up, it becomes more difficult,” Robbins noted.

For routine Raptor deployments to Guam, Japan, or South Korea, “how do you tell your employer that you need to be gone for four months or six months out of every year?” As a result, “if we deploy a lot, it's mostly the active duty that deploys and that just creates a burden that becomes difficult to sustain over time,” Robbins noted.

“If I look at the Raptor and where we're going, I think we'll be on the road a lot,” providing forward presence, he predicted.

“I think our adversaries and potential adversaries around the world are very well aware” of the F-22's capabilities, “and I think it frightens them. ... It provides a different tool” than anything else in the US inventory.


Keeping the right mix of manpower in place will be key. ■



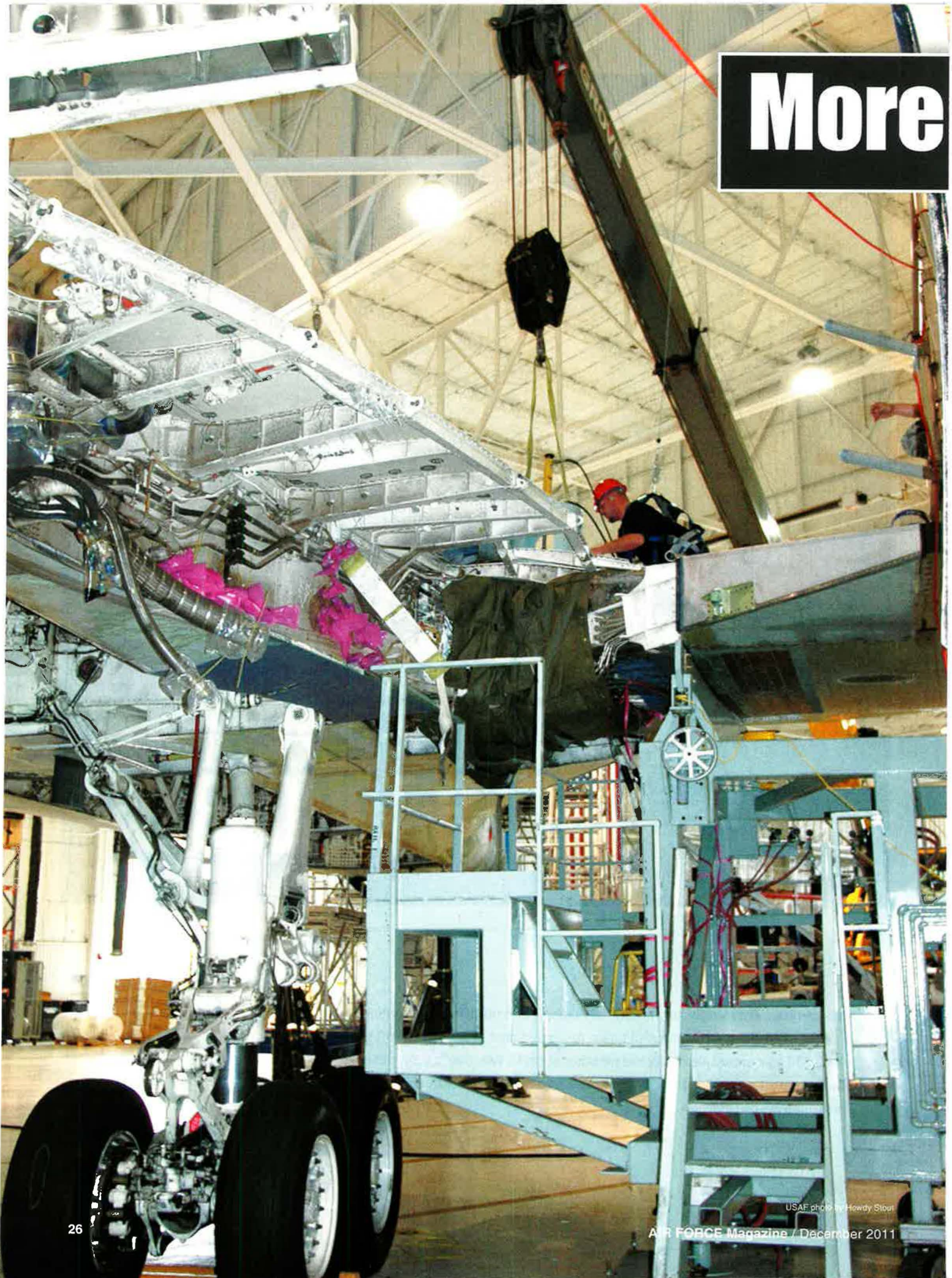
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AIR FORCE Magazine / December 2011

# Factory Than Flight Line

By Marc V. Schanz

**USAF's tankers and bombers aren't getting any younger, but workers at Tinker are finding new ways to keep them healthy.**

**T**he US Air Force's fleet is feeling the strain from pushing past two decades of nonstop combat operations in the Middle East and a decade of kinetic war in Southwest Asia. Airmen must continue to meet global demands with a thoroughly battle-worn force—one showing its age. Even if all the Air Force's modernization programs stay on track, for the foreseeable future the fleet will continue to get older. USAF's depot maintenance program is therefore a critical factor in keeping these aircraft healthy.

There are few places where this dynamic is more evident than the floor of Building 3001—the nerve center of the Oklahoma City Air Logistics Center at Tinker AFB, Okla. The 62-acre building, seven-tenths of a mile long, once housed a bomber assembly line, but today is jammed with widebody aircraft fuselages, engine work stations, sheet metal refurbishment shops, and other processes.

Along the KC-135 line, technicians work over an Eisenhower-era aircraft, stripping its paint. Nearby, several structural parts laid out on a table show exactly what ALC employees look for when a Stratotanker comes in for its five-year checkup and teardown.

Tools and methods, such as using ultrasound technology, have evolved over the years, said Marshall Riley, sheet metal chief for the KC-135 line. But much of the work still relies on experience and eyeballs. He pointed at an aft fitting, a large structural spar near the middle of the fuselage, taken out of another aircraft and replaced.

"These were never supposed to come out of the aircraft," he said, and when technicians do it today, they have to be careful replacing them; the engineering specs of the slide rule era of the 1950s and 1960s are often different from those

of the computer-aided processes of today. It is fairly rare to replace spars, Riley noted, and a great deal more work goes into dealing with corroded wing skin, areas around the landing gear, and other common problems.

"It's important to notice trends. If I find something common, I tell [inspection dock workers] to look at a certain area early on," Riley said. Finding problems early on is as important as fixing them—it keeps the programmed depot maintenance (PDM) line moving.

## Serious Business

This is daily business with Team Tinker, where more than 16,000 civilian ALC workers and airmen carry out this task painstakingly on some of the Air Force's most in-demand but aged assets—from the KC-135 tanker to the B-1B and B-52 bombers.

The depot has its own rhythm and metrics, several leaders point out, as the enterprise has responsibility for delivering combat-capable aircraft to users around the world—and doing it quickly, cheaply, and effectively. In short, Oklahoma City ALC—the Air Force's largest depot—

bears more of a resemblance to a factory than a flight line. This factory will become even more important in the near term, as dollars and schedules receive scrutiny across the force.

Tinker, while the largest of Air Force Materiel Command's depots, is one of three USAF locations where the service performs its heavy non-flight line maintenance, repair, and overhaul tasks on the bulk of its fleet. The other two locations are at Robins AFB, Ga.—home of the Warner Robins ALC—and Ogden ALC, at Hill AFB, Utah.

"Speed and quality," Col. Cedric D. George, commander of Tinker's 76th Maintenance Wing, said in an October interview when asked what factors he tracked in his daily work. George, a 24-year veteran maintenance and acquisition officer, had been on the job for six months, on the first depot assignment of his career. The maintenance wing has more than 9,420 personnel—making it the largest maintenance wing in USAF—and it annually racks up 8.5 million hours of labor on a range of aircraft and systems. Over the past two years, as depot maintenance processes have been scrutinized, more

**Left: A B-1B undergoes work at the logistics center at Tinker AFB, Okla. Right: Johnney Kunnath, a sheet metal mechanic with the 565th Aircraft Maintenance Squadron, removes a panel for replacement on a wing trailing edge.**



USAF photo by Margo Wright



**Aircraft work leader Russell Parris (l) and material expeditor Wesley Hugert check a KC-135 kit at Tinker. Having kits ready when needed has saved time that used to be spent waiting for parts and supplies to be gathered.**

employees have been hired at Tinker, and performance metrics have steadily crept upward. “This is not just a pickup game in a resource-constrained environment,” George noted. “This is how we do business.”

The reality of maintaining and upgrading an old fleet—in an environment where funds will become scarcer in the coming years—is not lost on the ALC’s top leadership. “I think we’ve barely scratched the surface of our capability,” said Maj. Gen. P. David Gillett Jr., the ALC commander, during an October interview. He added there is “tremendous potential” to deliver capability more cheaply than today through improvements in process and productivity. “The challenge going forward in an austere environment is we are compelled to achieve those kinds of results.”

This is the basic tension of everyday business for USAF’s depots—with no significant infusions of cash for maintenance activity, and the possibility of cuts looming, gains will have to come almost exclusively from productivity and process improvements. The workers at Tinker know this well. According to most metrics, the PDM operations at the center have seen drastic improvement in the last two years alone.

Gillett, who retired last month, noted that when he arrived at Tinker nearly three years ago, the center had promised the Secretary of the Air Force it would reduce its flow days—the number of days an aircraft was worked on—and put more aircraft out in the field to meet demand. “We were not delivering to our promise in

terms of PDM. Our programs were fine, but we seemed to be off track in depot maintenance,” Gillett said.

One example of success has been flow days for the KC-135 line. This is the largest programmed depot maintenance line in the Air Force, responsible for 447 airframes (as well as foreign military sales aircraft). The KC-135s averaged 226 PDM flow days in 2009, but had steadily come down to 159 days by the end of Fiscal 2011.

### The Staggered Line Concept

The net result has been more aircraft to active, Air National Guard, and Air Force Reserve customers—from 46 deliveries in 2009, to 54 in 2010, to 58 this year, and 64 anticipated next year.

In 2010, the line exceeded its goal of delivered aircraft, implemented “kitting” programs, which slashed inspection times in the initial dock phase, and instituted a host of rapid improvement events cutting down time on tasks, such as installing carpet in cockpits, and speeding up supply time.

For its efforts, the center was awarded DOD’s 2011 Robert T. Mason Depot Maintenance Excellence Award, recognizing the KC-135 team’s efforts to transform its processes in 2010.

Other than safety, three metrics pervade the center’s work: speed, cycle time reduction, and quality.

In the KC-135’s case, officials with the PDM team implemented a “staggered line concept”—basically splitting off two lines of aircraft based on an initial inspection. Col. Robert Torick Jr., C/KC-135 system

program manager, equated this to a triage point for the aircraft coming into depot. Based on what workers find, they then point the aircraft in one of two directions.

Most intense is the extended teardown cycle, involving major structural repairs that cannot be done concurrently with other tasks and taking about 82 days.

The speedy cycle, consisting of more routine tasks, only takes about 42 days.

“While the average age of the [KC-135] fleet is now 55 years, still, most of the fleet comes through and goes to a speedy PDM—about 60 percent,” said Torick.

Tinker’s depot must also care for some of USAF’s most in-demand combat aircraft, such as the B-1B fleet. While the Lancers are one of the Air Force’s newer aircraft types, they pose their own sustainment and maintenance difficulties.

“We have a lot of electronics on this aircraft, wiring harnesses, and other sensitive parts,” said Capt. Frank Faulhaber of the B-1B PDM shop, 565th Aircraft Maintenance Squadron. Much like other depot program improvements, Faulhaber said, the B-1 shop’s processes were “all over the map” in Fiscal 2010, but his team has worked hard to streamline procedures in order to turn aircraft faster.

The B-1 team has seen some success already. Work-in-progress aircraft, the number of airframes in depot not being worked on at any given point, have been reduced from eight to five, and “days in dock” for actual structural work are down to 87 from 99. The use of kits for parts and tools has expanded significantly, and flow days are down.

Even with PDM visits scheduled every five years or so, plenty of Southwest Asia’s combat trends have forced changes, Faulhaber said. New engine pre-coolers are being installed in the fleet, because there have been many maintenance issues with the older models in high Middle East temperatures. The component is crucial to regulating bleed air, for example, and if it breaks, hot air sprays all over other components surrounding the engines—creating big problems.

“When one breaks, it’s a pain for guys in the field,” Faulhaber said, and it can take upward of 18 hours to swap one out of an engine. That is 18 hours the aircraft is not turning sorties.

Every five years, the landing gear must be taken out and swapped—a process that can take under five days if done correctly, according to Jeff Spears, a section chief who works with most nonavionics components on the aircraft. Wheel well fires have been an especially pernicious problem in theater, Faulhaber said, so

flex lines are replacing older fluid lines. These lines help contain hydraulic fluid leaks and lower accident rates as a result.

Maintenance is only one part of the equation. Sustainment—the engineering and upgrade work performed by engineers—must figure into it as well. “It’s not one in isolation of the other,” said Col. Mark T. Beierle, head of the ALC’s Aerospace Sustainment Directorate. “First and foremost, it is the user who sets requirements,” he said, then you have to look at the back end—the technology side and the laboratories—to anticipate what is possible in the future. If a given program can spend a certain amount of dollars to fix a sustainment issue, or a similar amount of money to fix a modernization issue, a choice often must be deliberated carefully.

Beierle points to the KC-135 line. While pushing down its flow days, the program also carries out some “ambitious” modifications, such as the just-completed multiyear \$420 million Global Air Traffic Management avionics upgrade, the second major cockpit upgrade for the fleet. Now, the sustainment directorate has begun examining moving forward on the next upgrade for the aircraft’s avionics—new Communication, Navigation, Surveillance, Air Traffic Management (CNS/ATM) requirements for international flight.

Even with the new KC-46A program now progressing, the program office has to pay close attention to Stratotanker modernization, as the fleet will be in service for decades to come.

Sustainment is also an issue in smaller fleets, such as the B-2 stealth bomber or E-3 AWACS aircraft, Beierle said. Parts are critical, as the small fleets don’t necessitate large supplier bases. Engineering support from contractors is crucial; programs such as the B-2 have specialized engineering and materiel requirements. “These planes are art, and as you lose some of the artisans who built and designed them, that’s another challenge,” he added.

Elsewhere, new approaches to old tasks are taking shape, such as the maintenance of the F117 engine line—previously performed exclusively by the contractor, Pratt & Whitney, at its own facilities. Last year, P&W and the 76th Propulsion Maintenance Group signed an agreement to establish the F117 Heavy Maintenance Center at the ALC, a partnership for overhaul and repair for the C-17 fleet’s power plant.

P&W buys the maintenance labor from the ALC—from disassembly and



USAF photo by Margo Wright

**Maj. Matthew Grimes (l) and Maj. Terrance Safford run through a preflight check on a B-1. The aircraft, used for developmental testing, went through PDM and returned to Edwards AFB, Calif., ahead of schedule.**

inspection to reassembly—to satisfy the government’s requirement that no more than 50 percent of depot maintenance tasks are performed by contractors. By the time the second phase of the center is complete, more than 90,000 square feet will be dedicated to F117 maintenance at the ALC, said Floyd Craft, director of the 547th Propulsion Maintenance Squadron.

### Constant Turbulence

In 2011, the center’s technicians have examined and repaired 11 engines, and Craft expects that number to rise to 46 in 2012. Currently an engine will take about 90 flow days, Craft said, but the target is to get down to 55. Many of the components and processes are proprietary to P&W, and ALC workers have a bit of a learning curve as they adapt to them.

To improve performance in the future, Gillett and other leaders noted, process improvement will be first and foremost on the agenda, and this extends not only to the depot floor, but also to the supply chain itself.

Sandy Windsor, the maintenance support technical director for the 76th Maintenance Wing, must balance out the engineering requirements and personnel in a given fiscal year. Unpredictability of workloads makes the process challenging. If a forecast changes, or parts become unavailable, or not enough people are assigned a given task, the machine begins to break down. Inaccurate demand for parts, for example, leads to idle time on the depot floor. She noted, “On average, the maintenance wing has about 350 empty parts bins every day”—everything from nuts to actuators. Materiel support person-

nel ensure workers get the parts they need in a timely manner. One solution to improve availability and visibility was to move storage locations near the maintainer buildings. As of October, 27 shop service centers were spread across Tinker—holding key parts and components needed to complete work on a variety of systems and ensuring a supply line as short as possible.

As much success as the depot has experienced, the mission constantly evolves and the center must be prepared for the unexpected. Gillett said he is concerned about what tomorrow will have in store and what will be asked of the ALC. New programs such as the KC-46 will come online and present a whole new set of requirements and demands on top of legacy efforts.

“Things will not be like they are today,” he said. As budgets ebb and flow and hiring freezes and early retirements affect a portion of the civilian workforce, sustaining key maintenance, engineering, and contracting capability becomes a serious worry.

“Exactly the wrong people will leave or retire, and I’ll have mismatches in those capabilities,” he said. “It’s incumbent on the leadership to fix that.” New hires in areas such as engineering and the F117 engine program are great, but they must have the right skill sets passed on from more experienced workers at the same time.

The next few years will be “rough water” for the depots, Gillett said. “The one constant ... will be turbulence. ... The danger is, right now, we understand those processes, but in the future we’ll have to improve them. ... There will be uncertainty and contradiction and lack of resources.” ■



# Bomber Diplomacy

**B-2 and B-52 rotations to Guam offer valuable training—and send a powerful message.**

By Rebecca Grant

*A B-2 flies over the Pacific Ocean during an exercise from Andersen AFB, Guam.*

USAF photo by MSgt. Kevin J. Gruenwald

**S**ome 300 airmen from bomb squadrons at Barksdale AFB, La., Minot AFB, N.D., or Whiteman AFB, Mo., routinely arrive on Guam and take up station at America's most distant sovereign outpost in the Pacific. Not as a rush deployment, but as part of regularly scheduled rotations since 2003.

For the past eight years, Air Force B-2s and B-52s have quietly created a persistent umbrella of power projection and deterrence in the Pacific. Bombers rotate to Guam and range across US Pacific Command's area of responsibility on exercises that train crews and show the full reach of American airpower.

"The B-52 provides the capability to reach anywhere in the PACOM area of responsibility with a wide variety of weapons, allowing us to respond to whatever threats arise," said 20th Expeditionary Bomb Squadron Commander Lt. Col. Michael Miller after his forces deployed in August 2011.

The Pacific region tour is not just about training. Bombers holding station

on Guam are weaving together military power and political strategy—what is called the "continuous bomber presence."

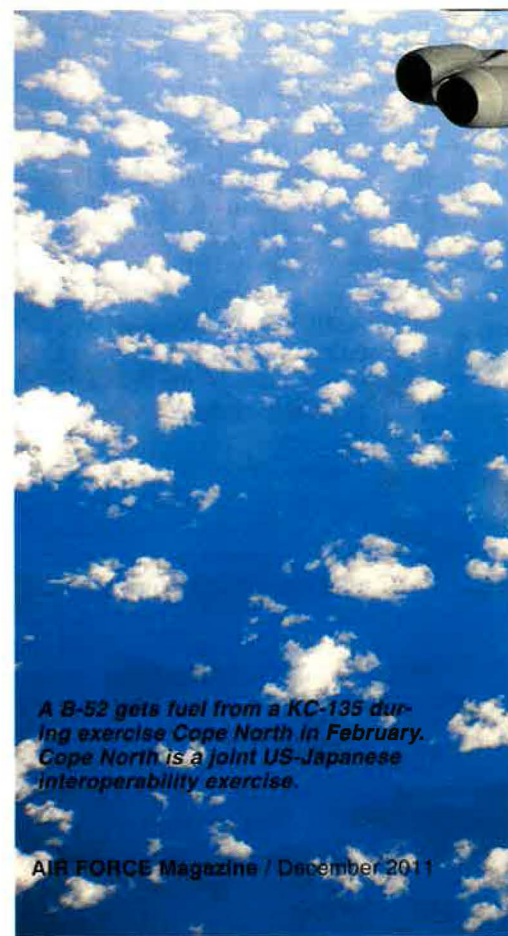
Call it also bomber diplomacy—a method for a lean force to reassure allies and deter potential adversaries.

"We see great value in the continuous bomber presence," said Gen. Gary L. North, commander of Pacific Air Forces. "It has become a staple of our force posture and integrates well into the planning construct."

From the beginning, the bomber rotations served pointedly political ends. We wanted to show that while we were busy in the Middle East, we had a long-term and long-range presence in the Pacific," reflected North.

Of course, the bombers don't do it alone. The continuous bomber presence is matched by "continuous tankers" in the form of KC-135s and KC-10s.

Frequent or ever near-continuous presence of fighters including the F-15 and F-22 is another part of the theater security package. Guam is also stuffed with munitions for the Navy and Air



*A B-52 gets fuel from a KC-135 during exercise Cope North in February. Cope North is a joint US-Japanese interoperability exercise.*

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Force. The base boasts a large fuel farm and 102,000 square miles of airspace in the Mariana Islands Range Complex alone.

The CBP bombers need the facilities of a major base to sustain their activities. "Think of Guam as the bull's-eye and we go 360 degrees," North said of the CBP's day-to-day flying.

PACOM leadership has five leading priorities in the region: advancing alliances and partnerships, maturing the US-China military-to-military relationship, developing ties with India, remaining prepared to respond on the Korean peninsula, and countering transnational threats. Continuous bomber presence serves several of these goals.

"Both our friends and adversaries are very aware of the force structure lay-down in the Pacific," North said, adding that the continuous bomber presence continues to "draw emphasis."

US officials may not say it directly, but it's clear enough the hard edge of bomber diplomacy fills an increasingly critical function: holding the line against undue expansion of influence by rising Chinese military capabilities. China's official policy is "peaceful rise," to use the term coined by Premier Hu Jintao. Yet doctrine and training within the People's Liberation Army and its air and sea arms forecast extended influence across the Pacific.



USAF photo by SSgt. Jamie Powell

**SSgt. Dustin Hyden and SSgt. Doyle Atkinson load inert naval mines onto a B-52 at Andersen in preparation for a joint USAF-Navy exercise, Valiant Shield.**

"Chinese military writings talk a lot about how to extend their power out to the second island chain, ... the 1,800-mile [factor], which would enable them to prevent other nations' ability to have freedom of movement at that great range," North explained in February at an Air Force Association symposium in Orlando, Fla.

Even more telling, China's military has spent the last decade making a great leap forward. "In 2000 less than 10 percent of their forces, their

air forces, were considered modern," noted North. By 2009 the number had risen to 25 percent for Chinese fighters and 45 percent in their air defense forces, he said.

China is well on its way to becoming a regional—and even global—maritime power. As history has shown, long-range airpower projection is an essential complement in dealing with adversary naval forces.

The bomber presence lays down a marker that no PLA Navy ships can patrol without coming under the reach of land-based airpower. That's a form of air superiority that has been a cornerstone of military operations in the Pacific since the 1940s.

### Big Stick

Bomber forces are no strangers to diplomatic maneuvers, of course. In the 1950s and 1960s, showy worldwide deployments of B-29s, B-47s, B-58s, and B-52s capable of nuclear delivery expanded diplomatic options in many a crisis. This form of force-without-war was often targeted at the Soviet Union, but the bomber deployments were also intended to influence so-called Third World nations wavering between the Western allies and the Soviet Bloc as both camps vied for influence.

A prime example was the 1958 Lebanon crisis. The Eisenhower Administration was hoping to fend off the spread of Soviet influence after a coup there. A glowing *Saturday Evening Post* article from 1958 quoted a Strategic Air Command general saying, "How could you land in Lebanon with practically a handful of marines the way we did un-



USAF photo by SSgt. Angella M. Lawrence



**An F-22 assigned to JB Elmendorf-Richardson, Alaska, prepares to take on fuel from a KC-135 near Guam. There is also a “continuous tanker” presence in the PACOM area of responsibility.**

less they were backed up by a powerful threat?”

Bombers from a base in Spain, he continued, would allow diplomats “something to work behind.”

The “handful” eventually reached 14,000 troops, but the point about bomber diplomacy was no less true. Gen. Nathan F. Twining, Chairman of the Joint Chiefs of Staff, advised President Eisenhower that sending SAC bombers forward would be a highly visible move. Eisenhower liked it. Moving the bombers would show the Soviet Union “readiness and determination without implying any threat of aggression,” Eisenhower later wrote in his memoirs.

Much the same is now going on in the Pacific.

Air Force B-52 and B-2 units typically send two to six bombers on rotations to Guam. From the island base they stage long training flights to every point on the compass and frequently drop live ordnance at training ranges. The CBP bombers have become regular participants in multinational exercises and even starred at regional air shows.

This time, the bombers are part of a powerful package of diplomacy with much more diverse aims. Cold War bomber deployments were usually direct reactions to crises. Like chess pieces, commanders moved the bombers forward to demonstrate intent then pulled them back as the political situation changed.

The CBP, on the other hand, is more permanent. Each combatant commander requests forces for theater security cooperation. For Pacific Command, those forces may include air, land, and

sea elements. It aims to reassure allies and confirm strong US commitment to the region. Bombers are establishing deterrence through a long-term posture rather than occasional crisis response.

This form of “force without war” invigorates cooperative relationships and provides the credible military options so central to effective deterrence. Along the way, the CBP has become one of the most enduring—and economical—pillars of US diplomacy.

### **An Almost Eight-Year Presence**

But it’s not all about the soft side. What’s unique about CBP is that it has become not only enduring but also one of the most assertive elements and has taken on a high-profile policy function going beyond just exercises. This is because bombers have the range and payload to spring from exercise participants to first-night attackers of nearly any type of target.

The dual role of the CBP has been there from the start. When air expeditionary operations began in the early 1990s, bombers regularly conducted long-distance global power missions. Guam was a frequent stopover.

Deploying to Guam was also a mark of deterrent power, and the island was the site of one of the earliest prolonged deployments of the B-2 back in 1998. The exercise was named Island Spirit and its mission was to conduct sustained operations simulating two weeks of continuous bombing.

In the event, a B-2 formation dropped Mk 82 bombs for the first time over the range at Farallon de Medinilla in the Northern Marianas.

In 2000, Pacific Command won approval to stockpile conventional air launched cruise missiles on Guam. Making the classic first-night attack bomber weapon available signaled that the US was serious about maintaining its reach in the Pacific—and the CALCM’s standoff range complemented the B-52’s reach.

Bomber deployments to Guam began on an irregular basis in 2003. “We were still dealing with the repercussions of the EP-3 being struck by the Chinese,” noted North, referring to the April 2001 collision of a Navy surveillance aircraft with a Chinese interceptor over the South China Sea. “Guam was a great place to put folks for long-range maritime strike.”

The signature event was a March 2003 deployment of B-1s and B-52s. It was the same month Operation Iraqi Freedom launched. This dose of bomber diplomacy was clearly intended to convey that the US could fight in Iraq but still publicly display its ability to deal with a pop-up crisis in the Pacific.

The official start of the continuous bomber presence came in February 2004. B-52s from Minot Air Force Base deployed to Guam.

Geography made Guam the natural choice, as the island represents “the deepest penetration of American soil into the Western Pacific, and therefore it provides an opportunity for us,” said retired Gen. Paul V. Hester, who headed PACAF in 2005.

Commanders soon touted the value of the deployment for seasoning their airmen in tasks from assembling bombs to ramping up maintenance.

Flight crews on detachment quickly found optimal training conditions. The area around Guam boasts plenty of unrestricted airspace. Typical bomber sorties include air refueling and live ordnance practice over Farallon de Medinilla, about 150 miles from Guam.

“As we have moved forces out of the Pacific and rotated them into [US Central Command] over the past several years since 2001, we need to maintain an ability for calmness with the same-level kind of effective force that we had permanently stationed there,” Hester explained.

Bombers soon roamed the whole Pacific Rim. B-52s flew exercises with land forces in the northern parts of Australia. Bombers flew to Thailand and were supported by Thai Army ground units, US Army ground units,

and conventional and special operations forces, Hester said in 2005.

The exercises had another purpose. That was what Hester called “normalizing” bombers as visitors to foreign airfields.

The main activity of the aircraft serving the CBP centers on a series of exercises sharing the code name Lightning. Polar Lightning reaches to Alaska. Jungle Lightning sends bombers toward Southeast Asia while Blue Lightning points toward the northeast. Other exercises have included Koa Lightning, which takes place near Hawaii. Bombers also fly in some of these exercises from continental US bases, but the Guam-based Lightning sorties take on multiple layers of meaning.

For the aircrews, it’s about sharpening execution.

“Most missions for bombers are long-duration flights. ... It is important that we practice like we play, and Polar Lightning provides a great opportunity for our aircrew to get some long-endurance experience,” summed up Maj. Beth Makros, who was assistant director of operations and a mission planner for a Polar Lightning exercise flown in 2009 by the 13th Expeditionary Bomb Squadron. On that occasion B-2s from Guam flew a 24-hour mission into Alaskan airspace. Tankers escorted the bombers to Alaska and were prestaged for refueling on the way back to Andersen Air Force Base.

Other exercises such as Koa Lightning in 2007 added significant integration with ground forces, as B-52s dropped practice ordnance with Global Positioning System guidance. Col. Damian McCarthy, 36th Operations Group commander at Andersen, said the effort practiced real-time force integration between fighters, combat controllers on the ground, and tankers.

The Koa Lightning sorties kept the B-52s in the air for 18 hours—longer than the average 10- to 12-hour training sortie, and on a par with the average of 17 to 19 hours for a combat sortie.

Training aside, bombers are not fanning out over the Pacific because of ranges and airspace. The larger purpose is deterrence and reassurance.

Continuous bomber presence essentially puts airmen on a simulated wartime footing. Once in place on Guam, “they are focused on nothing but the mission,” said North.

The exercises “simulate all the munitions for major combat,” North said. Beyond the ordnance drops are oppor-



USAF photo by John S. Swanson

**Airmen with the 127th Air Refueling Group board a KC-135 at Selfridge ANGB, Mich., headed for Guam. “Continuous tankers” make the bomber presence possible.**

tunities for rehearsing other aspects of combat missions, including electronic warfare.

### Outsize Impact

The CBP’s diplomatic importance is growing as well. “My government’s overriding obligation to allies, partners, and the region is to reaffirm America’s security commitments in this region,” then-Secretary of Defense Robert M. Gates told the Shangri-La security forum of Pacific powers in Singapore in 2010. “We are renewing our commitment to a strong and effective extended deterrence that guarantees the safety of the American people and the defense of our allies and partners.”

Bomber diplomacy as seen in the CBP could become a model for future operations. As budget pressures push toward a smaller Air Force, the value of the continuous bomber presence might be measured in dollars as well as diplomacy. As a model it offers ways to extract maximum value from force structure.

“We are sized for steady-state operations,” North pointed out, adding he was satisfied with the detachment of bombers and “very pleased with the rotation that [Air Force] Global Strike Command works.”

Bombers in the CBP maximize their impact through effect and diplomacy more than numbers. In wartime operations, the number of airframes on hand

to strike enemy targets is the typical measure of merit. Small numbers have outsize impact in bomber diplomacy. What has made the CBP a success is its focus on rigorous simulation of combat missions.

Another ingredient is consistency. Eight years of repeated, realistic simulation of combat missions have created a positive weight of interest at a time when the extent of US military commitment to the Asia-Pacific region is being questioned.

The CBP is on track to be just as valuable over the next decade.

“China’s development of a carrier-killer missile means that US naval airpower may be pushed farther out into the Pacific,” wrote Michael Auslin of the American Enterprise Institute in an August column in the *Wall Street Journal*.

Pressure on theater forces will add to the value of ranging bombers—and make it imperative that Guam remains a robust operating base.

There’s no doubt the readiness and determination that marks the CBP will be a prime product for airpower as smaller forces juggle global commitments in years to come. Allies and adversaries are well aware the CBP is all about the long-range and long-term muscle of American airpower.

“It’s well understood,” North said.

No diplomat could have phrased it better. ■

*Rebecca Grant is president of IRIS Independent Research. She has written extensively on airpower and serves as director, Mitchell Institute, for AFA. Her most recent article for Air Force Magazine was “Enduring Freedom’s New Approach” in the October issue.*



Forward basing is key, but the NATO allies are still too reliant on American airpower.

# Lessons From Libya

By John A. Tirpak, Executive Editor

**T**he critical lesson of Operations Odyssey Dawn and Unified Protector, the missions to defend Libyan civilians from Muammar Qaddafi's government forces, is that there's simply no substitute for forward deployed forces. Without these forward forces, top military officials said the effort to protect Libyans from massacre would have been impossible.

Qaddafi had pledged a bloodbath in Benghazi, one of the first large cities to be taken over by opposition forces. Loyalist armored vehicles were on their way to Benghazi when the United Nations sanctioned action to prevent them from fulfilling Qaddafi's open pledge to massacre civilians there. Then, supported by NATO airpower, rebel forces defended Benghazi from

the approaching government units and soon turned the tide. Thanks to the top cover of air superiority, opposition forces began to push back Qaddafi's attackers.

By Aug. 23, the opposition had taken the Libyan capital of Tripoli and seized the compound from which Qaddafi ruled. However, he had slipped away and continued to release messages urging the nation to resist and pledging never to surrender.

Then, on Oct. 20, Qaddafi, who had holed up with his remaining loyalists in Sirte, tried to flee the city as opposition forces moved in. He traveled in a convoy of dozens of vehicles, which was spotted and struck by coalition aircraft.

Wounded, Qaddafi tried to hide nearby but was captured by opposi-

tion forces. He was alive when first captured, but dead shortly thereafter. Exactly what happened to Qaddafi was unclear at press time.

The pace of NATO's intelligence-surveillance-reconnaissance sorties had remained fairly even throughout the operation, said Lt. Gen. Ralph Jodice II, but the numbers of kinetic missions ebbed and flowed. Jodice acted as combined air component commander for NATO. As Qaddafi's area of control diminished, so did NATO strikes, and the Oct. 20 convoy attack marked the last strike mission. Unified Protector was shut down Oct. 31.

Jodice said in late October he'd been given no direction to prepare for any kind of post-Qaddafi mission in Libya.

NATO headquarters had been "working very closely with the Libyan civil



*An F-15E pulls away after refueling from a KC-10A during a mission for Operation Odyssey Dawn. Strike Eagles based in Britain conducted most of the interdiction and strike missions for operations over Libya.*

airspace authority” and agencies such as the International Civil Aviation Organization “to make sure that the airspace is ready for the Libyans to take over” after OUP was complete, Jodice said.

Gen. Mark A. Welsh III, head of US Air Forces in Europe, said the Libya operation demonstrated the value of forward presence. This was a NATO operation, but one highly dependent on USAF contributions, especially for intelligence, command and control, and aerial refueling. In light of this, Welsh warned against “downsizing to save money without talking about” the value of forward forces in an uncertain world.

### Resolution 1970

There is danger in relying too much on “reachback,” said Maj. Gen. Margaret H. Woodward, commander of 17th Air Force and the joint force air component commander for Odyssey Dawn, which covered the first two weeks of NATO’s Libya operations. Reachback refers to relying on Stateside combat and support aircraft to operate from home base, or to CONUS-based support personnel tied electronically to forward units.

“We talk all the time about ... global reach, and I think we become a little bit insular by saying, ‘Well, we can do everything by reachback,’” Woodward said in a September interview. Odyssey Dawn was “a wake-up call. ... If we didn’t have forward basing, I feel very confident that we would not have prevented” the slaughter threatened for Benghazi.

Forward based assets offer essential insurance, she said. With the right assets either in place or quickly available,

Woodward said Libya has been a singular success for US airpower. American air forces “met every ... objective we were given,” all without a single coalition loss of life, she noted.

No one expected US Africa Command to be “a command that conducted and led” air campaigns, observed Army Gen. Carter F. Ham, head of AFRICOM. When created, it was expected to focus on training and advising and a lot of support-type missions.

Thus, one of the biggest lessons of the conflict “for me and for the headquarters and the staff is: Combatant commands don’t get to choose their missions,” Ham said. There can’t be an assumption that a regional command will only have to work certain kinds of operations, he asserted.

“Geographic combatant commands must be full-spectrum commands. ... We must always retain the capability to do the higher-end operations.”

However, despite the fact that commanders “always want ... more ISR,” there was probably an insufficient amount of information about Libya and potential targets when the situation erupted, and necessary intelligence-surveillance-reconnaissance assets were not available until well into the operation.

Woodward said she received her first orders to get ready for possible military action on Feb. 26, when the United Nations adopted Resolution 1970, demanding an end to the violence in Libya. The 300-person Air Forces Africa staff was tasked to produce a plan, within 36 hours, to implement a no-fly zone over Libya.

“Almost no one in Washington publicly seemed to believe we would actu-



*An E-3 AWACS aircraft at Lajes Field, Azores, Portugal, after an Operation Unified Protector mission. E-3s were requested right from the start of planning, but not approved until strike missions had commenced.*



**SrA. Justin Burger (r) directs A1C Philip Smouse (in loader) as Smouse stages cargo for Unified Protector at Ramstein AB, Germany.**

ally execute this operation,” she said, and there was political chagrin that 17th Air Force’s original plan called for a physical takedown of Libya’s air force and air defense systems. A rebuttal plan from Washington called for establishing the no-fly zone “without any kinetic strikes” in Libya, she said. AFRICOM responded that such a plan was “extremely high risk,” she added.

The plan evolved daily until then-Defense Secretary Robert M. Gates told Congress that implementing a no-fly zone would demand attacks on Libya’s integrated air defense system. The original course of action was “almost immediately validated by AFRICOM and the Joint Staff,” but political approval of the proper resources “simply did not occur in time for operations,” Woodward reported. For a time, only one “initial strike” was approved.

As a result, AFRICOM had to borrow forces from US Air Forces in Europe to conduct the operation. In the absence of direct orders from the Secretary of Defense approving assets, such an arrangement is legal, Woodward said.

There was little “intelligence preparation” of the area of conflict, Woodward added. The US Intelligence Community hadn’t viewed Libya as a potential adversary “for years,” she said, “making operational data and intelligence one of our earliest and most critical limiting factors.”

In an interview, Woodward allowed that even if she’d had RQ-4 Global Hawk unmanned surveillance aircraft available exclusively to monitor Africa before the “Arab Spring,” she would not have focused them on Libya.

So, another lesson was that there may be a need for the capability to

obtain wide-scale, comprehensive ISR coverage of an area with little notice.

AFRICOM received a draft of UN Security Council Resolution 1973—which included a mandate to “protect civilians”—on March 16, one day before it passed.

Though commanders requested assets such as E-3 AWACS and E-8 JSTARS aircraft right from the start of planning, these were not approved until after strike operations were under way. The situation in Benghazi was becoming urgent, however, meaning there was no time to lose.

### SCAR Missions

“At the very beginning,” Woodward said, “I thought we may have been given the mission too late” to keep Qaddafi’s forces from entering Benghazi.

If they had, “I thought it was going to be next to impossible, in that urban environment, to do what we needed to do to prevent him from killing civilians.”

The political approval process was so slow B-2 bombers making initial stealthy strikes on Libyan airfields took off from Whiteman AFB, Mo., without being issued an execute order, Woodward reported. It was finally signed six hours into the mission—when the bombers were already halfway to the target.

Operating bases were designated on the periphery of the Mediterranean Sea, and made full use of USAF agile combat support forces to accommodate thousands of personnel and hundreds of coalition aircraft converging on those locations.

The distances involved were daunting, Woodward said. Fighter sorties out of bases in Europe averaged eight hours and required five air refuelings “to generate just one hour on station,” she noted.

Thirty-four tankers from myriad active, Guard, and Reserve units were cobbled together in what was dubbed the “Calico Wing” to support the operation, Woodward said. Over the next 13 days, they offloaded more than 17 million pounds of fuel.

Since the initial strikes didn’t have JSTARS or AWACS intelligence, tracking, and targeting support, Woodward said this put an enormous burden on the aircrews. She had orders to minimize civilian casualties, avoid losing any aircrew, and to do nothing to suggest Qaddafi himself was targeted.

“We’re telling them to go down, look at the environment and then make a decision based on what they estimate



**Air National Guard TSgt. David Sparkman, who was deployed to Europe for Unified Protector, cleans the boom strut of a KC-135.**

the collateral damage to be, and then make a decision on whether to release weapons or hold them. ... Not a simple thing to do,” explained Woodward. Such decisions are usually made with the heavy collaboration of air battle managers with direct visibility into the unfolding combat.

She described the fighter missions as SCAR: strike coordination and reconnaissance. In addition to the tasks she described, the fighters performed a kind of forward air control-air battle manager function, sequencing and deconflicting multiple attacking flights into and out of target areas. They also provided targeting information to other aircraft.

The principal USAF combat aircraft were F-15Es based in Lakenheath, Britain, and F-16CJs based in Spangdahlem, Germany. The F-15Es conducted most of the interdiction and strike missions, while the F-16CJs were charged chiefly with suppressing Libyan air defenses, performing strikes as conditions warranted.

It was also difficult not having dedicated combat search and rescue forces close at hand for the start of operations, Woodward reported. A heart-stopper of an event occurred when an F-15E crashed early in the operation, due to a mechanical problem, leaving its two-man crew stranded deep in contested territory.

The potential crisis of an airman being captured and used as a human shield or for propaganda purposes was a nightmare for all coalition participants. Fortunately the pilot and combat systems officer were recovered relatively quickly.

“I will never forget looking across the AOC [air operations center]” at coalition representatives, Woodward said. “They were cheering just like everyone else ... when we had the message that both crew members were safe.”

The other air force representatives gained a sense of “unbelievable security” from the rescue, knowing if any of their own aircrews had to bail out, they would be rescued swiftly, Woodward asserted.

The air reps were “floored at how well that execution went” and with the “professional way that personnel recovery forces operate.”

Odyssey Dawn lasted just 13 days. On March 31, NATO took the lead for the operation, redesignated Operation Unified Protector, with Jodice taking over as CFACC.

As per agreement with its allies, the US, which had led the initial strikes, handed off the kinetic missions to other NATO forces, led by Britain and France,



**A Qatar Emiri Air Force Mirage 2000 taxis at Incirlik AB, Turkey. Jordan, Qatar, Sweden, and the United Arab Emirates contributed aircraft and crews to Odyssey Dawn.**

although nearly all coalition members carried out some strikes.

The US continued to participate as a key enabler, however, providing ISR assets as well as ongoing aerial refueling support. Jodice moved his operational headquarters from Izmir, Turkey, to Sigonella, Italy, because it was necessary to be at the NATO air operations center near the action.

### Steps and Checks

“Because of the dynamic environment,” requiring face-to-face discussions with NATO leaders and representatives of coalition partners, “it was critical that we were all together,” Jodice said in an October interview.

When NATO allies began to run low on munitions, the US stepped in to replenish weapon stocks. This last contribution irked Gates, who, in a parting speech as US Defense Secretary to NATO ministers, chided them for having insufficient inventory of weapons—a symptom, he said, of NATO countries’ failing to spend enough on their military forces.

Jodice, however, said, “We had all the assets that we needed; that included munitions. I never once had to cancel or postpone a sortie because I didn’t have the right munitions that I needed.” Jodice did acknowledge that he was not involved in facilitating ad hoc arms transfers under the Foreign Military Sales program.

“We used precision munitions 100 percent of the time,” Jodice noted, adding, “I don’t know that that can be said about any other operation.”

He also described an excruciating sequence of steps and checks applied to all strike missions to prevent civilian casualties and collateral damage. Targets were first identified using the large ISR platforms, such as Rivet Joint and

JSTARS. Then the rules of engagement were applied; strikes were called off if there could be unintended damage. If the pilots on the scene confirmed the target, it could be struck, but only with weapons offering “the lowest yield” of explosive effect, Jodice said.

“When we [needed] to strike something, it was done with the utmost precision,” he said.

French Air Force Gen. Stephane Abrial said NATO’s European air forces “could not have performed to the same level of effectiveness without heavy contribution from the US.” Abrial said at the Air Force Association’s September conference that European nations must build capabilities not dependent on the involvement of the US. The United States could have refrained from an out-of-area operation such as Libya, thus hamstringing any Europe-only effort.

One sore spot in the prosecution of the Libyan campaign was the lack of full-motion video—at least, early on. MQ-1 Predators were not approved for Libya until after Odyssey Dawn had ended and Unified Protector began. However, JSTARS and AWACS aircraft eventually entered the fight, and “their job was to orient shooters, pair shooters with targets, solve battlespace problems, speed accurate decision-making,” Woodward reported.

The integration of more and more participants—both new types and new nations—represented an ongoing challenge, Woodward said. While each brought unique and welcome assets, they also brought idiosyncratic rules about what they would and would not do. Germany, for example, refused to participate in any direct attacks. On the other hand, Jodice said, Jordan, Qatar, Sweden, and the United Arab Emirates,



**SrA. Lawson McLester, at Aviano AB, Italy, takes fuel samples for testing during Odyssey Dawn. Some fighter sorties out of Europe required five air refuelings to generate one hour on station.**

besides contributing aircraft and crews, added a valuable “cultural” element to the operation.

### The Structure Works

One of the easiest aspects of the operation was that the coalition accepted US leadership without debate, Woodward reported.

“Each partner understood the need for unity of command [and] ... the need for a single joint force air component commander,” she said. “And each partner deferred to the United States Air Force to fill this role because each partner knew that only the United States Air Force had the capacity to command and control this fight.”

Odyssey Dawn was the first air campaign ever run by a woman. Woodward said although that fact generated some media interest, it was operationally a non-issue.

Asked if there was any foreign opposition to taking direction from a woman, Woodward said there was none.

“That just never even came up,” she said. “We never gave it a second thought.”

Despite this operational success, however, USAF’s global assets were stretched thin by the action to protect Libyan civilians and establish a no-fly zone over the country. The operation highlighted shortages of intelligence, surveillance, and reconnaissance equipment and combat search and rescue assets.

Service leaders predict that a future Libya-type operation—a no-warning battle that erupts even as the US is



**An F-16 moves into refueling position under a KC-10. Thirty-four tankers from myriad active, Guard, and Reserve units supported the operations over Libya.**

engaged in another conflict—will be impossible to repeat if the Air Force becomes much smaller than it is today.

Odyssey Dawn “came about in pretty short order and unfolded quite quickly,” Ham told defense reporters in September.

“One of the reasons that I think the US was able to respond very quickly was the presence, almost exclusively in European Command, of air and maritime forces that were flexible and able to respond pretty quickly,” he said. Having long trained with NATO air forces and those of other countries that joined the coalition, the US was able to seamlessly respond to United Nations mandates and execute the mission.

Had the US “not taken the lead, with great support” from key US allies, “I’m absolutely convinced,” Ham said, that

“many, many people in Benghazi who are alive today ... would not be.”

Another lesson from Libya, which Ham posed as more of a question for the future, is how to ensure in future conflicts the same interoperability and coordination as was seen in Odyssey Dawn and Unified Protector.

“We’re pretty practiced at doing big military operations with our NATO allies,” Ham said. “We brought in some non-NATO participants, but we have a NATO framework for that.” What needs to be figured out, he said, is “how do you bring together a multinational coalition without the standing agreements and interoperability practices that NATO has?”

Jodice said he believes OUP proved that the Alliance structure works.

“One of the valuable lessons learned there is that the Alliance is able to act quickly when the need arises,” he offered.



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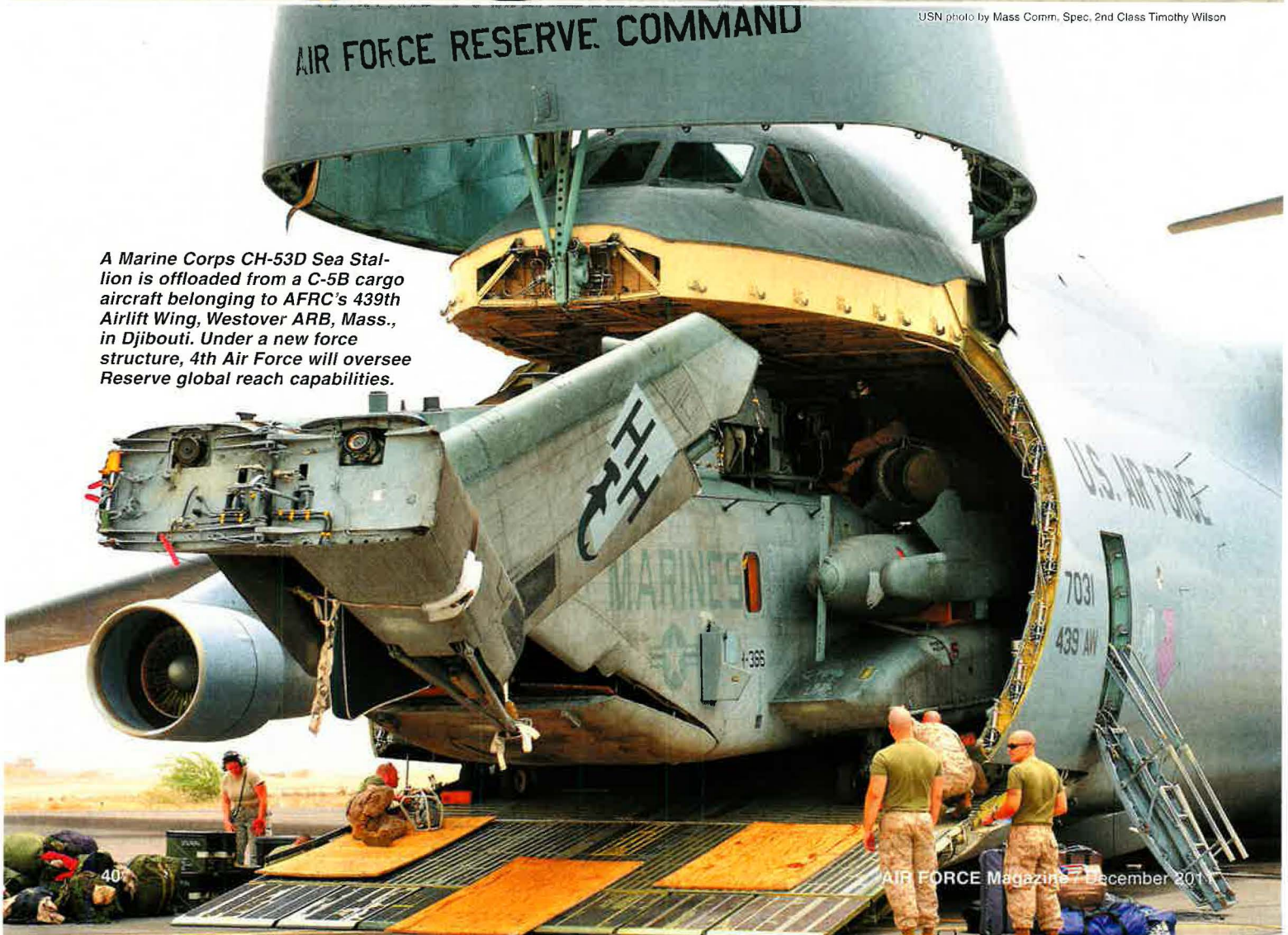



USAF photo by SSgt. Danielle Wolf

USN photo by Mass Comm, Spec. 2nd Class Timothy Wilson

**AIR FORCE RESERVE COMMAND**

*A Marine Corps CH-53D Sea Stallion is offloaded from a C-5B cargo aircraft belonging to AFRC's 439th Airlift Wing, Westover ARB, Mass., in Djibouti. Under a new force structure, 4th Air Force will oversee Reserve global reach capabilities.*



A close-up, low-angle shot of an A-10 Warthog fighter jet on a runway. The aircraft is white with blue and red markings. The cockpit canopy is prominent on the left, and the large engine intake is visible behind it. The wings extend to the right, with various pylons and equipment mounted underneath. The background shows a clear blue sky and a blurred airfield.

*A-10 Warthogs belonging to the 442nd Fighter Wing line up at Whiteman AFB, Mo.*

# Out of Reserve

By Amy McCullough

**T**he Total Force works together and trains to the same standards, so it should come as no surprise that the Air Force Reserve has proved able to seamlessly integrate with its active and Air National Guard combat partners within 72 hours. However, finding a proper balance among the three Air Force components will be key as the Pentagon looks to cut forces and shave billions from its budget in the coming years, said Air Force Reserve Command chief Lt. Gen. Charles E. Stenner Jr.

The thing that worries Stenner the most about today's budget environment is that AFRC won't get the answer it needs to rebalance the force so it can continue to actively participate in future operations. "That discussion is not easy," he said in an interview with *Air Force Magazine*. "It gets somewhat emotional at times because everyone is trying to do the right thing for the nation and there just isn't going to be enough money to do what we've been doing, so we've got to do the best we can to get it right."

In the past, the National Guard and Reserve components were easy targets

as Congress looked to pare down the defense budget following a major war. But over the last 10 years, AFRC has evolved from an augmentation force, focused solely on training, to a continuously employed reserve critical to its active duty, National Guard, and joint partners.

## Experience Counts

After the troops came home from World War II, America faced the need for similar budget cuts. At that time, the strategic reserve was essentially just a surge force, so officials were able to simply "take those organizations off the books and keep the operational force." But after a decade of fighting alongside their active duty counterparts, things aren't so easy this time around.

"We are in the Air Force as an operational force and have been for many years. We are trained to the same standards and are ready to go," he said. "The biggest fear I have right now is that we do use the same methodology, in which case, we [would be] cutting some of the most experienced individuals we've got."

The experience level in the Guard and Reserve is "several years higher than the active force," because many active duty members choose to stay in the military on a part-time basis, bringing with them invaluable experience, said Stenner.

By the end of 2011, the Air Force Reserve is projected to have an end strength of 71,400 with plans to grow to 72,400 by the end of Fiscal 2014. Recruiters have broken records the previous two years, bringing in just over 10,000 new part-time airmen each year in high-demand mission areas, such as cyber, intelligence-surveillance-reconnaissance, and bombers. And though that's good for today's missions, it's not clear if that kind of growth will be able to continue, said Stenner.

"That's a huge unknown right now based on what we have in Fiscal 2012 and what we are doing with the [budget] in '13, [which is] still to be determined," he said.

It is difficult to put a dollar figure on AFRC's contributions to the Air Force's overall efficiency effort, but the command has made sweeping strategic

*SSgt. Demian Abel, an AFRC para-rescueman, scans the horizon for potential threats during a medical evacuation mission over Kandahar province, Afghanistan.*



USAF photo by SSgt. Manuel J. Martinez

changes to its force structure as part of that effort, said Stenner.

Effective Oct. 1, AFRC began downsizing all of its numbered air forces, focusing them solely on readiness. The change is intended to eliminate a layer of bureaucracy by adjusting the command's management structures so it can better handle the operational tempo and rotate airmen to the fight "in a more nimble and accurate fashion," said Stenner.

Under the new force structure, 4th Air Force, based at March AFB, Calif., will focus specifically on global reach. It will include all of AFRC's tankers and airlift capabilities, rather than the previous construct which was based on geographic boundaries.

At Dobbins AFB, Ga., 22nd Air Force will oversee AFRC's tactical airlift, combat support, and training.

Finally, 10th Air Force, at NAS JRB Fort Worth, Tex., will manage AFRC's strike, ISR, space, cyber, and special operations assets. This constitutes what Stenner called the command's "power and vigilance" readiness.

The changes involved administratively shifting ownership of four flying wings, one flying group, and seven smaller units by Oct. 1. However, the realignments will not force the units to

change their geographic locations, said Col. Greg Vitalis, AFRC headquarters program manager at Robins AFB, Ga.

"The numbered air forces had a layer of bureaucracy in them that the wings would have to go through," said Stenner. For example, the wings would have to go through the NAF to get to the major command headquarters. They also "were doing more training than they were monitoring readiness, so the initial premise was [to] take those numbered air forces, [and] focus them specifically on the type of readiness they were suited for."

### **March Madness**

The wings then assumed some of the manpower that was removed from the NAF to "establish exercise and evaluation teams so [they] could prepare for and sustain the readiness, take the inspections, do the kinds of exercises that need to happen," Stenner said at the Air Force Association's annual Air & Space Conference in September in National Harbor, Md.

Although it will take awhile for the changes to completely take effect, each NAF ultimately will downsize by about a third, relative to its previous size.

These shifts are the largest changes under a raft of rationalization mea-

sures that AFRC officials announced in September.

"If you go after it from an efficiencies perspective, in other words, how do we do this the cheapest, you will not get it right. The cheapest means that we're going to start going down a slippery slope [with] tiered readiness, and we should never do that," said Stenner. "We've got to be able to do what we need to [do] today, seamlessly integrated," with the right mission sets, and the right policies aimed at getting Reservists into the fight effectively and efficiently.

Last spring, that capability was put to the test when AFRC got slammed with a sudden influx of requirements during what Air Force leaders have since dubbed "March Madness."

In mid-March, the command responded to a devastating 9.0-magnitude earthquake and subsequent tsunami in northeastern Japan. Almost simultaneously, a civil war broke out in North Africa and Libyan dictator Muammar Qaddafi began brutally attacking his civilian population. In addition, the command remained heavily involved in operations already under way in Iraq and Afghanistan.

When disaster first struck Japan March 11, the Air Force Reserve had 10

airmen on temporary duty assignment, 28 airmen deployed, and 127 personnel assigned to the country in support of normal operations. Within 51 hours, AFRC had 21 aircraft and 51 volunteer crews available to support Air Mobility Command or US Pacific Command with relief efforts, said Col. Gordon H. Elwell Jr., chief of the Operations Division at the command's new Force Generation Center, which acts as a one-stop shop for Reservists deploying to theater and returning home.

Less than one week after Operation Tomodachi commenced in Japan, the United Nations Security Council approved a resolution authorizing the use of force to protect Libyan civilians from Qaddafi's merciless regime, including establishing and maintaining a no-fly zone over the northern coastal state.

Within 48 hours, five KC-135 crews volunteered from McConnell AFB, Kan., to support operations in Libya. The call came over the weekend, and the Reserve crews deployed to Moron AB, Spain, on Monday along with their associate active duty wing. Shortly after that, another KC-135 crew that was already in the process of deploying to Europe and US Central Command, was diverted to support what had then become Operation Unified Protector.

Eight Reserve individual mobilization augmentees provided command and control support aboard USS *Mount Whitney*, which was operating in the Mediterranean Sea. And three more KC-135 aircraft and crews, along with their associate maintainers, were mobilized from March Air Reserve Base, Grissom ARB, Ind., and JB Andrews, Md., said Elwell.

By June, the Air Force Reserve had 11 crews, multiple aircraft, and dozens of maintainers supporting the operation in Libya. The unexpected operational tempo would continue throughout the summer.

Reserve leaders credit the Force Generation Center, headquartered at Robins, with the successful, simultaneous deployment of so many different AFRC crews and assets around the globe.

### Dwell Ratios

The center is intended to holistically manage the Reserve force by tracking unit availability and operational tempo, while overseeing Reserve resources. "We started this journey about three years ago, just discussing what do we need to do to understand all 55 functional areas that we manage at that location. Where are the folks, not only in the selected reserve, but [also] in the [individual ready reserve]?" said Stenner in the interview. "How do we get them to and from the fight and how do I, as the commander, make sure that we don't break any one of those mission sets? ... How do I package that up so I can understand it, manage, monitor it, program for it, budget for it, and continue in perpetuity to ride that capability?"

When the FGC stood up in June 2010 there was a lone airman at the helm. It was Brig. Gen. William B. Binger's job to bring the center from a paper concept to its operational capability. Though a success, that transition happened significantly sooner than expected, thanks to the culmination of events last spring.

FGC is split into four divisions—operations, support, forces, and security cooperation and exercises—each led

by a colonel. By Oct. 1, 2010, all four division chiefs were on board; however, the center was only about 20 percent manned when it took control of the March mobilizations.

Elwell said it was "like driving a car 80 miles per hour while still trying to rebuild the engine in transit."

Binger, FGC's first commander, acknowledged it was sometimes challenging, but said he is proud of what the center has accomplished in such a short time.

"We've gone from a piece of paper and a concept to actual operational missions now in four different divisions, some of which has never been done in one cohesive place before," said Binger, who was expected to rotate to his new position as commander of 10th Air Force in November.

The drawdown in Iraq will help ease some of the pressure on the Reserve force and the FGC is supposed to make deployments more predictable for Reservists, their families, and their employers. However, the operational tempo remains high in certain career fields, such as explosive ordnance disposal, security forces, and contracting, and that is not expected to change anytime soon.

The goal is to maintain a one-to-five deployment-to-dwell time ratio, meaning a Reservist will deploy for one period and then remain home for five periods before being called up again. However, there are many stressed career fields in the Reserve that are operating on a one-to-three or one-to-two dwell ratio. That is not good, said Stenner.

"One-to-five is a planning factor. [If we drop] to one-to-four, I lose 10 percent" of Reservists through attrition and other means. If AFRC drops from one-to-four to one-to-three, "I lose about another 10 percent," Stenner said. "That's driving to zero and that's not good. ... There are 22 mission sets I'm concerned with right now that we are watching very closely, and we're making sure we meter the output to meet the need."

Despite the strain of fighting two simultaneous wars and the stress of looming budget cuts, Stenner said he is optimistic about the future.

"This is not doom and gloom. It's not easy, but there is an opportunity here to adjust and craft this Air Force to meet today's realities and be flexible enough to meet tomorrow's changes," he said. ■

USAF photo by TSgt. Jeff Wainston



**A B-52 from AFRC's 307th Bomb Wing taxis at the Ostrava Arpt., Czech Republic, where it participated in an air show. Air Force Reserve Command members are serving all over the globe.**

# Pinetree Line

**These extraordinary photos document a year's deployment on Resolution Island, the site of a Cold War early warning system.**

Photos from Robert W. Knowles via Mark A. Knowles





Map by Zaur Elyanbekov

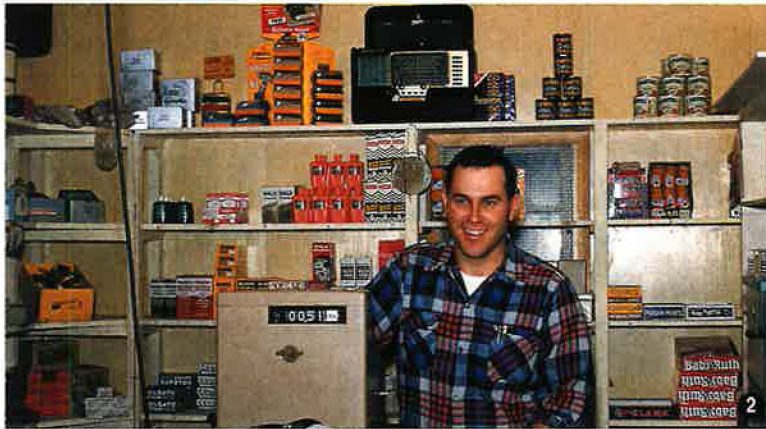


*The Air Force's radar site on Canada's Resolution Island in the Labrador Sea stood near the northeastern-most tip of Air Defense Command's Pine-tree Line. In February 1957, an H-21 helicopter transports personnel to and from the site.*

**A**irmen of the 920th Aircraft Control and Warning Squadron on Resolution Island watched for Soviet bombers and were ready to scramble fighters to intercept the intruders. The Pinetree Line, begun in 1951, traced the northern US border, extending up Canada's northeast coastline. Augmented by 1957 with the Mid-Canada Line and high-Arctic Distant Early Warning Line, this network of early warning stations stretched over North America from Greenland to Alaska. **11 and 21** In 1956, then-SSgt. Robert Knowles received orders for Resolution Island. These photos come from his year's assignment there. The series begins at Philadelphia Airport because Knowles left his wife, Mary Jean, and toddlers, Mark and John, with his in-laws in Pennsylvania. **131** Knowles photographed several military aircraft at Goose Bay, Labrador, en route to his new post. C-124 Globemaster IIs airlifted the heavy equipment and supplies needed to build a radar network in the desolate northern expanse. **141** Also at Goose Bay, a KC-97 taxis past a Navy P2V-5 Neptune patrol aircraft and C-47 transport. **151** Winter sunset at Resolution Island, December 1956. **161** A Maritime Central Airways DC-3 sets up for an airdrop at Resolution Island. MCA was among the carriers contracted to support remote early warning sites in the Canadian arctic.







*1* Tasked with resupplying early warning radar sites, the 22nd Helicopter Squadron was based at Goose Bay. Those resupplying Resolution were detached to nearby Frobisher Bay. *2* Knowles at the site PX. A native of Wichita, Kan., he filled several roles on Resolution, including clerk-typist and mailman. *3* Pole Vault communications antennas linked Resolution with other early warning sites. *4* Two of Resolution Island's three early warning search radars overlooking pack ice on the Davis Strait.



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*1* Tracked “weasels” push their way through the snow, providing mobility and muscle on the island’s rugged terrain. *2* Sunrise comes to Resolution. *3* Piasecki H-21s were fitted with extra fuel tanks to reach the far-flung site. *4* An H-21’s stabilizer undergoes repair in March 1957. During winter, foul weather often limited helicopter resupply from Frobisher Bay to once or twice a month.

111 "Tippy" plays with an airman bundled in a parka at Resolution's second airstrip—a frozen lake. 121 This C-123 landed on 54 inches of solid ice—the site's Lake Strip—where airmen offloaded it. 131 Provisions settle to earth. Airdrop was often safer than landing, and mail drops were sometimes conducted without even a chute. 141 Resolution's parabolic communications antennas connected it to 13 other radar stations ranged along the Labrador coast. 151 A Douglas C-118 Liftmaster buzzes the airstrip after completing an airdrop. "Thanks for the propwash," Knowles wrote on the border of one of the 35 mm slides in this series showing the parachute delivery. 161 A "Sno-Go" clears drifts from the station's motor pool.



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111 Landing craft like the one at far right ferried fuel, equipment, and provisions from ship to shore during the warmer months. 121 Clearing ice in preparation for a visit by the Navy. 131 Despite its ungainly appearance, the Piasecki H-21 was a rugged helicopter, purpose built for Arctic operations. 141 A float-equipped H-47 helicopter from the Canadian Navy ship HMCS Labrador clatters low. Weather was only one hazard at Resolution. In July 1957, two Royal Canadian Navy H-47s located a missing airman killed by falling from a cliff near the station. Days later, both helicopters crashed in severe turbulence near Frobisher Bay. 151 Radar sites were chosen for their clear shot at the northern horizon. Perched on a 1,200-foot cliff, the Resolution Island station was no exception.





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11 A landing craft grinds ashore at the island's Yellow Beach, briefly free of ice. 121 Knowles, Technical Sergeant Hill, and Staff Sergeant Corwin enjoying summer warmth. By this time, Knowles' tour on Resolution was ending. He went on to complete a 20-year Air Force career, retiring as a chief master sergeant in 1975 at Travis AFB, Calif. 131 Knowles photographed this Danish ship from the deck of a US Navy craft. It was August 1957, and he wrote on this slide, "Homeward bound." 141 A year after he first stopped here, Knowles again transited Goose Bay and photographed this C-124 and C-118. Knowles ran an auto accessories store in Fairfield, Calif., after his Air Force service. He died in 1990. Operations on Resolution Island continued until 1961, when the facility was turned over to the Royal Canadian Air Force. ■

Osama bin Laden's trail went cold right as al Qaeda's leadership, being pummeled by airpower, appeared to be trapped in a mountain fortress.

# Tora Bora

By Rebecca Grant

**T**he battle of Tora Bora in December 2001 may have been a lost opportunity to catch Osama bin Laden. But it was definitely the moment when Operation Enduring Freedom shifted from a fast-moving, US-led rout of Taliban forces to a tricky counterinsurgency war.

The consensus view of Tora Bora's outcome was captured by a November 2009 Senate Foreign Relations Committee report: "On or around Dec. 16, [2001] two days after writing his will, [Osama] bin Laden and an entourage of bodyguards walked unmolested out of Tora Bora and disappeared into Pakistan's unregulated tribal area," read the report, overseen by Sen. John Kerry (D-Mass.), a longtime critic of the Tora Bora operation.

Exactly how bin Laden got into Pakistan is a mystery even after his death. The intelligence reports from the time were constantly shifting and often contradictory. The US has never definitively determined whether bin Laden was actually at Tora Bora during the now-famous battle, and even top US military commanders feel he was probably—but not definitively—there.

Bin Laden and Taliban forces had planned for some time to make a stand at Tora Bora. Beginning on Oct. 7, 2001, US-led

airpower and special operations forces teamed with various Northern Alliance factions to topple Taliban control of Afghanistan's northern cities. The fall of Kabul on Nov. 13 collapsed Taliban control across Afghanistan, but al Qaeda and Taliban elements spread throughout the country as the government crumbled.

Dispersed Taliban and al Qaeda elements presented the coalition with a new challenge. "Our interest," said then-Secretary of Defense Donald H. Rumsfeld, "is to capture or kill all the al Qaeda and prevent them from escaping into other countries or other locations in Afghanistan where they can continue their terrorist activities."

Of course, it was no surprise OEF had the potential to turn into a guerilla war. "When you go back and take a look at the history of how they have fought tactically, it's been predominantly a guerrilla-style war done from hidden positions," Rear Adm. John D. Stufflebeem explained to reporters that Nov. 14.

However, the rapidly evolving situation in Afghanistan left US Central Command with very little sense of how many al Qaeda and Taliban remained. Afghan fighters had the option of simply going home—or taking up new fighting positions.

*A US Army Chinook helicopter offloads coalition forces high in the mountains of Afghanistan during a hunt for Osama bin Laden. Caves honeycombed the Tora Bora complex, and al Qaeda's leader knew them well.*



Many al Qaeda were not natives, however, and had come to Afghanistan from places such as Saudi Arabia and Chechnya and now had to surrender, hide, or flee.

### Bin Laden's Options

For bin Laden, the end of Taliban rule left him few options. Cities were slipping out of Taliban hands, and roads were subject to attack from the air. This left the mountains—with their sheltered access to Pakistan—as a preferred choice for any sizeable group of terrorists sticking with bin Laden.

The 9/11 mastermind began to plan his next move, and it led straight to Tora Bora, less than 10 miles from the Pakistan border.

During Afghanistan's long war with the Soviet Union, CIA money helped build up the cave complex at Tora Bora for use by Afghan resistance fighters. Maps originally designated the area Tora Gora, but for unknown reasons CENTCOM and others redesignated it Tora Bora in December 2001.

Few knew the complex better than bin Laden himself. A US Senate report contended that in the late 1980s, bin Laden had assisted with many of the construction projects such as building the rough road from Jalalabad to Tora Bora and supervising excavation of the connecting tunnel system within the caves.

Bin Laden made more improvements to the Tora Bora hideout after leaving Sudan for Afghanistan in 1996. He "began expanding the fortress at Tora Bora, building base camps at higher elevations for himself, his wives, and numerous children and other senior al Qaeda figures," said the Senate report. A report in *The Guardian* stated bin Laden "used much of his personal fortune to enlarge and equip these caves for use as a military stronghold."

On Nov. 10, 2001, bin Laden rallied a crowd at an Islamic center in Jalalabad. "The Americans had a plan to invade, but if we are united and believe in Allah, we'll teach them a lesson, the same one we taught the Russians," bin Laden told hundreds of fighters during his speech.

It was to become the last public address in person by bin Laden—and the last certain confirmation of his whereabouts for nearly 10 years.

On that night, bin Laden circulated in the audience, handing out cash gifts. Later, a resident reported seeing bin Laden "standing in front of our guesthouse at 9 p.m.," just before the beginning of the nightly BBC radio Pashto-language news broadcast. Others saw bin Laden make an appearance at a mosque, surrounded by bodyguards. He then headed out of



**Special operations forces sight targets. In the end, the fight for Tora Bora, though intense, would involve just handfuls of ground personnel.**

Jalalabad in a vehicle convoy bound for the mountains, with several hundred followers with him.

"They were scornful and in a hurry, and sat there on a stoop, dividing up the fighters and assigning them to different caves," recounted eyewitness Malik Osman Khan, who was a village elder in Garikhil. "Our people were terrified, because we thought the planes would hit the Arabs as they stopped in our village. We sent the women and children into another village for their own safety."

Bin Laden's retreat to Tora Bora was characteristic of al Qaeda's leader. For all his intensity, he was not the kind of leader willing to risk his own life or that of his kin in pursuit of his ideals, nor was he a solo player. Bin Laden hid out but kept his family and security entourage with him.

The move to Tora Bora was not a step toward martyrdom but a stopgap while he figured out what to do next.

### Hands Full

Meanwhile, CENTCOM had its hands full monitoring several locations chock full of Taliban and al Qaeda.

Top of the list was Kandahar, still in Taliban hands at the time. Reports suggested that some Taliban and al Qaeda were fleeing into the city and then moving south. "A good many of these people who surrendered and turned in their arms and then left, and a number of the other Taliban, ended up just fading into the villages and the mountains and they're still there and they're still armed," Rumsfeld said on Nov. 30.

Operations to take Kandahar continued until Dec. 7, 2001. Kandahar was especially important for several reasons. Mullah Mohammed Omar, a Kandahar area native credited with founding the Taliban in Afghanistan and in September 1996 with taking over Kabul and install-

ing Taliban rule across the country, was thought to be there. Stufflebeem said Dec. 10 the Pentagon had no indications that Omar had left the Kandahar area.

On the outskirts of the city was another major political figure waiting to emerge. Hamid Karzai was slated to take over as interim head of state, and his forces had taken the town of Tarin Kowt in mid-November. By Dec. 1, they were 30 miles from Kandahar.

Special operations forces directed air strikes for a two-day battle with the Taliban. Karzai was so close he was injured in the face from an off-target bomb that killed three members of the Afghan-US team.

Deputy Secretary of Defense Paul D. Wolfowitz compared the endgame at Kandahar to "people deciding, like rats, to leave a sinking ship. But we didn't have the whole perimeter of the ship guarded." As a result, approximately 1,000 marines went to work combing Kandahar for the Taliban and al Qaeda.

All this loomed large as CENTCOM evaluated its options for Tora Bora. Special Forces teams were already operating near Tora Bora, as was a CIA-led team working under the name Jawbreaker. Now, it was time to bring airpower to bear.

The first call was for intelligence-surveillance-reconnaissance. Predators had surveyed the Tora Bora area as early as Oct. 9 and air strikes had hit the caves.

CENTCOM Commander Gen. Tommy R. Franks confirmed the US was watching two areas closely: Kandahar and the area between Kabul and Khyber. This zone included the Jalalabad area and Tora Bora.

CENTCOM tasked a Global Hawk unmanned reconnaissance aircraft. The UAV system—with just four aircraft in existence at the time—racked up an impressive combat record. Its infrared, radar, and electro-optical sensors allowed coverage at night and through bad



weather. The Global Hawk's 30-hour-plus mission endurance made it perfect for Tora Bora and the evolving situation in Afghanistan.

"Around the end of November we started looking at the Tora Bora mountain region because we had indications there from a variety of sources that said Tora Bora was where the bad guys were," said then-Maj. David Hambleton, who was a Global Hawk liaison officer at the combined air and space operations center.

### Battle Joined

The real fight for Tora Bora would be intense but involve just handfuls of US personnel on the ground. The special operators of Task Force Dagger had forces committed to other locations around Afghanistan. The most they could offer was to augment the Jawbreaker team that had been tracking bin Laden around Jalalabad.

Nor were regular forces available. Any decision to pull marines from Kandahar and deploy them around Tora Bora would have sacrificed the hunt for Mullah Omar—the Taliban leader—and the task of dealing with the large fighting concentrations around Kandahar.

The only immediately feasible option was Rumsfeld's preferred template of having small SOF teams and airpower support allied Afghan fighters. The decision not to employ a larger US force is controversial to this day.

On Dec. 2, more than 100 strike aircraft hit targets near Kandahar and Jalalabad.

That same day, CENTCOM began its move. A SOF team of about 13 personnel codenamed Cobra 25 traveled to Jalalabad to recruit Afghan forces under the command of two warlords, Hazarat



**US air strikes hit the caves repeatedly for more than two weeks. In one strike, a 15,000-pound "Daisy Cutter" bomb—delivered by a C-130—struck a target at the cave complex and the earth shook for miles around.**

Ali and Haji Zaman. This loose "Eastern Alliance" was to move into Tora Bora under US direction.

"We moved up with this Eastern Alliance army with large embedded Special Forces and CIA, and they called in air to support our positions [and] closed tunnel openings," Marine Corps Lt. Gen. Michael P. DeLong, Franks' deputy at CENTCOM, later told *National Review*.

The idea was that Ali and his people would lead the way. "These were high mountains," said DeLong. "The [Afghans] knew how to get there without being seen from some positions, so going with them was by far the best way to go."

For the next six days, Cobra 25 surveyed positions and called in air strikes. Afghan security elements provided protection. On Dec. 8, CENTCOM added another special operations task force, with 50 more special operators, and a small British element linked up as well.

"To the best of our knowledge, he has not left the country," Air Force Gen.

Richard B. Myers, Chairman of the Joint Chiefs, said Dec. 9. Specifically, senior US leadership believed bin Laden to be holed up in Tora Bora.

As the air strikes intensified, a 15,000-pound "Daisy Cutter" bomb, so large it had to be delivered by C-130, hit a target in the complex and reportedly shook the terrain for miles.

"The al Qaeda forces are still holed up in caves in the Tora Bora area. There still has been fierce fighting to defend their cave entrances, and we have still been providing strikes, as requested by the opposition groups and coordinated by our forces that are with them," said Stufflebeem Dec. 10.

Warlord Ali was ready to move into Tora Bora. For a brief time it looked like success was imminent. That afternoon, Afghan fighters reported they had surrounded bin Laden. Ali plucked two SOF operators from the coordinating team to accompany him and rushed his forces forward.

Another 33 special operators prepared to move up to support Ali, but to no avail. Ali's forces took fire as soon as they probed al Qaeda's positions. The Afghans immediately retreated, leaving the first two US commandos to wind their way back to friendly positions during the course of the night.

As a US Special Operations Command history later put it, Ali's soldiers' "fighting qualities proved remarkably poor."

The only good outcome was that the two SOF operators abandoned by Ali now had detailed reconnaissance of al Qaeda mortar and gun positions. Once back to relative safety, they used this information to work alongside the Cobra 25 combat controller and call in 17



straight hours of air strikes. They were as intense as the US and allies could muster.

Global Hawk planners at the CAOC got new orders to “go VFR [visual flight rules] direct straight up to Tora Bora and start taking pictures,” recounted Hambleton. Strike aircraft and AC-130 gunships honed in as well.

What if enemy fighters tried to escape, as had already happened just days before at Kandahar? Pakistani President Pervez Musharraf had forces on the border to attempt to block escapes from Afghanistan to Pakistan.

But the task was exceedingly difficult. “It’s a very complicated area to try to seal, and there’s just simply no way you can put a perfect cork in the bottle,” Rumsfeld conceded Dec. 11.

The plan was to prompt the Afghan forces to destroy bin Laden’s hard-core fighters in the caves.

The only way to get Ali to hold terrain was to commit more SOF personnel, however, so special operators drove in trucks as far as they could then continued on donkeys to carry their gear. The Afghan forces pulled back from their positions every night. It was Ramadan, and the troops were fasting by day and feasting after sundown.

Fortunately for US forces, al Qaeda opposition kept lighting campfires to keep warm at night. SOF teams used optics and thermal imaging to bring in even more air-delivered firepower.

Air strikes chipped away at the complex, but the US still had only about 50 men committed. The teams controlling air strikes were finding thermal imaging so effective they could pull back from forward positions. The two Cobra 25 teams withdrew by Dec. 14. That night, Ali’s forces at last held the terrain they’d taken during the day.

Then the assault paused.

The Taliban “had clearly changed their strategy to one of survival,” Lt. Gen. Maxwell C. Bailey, commander of Air Force Special Operations Command, later explained. “They had ceased resistance. The bad thing was that once they ceased armed resistance,” Ali’s and Zaman’s anti-Taliban forces also ceased attacking.

The Afghan forces insisted on a quiet battlefield for several hours, with the explanation that al Qaeda had decided to surrender and needed an opportunity to come down from the mountains and turn in their weapons.

In reality, the pause gave the hard-core fighters still holed up time to run. “This tribal area was sympathetic to bin Laden,” DeLong later wrote. “He was the richest



**Special Forces personnel surround future Afghan President Hamid Karzai (middle row, third from left). Karzai was wounded in a two-day battle with the Taliban near Kandahar.**

man in the area, and he had funded these people for years.”

Ali declared Tora Bora a “victory” on Dec. 17 and the last SOF operators departed the area on Dec. 19. They estimated they had killed about 250 terrorists, but it was obvious that many had slipped away. Pakistani soldiers said they captured as many as 300 fighters who fled Tora Bora, Franks testified later.

### Ground Action Post Mortem

Almost immediately, critics used Tora Bora to make a case that the battle was a missed opportunity where ground forces should have been used.

The controversy simmered for years and reached full flower with scholarly articles asserting a force of as little as 1,000 troops could have been placed in the 14,000-foot mountains to envelop Tora Bora.

Few thought so at the time, however, and Rumsfeld’s policy for OEF was firmly set on using US airpower with very light ground forces.

The Bush Administration had for many reasons been loath to put US ground forces into Afghanistan. Logistics, the risk of alienating Afghanistan’s population, and even the long shadows of Soviet mistakes in the 1980s all made for reluctance to commit ground forces.

“We deliberately did not plan an operation in Afghanistan based on putting in 100,000 or 150,000 American troops along the model of the Soviets,” Wolfowitz said in June 2002.

A big US-led ground attack at Tora Bora was never a serious option. For one, Franks only had about 1,300 soldiers, marines, and Special Forces in Afghanistan at the time of Tora Bora. They were spread across 17 locations. “We didn’t have the lift” to get them to the fight, DeLong later told lawmakers.

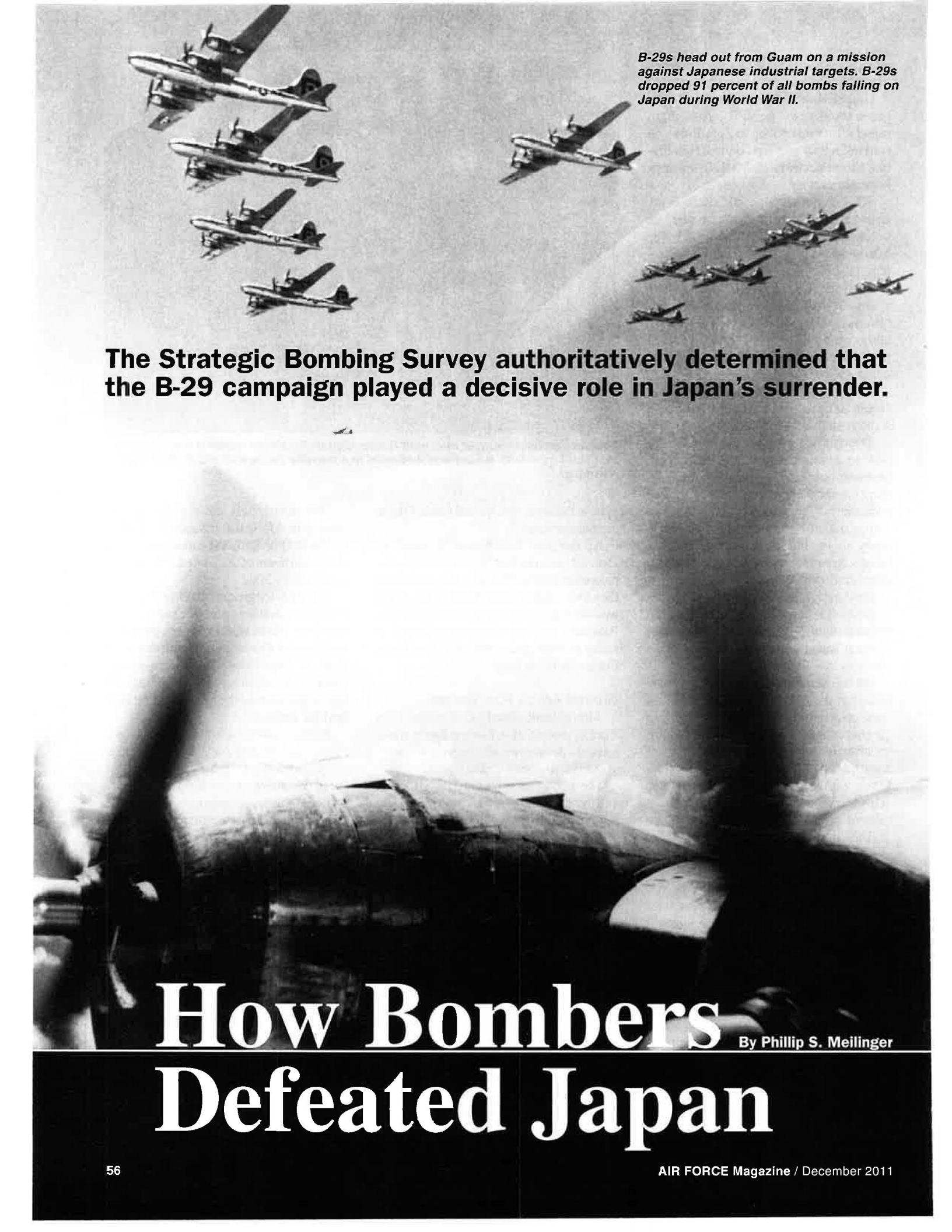
Policy considerations mattered, too. According to DeLong, it was Franks’ objective to ensure Afghanistan was peaceful in the run-up to elections expected to bring in Karzai as leader.

Mop-up efforts continued for some time. Rumsfeld told the *Baltimore Sun* at the end of December searches of the now-empty cave complex could go on through much of January 2002.

One thing was certain though. When bin Laden vanished in December 2001, it ensured that the hunt for him and the mission to destroy al Qaeda in Afghanistan would drag on.

But the next time allied forces engaged a significant concentration of al Qaeda terrorists, in Operation Anaconda, CENTCOM was determined that US ground forces would lead the way. ■

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*B-29s head out from Guam on a mission against Japanese industrial targets. B-29s dropped 91 percent of all bombs falling on Japan during World War II.*

**The Strategic Bombing Survey authoritatively determined that the B-29 campaign played a decisive role in Japan's surrender.**

# How Bombers Defeated Japan

By Phillip S. Meilinger

**A**merican war plans prior to World War II anticipated a Europe-first strategy. After Pearl Harbor, however, the public demanded action against Japan. As the Army and Navy geared up for campaigns in the Pacific, the US Army Air Forces (AAF) examined ways to hit Japan. B-17s and B-24s did not have range to reach the Japanese home islands, so the AAF needed a bomber with a range greater than 3,000 miles.

The bomber would turn out to be the Boeing B-29 Superfortress.

The first B-29s of XX Bomber Command, a subunit of Twentieth Air Force, were deployed to India in April 1944 under the command of Brig. Gen. Kenneth B. Wolfe. However, logistical problems arose as all supplies had to come over the Himalayas. While flying over "The Hump" was a terrific aerial feat, this requirement added to the difficulties of XX Bomber Command, and bomber operations proceeded slowly.

Gen. Henry H. "Hap" Arnold, the ever impatient AAF Chief, relieved Wolfe in July 1944 and replaced him with Maj. Gen. Curtis E. LeMay. Although performance improved, the problem with the attacks on Japan was in the concept of striking from India. Attempting to operate a successful strategic bombing campaign over such vast distances in a remote theater was simply unrealistic.

The tale is told in the tally: In the 49 combat missions flown by the XX Bomber Command, over nearly 10 months, only 11,000 tons of bombs were dropped—compared to 156,000 tons that would be dropped by XXI Bomber Command from the Marianas. Operations from India were halted in March 1945.

On the upside, some bugs were worked out of the new aircraft, the campaign bolstered Chinese morale, and LeMay gained valuable Pacific and B-29 experience. The Marianas bases were essential for the strategic air campaign against Japan, and it was from the islands of Guam, Saipan, and Tinian that the B-29s would strike major blows.

Targeting has always been a key component of strategic air warfare. So even before the B-29s were deployed, there was a major effort to study the Japanese economy and select the most appropriate targets.

Unfortunately, the intelligence apparatus required to conduct such a study and provide competent targeting advice was limited and faulty. The AAF entered the war deficient in this area, and Japan was a difficult intelligence challenge due to

the closed nature of its society. In many cases, the air planners had to rely on old maps, an occasional tourist report, and prewar insurance data.

Building upon the lessons and experiences of the European theater, air planners identified several key systems in Japan to be targeted. Coke ovens, essential for steel production, were a key system singled out for attack. Other target systems included merchant shipping, oil refineries, the transportation network, and munitions factories, especially aircraft and engine complexes.

### **A Radically Different Tactic**

US Strategic Bombing Survey (USSBS) analysts reinforced these targeting priorities after studying the effects of Allied bombing on Germany.

The commander in the Marianas would have other ideas, however.

The first three months of the XXI Bomber Command's operations based out of the Marianas were not impressive. By January 1945, XXI had dropped a mere 1,500 tons of bombs on Japan. Accuracy was poor, and on half the missions only one out of 50 bombs fell within 1,000 feet of the target. Once again, Arnold ran out of patience.

LeMay was moved from India to Guam to take command in January 1945. He soon lowered bombing altitude by several thousand feet to improve range and decrease the effects of the jet stream at high altitude, which played havoc with accuracy. Intelligence was still an imprecise science, but analysts determined the Japanese economy was organized into "cottage industries," unlike the large factory complexes prevalent in Europe. Half of all workers in Tokyo were employed in factories of less than 100 people.

As a result of these factors, in March 1945 LeMay made a radical change. He lowered the bombing altitude to below 9,000 feet. Because he suspected weak night defenses, he stripped the B-29s of guns, ammunition, and gunners, except for the tail gun.

In a stunning reversal of two decades of air doctrine, LeMay jettisoned the teachings of the Air Corps Tactical School that emphasized high-altitude, daylight precision bombing and ignored most of what he and other combat leaders had learned so painfully over Germany. He launched his B-29s at night in low-altitude area bombing attacks, using incendiaries against Japanese cities.

This was risky, but it worked. The Japanese were unprepared for firebombing, and the results were devastating to the Japanese economy and its military capability. The combination of lower altitude and reduced defensive armament allowed for doubling the airplane's bomb load to six tons.

In July 1945, Eighth Air Force, newly outfitted with B-29s, arrived in theater under the command of Lt. Gen. Jimmy Doolittle. The Eighth was just gearing up in the Pacific when the war ended, but the bombing already had reached a crescendo. B-29s dropped 14,000 tons in March (with 385 aircraft available), and then 43,000 tons in July (with nearly 900 aircraft on hand). Planners anticipated this figure would rise to an astonishing 115,000 tons in September with the combined might of the Eighth and Twentieth Air Forces in full operation.

But before that could happen, on Aug. 6, 1945, a B-29 dropped an atomic bomb on Hiroshima. Three days later, a second atomic bomb hit Nagasaki. After the second bomb, the emperor broke a three-to-three tie at a Cabinet meeting and sued



**B-29s sweep low over the Marianas as a US Navy construction battalion (Seabees) builds a base. XXI Bomber Command would drop 156,000 tons of bombs operating from the chain of tiny islands.**



**Gen. Curtis LeMay radically changed bombing strategies from high-altitude, daylight raids to nighttime, low-altitude raids using incendiaries.**

for peace. What had finally pushed Japan into surrendering?

In his unprecedented radio address to the nation on Aug. 15, the emperor justified surrender by referring to a “most cruel bomb” whose power was “incalculable.” USSBS members, who had deployed to Japan under survey chief Franklin D’Olier shortly after the surrender, interviewed Japanese leaders to find out what brought about capitulation.

The chief cabinet secretary, Hisatsune Sakomizu, said, “The chance had come to end the war. It was not necessary to blame the military side, the manufacturing people, or anyone else—just the atomic bomb. It was a good excuse.”

Kantaro Suzuki, the premier, confirmed this, but stated he needed the right circumstances to overcome the intransigence of the military leaders, and the atomic strikes gave him that opportunity.

The atomic bomb drops continued to cause controversy, and the USSBS added to this debate by asserting that Japan would have surrendered by Nov. 1 without the use of atomic bombs, without an invasion, and without Russia entering the war—implying the bombs were unnecessary.

But the survey’s prediction of a Japanese surrender by November was based on the assumption that the crescendo of bombing just noted would soon begin. With the arrival of Eighth Air Force on Okinawa, the tonnage of bombs dropped on Japan was scheduled to nearly triple beginning in September. The devastation to Japan would have been different, but enormous nonetheless.

What if there had been no bombing at all and no invasion? Would the US Navy’s blockade have been more humane? The

survey revealed that rationing started in 1941, and by 1945, the food situation was “critical.” But how long would a starvation blockade have lasted and how many civilians would have died before the military leaders gave in?

During the war, the Japanese held 558,000 prisoners of war and internees in prison camps. The mortality rate in these camps was around 40 percent—10 times that of the German camps. And millions of Asians under Japanese domination would have continued to suffer under occupation until a blockade played itself out.

Similar to what was done in Europe, the bombing survey conducted an analysis of the Japanese economy and its destruction by the bombing campaign, with interviews, site visits, photographs, and tons of data collected.

The directors would publish 108 reports for the Pacific, some controversial.

### Psychological Warfare

The statistics collected by the USSBS teams were illuminating. The B-29s dropped 91 percent of all bombs falling on Japan, and 96 percent of all tonnage fell in the last five months of the war. Air attacks destroyed hundreds of factories and thousands of “feeder industrial units.”

The Japanese attempted to disperse into underground factories and caves to avert the attacks, but this effort only further dissipated scarce resources. Japanese industrial production dropped between November 1944 and July 1945. In the cities not bombed, production in June 1945 was at 94 percent of its wartime peak, but in bombed cities, production fell to 27 percent of its acme. By July 1945 aluminum production was at nine percent, while oil refining and ingot steel production were at 15 percent of their high points.

The survey concluded that “by July 1945, Japan’s economic system had been shattered. Production of civilian goods was below the level of subsistence. Munitions output had been curtailed to less than half the wartime peak, a level that could not support sustained military operations against our opposing forces. The economic basis of Japanese resistance had been destroyed.”

Eight-and-a-half million people evacuated Japanese cities. This was a quarter of the urban population, although in big cities such as Osaka

and Kobe, more than half fled. One-third of the 8.5 million evacuees were factory workers, evidenced by an absentee rate of 49 percent by the end of the war.

This trend was spurred by LeMay, who in July began dropping leaflets on Japanese cities, stating they would be bombed in the next few days. One Japanese official said these leaflet drops caused panic and contributed to the evacuation of the cities. Of those remaining, hundreds of thousands of people were pressed into service to fight fires, restore utilities, and clear rubble after bombing missions, which further hindered production and attempts to disperse the armaments industry.

Morale plummeted. Polls taken by survey teams indicated that in June 1944, only two percent of the Japanese population thought they would lose the war. By December, it was 10 percent; in June 1945 it was 46 percent; and by August it had climbed to 68 percent.

As for reasons for surrender, more than 50 percent said it was due to air strikes and some 30 percent blamed it on military losses.

The Navy had played a supporting role in the defeat of Germany, but felt it had enjoyed a dominant role in the Pacific. The Navy therefore insisted on writing a series of reports detailing the history of naval operations in the theater, including amphibious operations in the South Pacific and central Pacific areas. For the Navy, these operations were essential preludes to the bomber offensive beginning in November 1944 from the Marianas. Clearly, it was looking ahead to peacetime, when the major issue of a separate Air Force would be decided.

As in Europe, there were synergies in the industrial collapse, and the Navy’s unrestricted submarine warfare campaign was important in reducing the

**These leaflets were dropped on 35 Japanese cities, including Hiroshima and Nagasaki, on Aug. 1, 1945. On the reverse side, written in Japanese, was a warning for civilians in these possible target cities.**



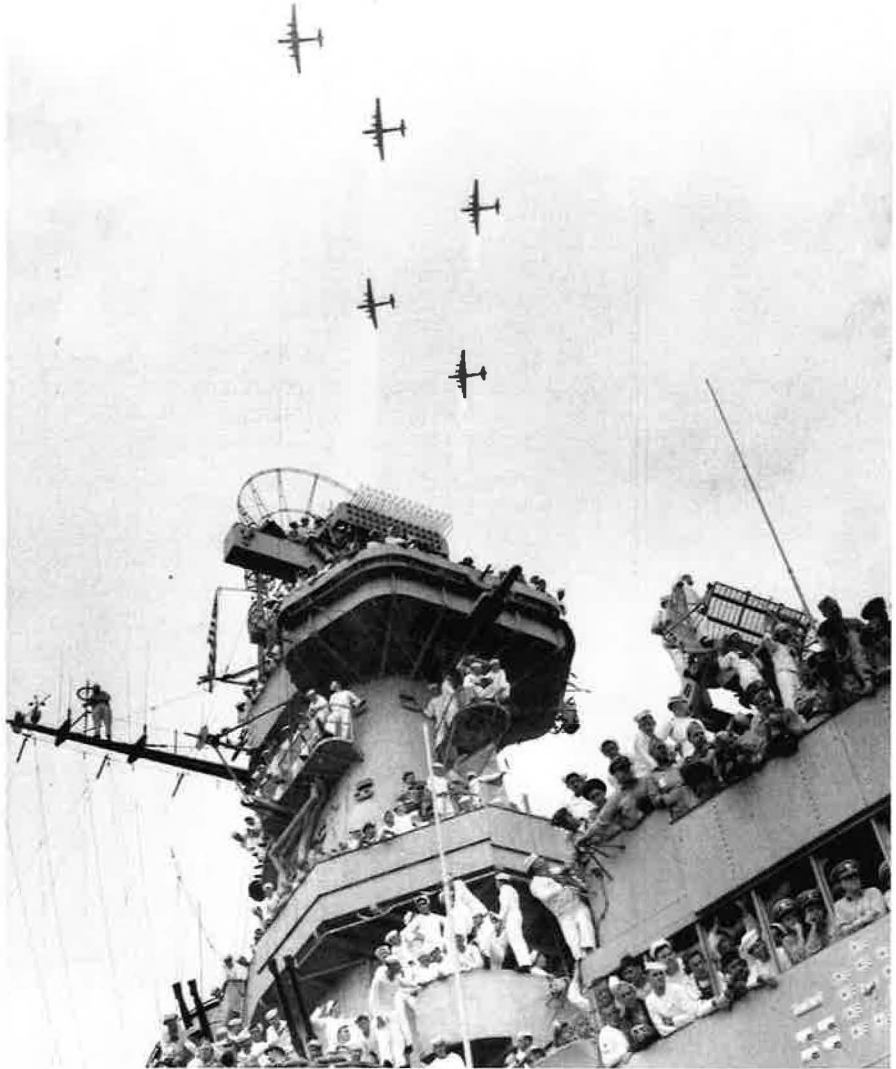
supply of raw materials to the home islands. B-29 air bases were won by the combined efforts of the Army, Navy, and AAF. The bombers then struck Japanese aircraft factories, but these factories were already low on aluminum supplies due to the blockade. However, even when aircraft were built, there were no engines to power them because bombing had destroyed the power plant factories. Even if engines had been available, there was no petroleum to fuel them because of the blockade. If there had been petroleum, oil refineries had been destroyed from the air—limiting gasoline production. The Navy's strangulation blockade was greatly assisted by the B-29 campaign that mined inland waterways and plastered Japanese airfields where kamikaze pilots took off.

The Japanese food situation was also precarious. As the war progressed, more and more farmers had to leave the land to fight or to work in the factories, thus causing food shortages. Submarines cut sea lines, and aerial mines sown by B-29s lowered imports. The bombing of factories cut fertilizer production, reducing crop yields. The need to rebuild bombed factories pulled more farmers off the land, and by the end of the war, more than one million acres of arable land were abandoned. There were many such examples that demonstrated a vicious and ever tightening downward spiral from which Japan could not recover. Japanese leaders were presented with multiple catastrophic failures they could not handle; one or two of the above might be managed, but not all of them.

Overall, at least 330,000 Japanese civilians were killed by the air attacks, about the same total as in Germany, although the losses occurred in much less time and with only one-tenth the tonnage. In addition, about 2.5 million homes were destroyed in the air attacks, and more than 600,000 others were pulled down by the government to build firebreaks.

The air campaign was not, however, a total success. The biggest strategic error made by the planners, according to the survey, was that B-29s should have struck railroads and inland waterways sooner. Such attacks would have thoroughly disrupted internal transportation, as well as significantly curtailed reinforcements to the island of Kyushu—the site of the proposed invasion in November 1945.

The B-29s played a decisive role in the defeat of Japan. Aerial bombardment reinforced the naval blockade that disrupted the economy of the country as a whole, but primarily it made ultimate victory seem



**B-29s fly over USS Missouri during the surrender ceremony aboard the battleship in Tokyo Bay on Sept. 2, 1945. If not for the bombers, Japan could have held out for months longer against the naval blockade.**

utterly hopeless to the Japanese and their leaders. No doubt Japan could have gone on for months—perhaps years—if the only threats were the starvation blockade and the slow but inexorable creep of Allied armies toward the home islands.

As Premier Suzuki phrased it, “Merely on the basis of the B-29s alone I was convinced that Japan should sue for peace.” More specifically, the psychological effect of the atomic bombs created a climate within the Japanese leadership allowing the emperor to overrule his hard-line military advisors.

The overwhelming authority of the USSBS is unassailable. Nothing like it has ever been attempted after a war. The mountain of evidence obtained, the

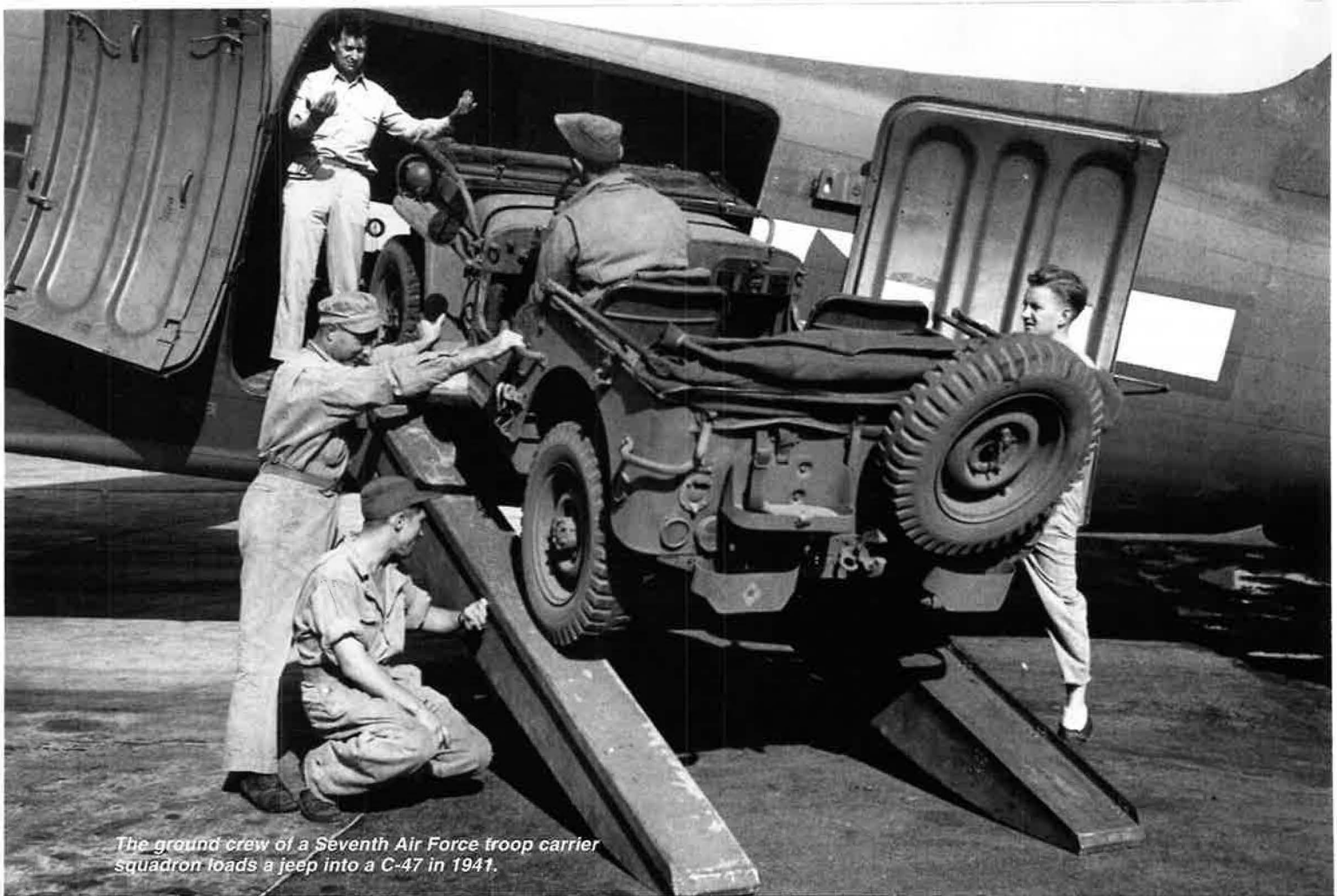
thousands of interviews conducted, the painstaking measurements taken, are simply too massive to refute.

More importantly, the USSBS provided airmen in the immediate postwar years the unimpeachable evidence they needed to carry on the fight for institutional independence. The survey's reports, and especially the concise and readily obtainable summary volumes, were widely circulated and quoted in the years to follow.

There is still much to be gained from these documents. For airmen today, the hundreds of detailed surveys still provide a rich and deeply authoritative mother lode of information regarding the effectiveness of the AAF's World War II bombing effort. ■

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*Phillip S. Meilinger is a retired Air Force pilot with 30 years of service and a doctorate in military history from the University of Michigan. He is the author of eight books and more than 80 articles on military affairs. His latest book is Into the Sun: Novels of the US Air Force. His most recent article for Air Force Magazine, “The USSBS’ Eye on Europe,” appeared in October.*



*The ground crew of a Seventh Air Force troop carrier squadron loads a jeep into a C-47 in 1941.*

# Loadmaster Evolution

**The loadmaster specialty has evolved from ad hoc beginnings to a central job in modern airlift.**

**By Sam McGowan**

**T**hough practically indispensable today for mobility missions around the world, aircraft loadmaster duties have not always been part of military air transportation.

No such crew position existed in the troop carrier and air transport squadrons of World War II. Aerial engineers had responsibility for the cargo compartment and, with help from the radio operator, dispensed air-drop bundles. Sometimes, ground personnel flew along to help handle cargo.

Air cargo officers planned the loads while ground personnel, usually from the unit that owned the cargo, performed loading and unloading. Quartermasters took on responsibility for rigging bundles for air-drop and although a passenger handling specialist had joined Air

Transport Command aircrews by 1944, it wasn't until after the Korean War that USAF established the loadmaster career field.

Before the US entered World War II, Air Corps Maintenance Command activated the 50th Transport Wing to haul cargo from depots to combat squadrons in the US, Alaska, and the Panama Canal Zone. The crew member responsible for ensuring the airplane was properly loaded and cargo secured was the aerial engineer (commonly called the crew chief)—a sort of jack-of-all-trades on multiengine aircraft.

In 1941, the 50th Transport Wing had the responsibility of providing airplanes to support new airborne regiments, and engineers had to monitor jumps, dispense air-drop bundles, and

install glider tow equipment. Shortly after the US entered the war, the Army Air Forces reorganized and ACMC's transport squadrons transferred into the new Air Transport Command.

In 1942, Gen. Henry H. "Hap" Arnold, AAF commanding general, elevated Army Air Forces Ferrying Command to form Air Transport Command. The former command was redesignated as the I Troop Carrier Command and given responsibility for training troop carrier units for overseas service. In July all existing air transport units were redesignated as "troop carrier."

By the time of I Troop Carrier Command's redesignation, transport squadrons were heavily involved in combat operations in the Pacific. Far East Air Force established an Air Transport Com-



*Kentucky ANG loadmasters guide a pallet of cargo onto a C-130 Hercules. By 1964, scanner duties on C-130s belonging to TAC were combined with loadmaster duties, and the loadmaster became part of the flight crew.*

mand on Feb. 2, 1942. It became part of its Directorate of Air Transport. To facilitate load planning, the DAT established “station control teams” made up of Americans and Australians, trained on payload capacities and weight limits of aircraft used as transports—from worn-out bombers and civilian transports to C-47s and C-53s. To staff the teams, the Army established Military Occupational Specialty 967—air transportation technician—for airmen whose duties included manifesting of cargo and supervising aircraft loading. Personnel from units that owned the cargo performed the actual loading, under the supervision of a station control officer. In 1943 Fifth Air Force combined the station control teams into the 1st Air Cargo Control Squadron. Similar units soon followed.

In July 1942, Japanese troops were advancing in New Guinea toward Port Moresby. They were met by Australians supplied by air and overland porters.

Aircrews from the 21st and 22nd Troop Carrier Squadrons flew to Moresby from Australia to pick up loads then continue northward into the mountains to deliver their cargo. A team of three enlisted men and an NCO supervised by a station control officer would load the cargo by hand, secure it with straps and ropes, and then take up stations. One man sat on the floor by the open cargo door, in position to kick out each bundle when the pilot activated the green light. Similar methods were used in Burma and adopted worldwide as the war continued. If no ground personnel accompanied flights, the crew chief and radio operator dispensed bundles.

By May 1944, as the Allies prepared to invade Normandy, IX Troop Carrier Command saw a need to formalize cargo drops. Since quartermasters processed and handled cargo, IX Air Force Service Command’s 2nd Quartermaster Depot Supply Company put its quartermasters through a two-week training course and placed them on flying status as “dropmasters.” Their duties included rigging cargo bundles and flying on drops to assist the crew chief and radio operator with dispensing the loads. But fewer than 100 had been trained by D-Day, so more than half the C-47s assigned to supply drops flew without one.

### Jettison Masters

Interestingly, although Air Transport Command was originally established to issue contracts to national airlines, it also had responsibility for operating airplanes appropriated for noncombat transport operations. In fall 1942, ATC began taking delivery of a fleet of Consolidated C-87 and Douglas C-54 transports for transoceanic missions.

In December, ATC gained control of the India-China ferry operation, which had been set up to deliver supplies to China. To maintain the India-China Wing’s transport fleet, ATC established Fireball missions using C-87s to transport aircraft parts from a depot in Ohio to bases in India. To keep track of the high-value cargo, enlisted men accompanied the cargo to destination. Since they primarily kept track of manifests, they were referred to as flight clerks—and this led to the creation of the flight traffic clerk billet.

In 1944 ATC established scheduled passenger flights from the US to Europe and the Pacific and between India and China. Flight traffic clerks ensured safety and provided passenger comfort items such as coffee, blankets, magazines, and newspapers. Cargo missions continued operating with only an engineer and radio operator. Cargo loading and securing of ATC transports was conducted by ground personnel under the supervision of air transportation technicians assigned to Army Air Forces base units.

In 1947, when the Air Force became a separate service, troop carrier operations became part of Tactical Air Command. The quartermaster rigger function remained with the Army and aerial delivery duties were an Army responsibility through the Korean War. Army quartermaster riggers installed and operated C-119 aerial delivery equipment, and Army kickers flew on C-46 and C-47 drops.

Initially, Air Transport Command had uncertain status, as no plans were made for such an organization in the new service. Military Air Transport Service was established in 1948 as a Department of Defense-wide specified command, with USAF as the lead service. The flight traffic clerk function continued on passenger-carrying aircraft but the term was changed to flight traffic specialist, then to flight steward for a time.

In 1950 the Air Force took delivery of the Douglas C-124 for MATS, TAC, and Strategic Air Command, and for the first time cargo handlers were assigned to flight crews and called loadmasters.

The assignments were due as much to the possibility of cargo jettisoning as to any particular need for a cargo specialist to fly on missions. The C-124 crew included a second flight engineer—a scanner—but the airplane’s large size and payload capacity dictated the need for additional personnel in the event a load had to be jettisoned. The aircraft also had cargo handling features requiring special training to operate. Initially, air freight personnel received training for the equipment and reported to transport and troop carrier units for aircrew duty.

Immediately after the Korean War a major reorganization of troop carrier functions occurred. The dropmaster role transferred to the Air Force and became part of the aerial delivery sections of new aerial port squadrons that

were established at troop carrier bases in the US and overseas.

An aircraft loadmaster specialty code first appeared in 1953 as a shred-out of the air transportation career field. TAC and Far East Air Forces' C-124 squadrons took on tactical responsibilities including airdrop, and loadmasters rigged and inspected cargo and operated aerial delivery equipment.

MATS and SAC assigned loadmasters to transport crews to supervise loading, operate loading equipment, and handle jettisoning of cargo. In the early 1960s, loadmaster classes were told that their primary purpose on logistical flights was for jettisoning; otherwise they were not needed on nontactical flights.

The Lockheed C-130 entered service with TAC in 1956. Initially, C-130 crews did not include a loadmaster except for airdrop, and loadmasters were assigned to aerial port squadrons. Flight crews included a scanner, who worked on the flight line when not flying.

By 1964 scanner duties on TAC C-130s were combined with loadmaster duties and the loadmaster became part of the flight crew. This was not true in MATS, however, where loadmasters were considered cabin crew and flight crews included a second engineer who performed scanner duties. In the spring of 1964 an Air Force-wide call went out for airmen to cross-train to become loadmasters and the field opened up to basic trainees.

The Vietnam War was the first conflict to see loadmasters in a combat role and showed the importance of this crew position.

Tactical transports flew into forward airfields, frequently under artillery attack, necessitating rapid off-loading. The speed of loadmasters' efforts often determined whether the aircraft became a target on the ground. Airdrops were frequent for C-123 crews and less frequent for C-130s, until the 1968 communist Tet Offensive when they became routine.

Troop carrier wings were given "special missions," particularly C-130 and C-123 sorties over Laos and North Vietnam, leaflet missions, and the Commando Vault C-130 mission delivering 10,000-pound and 15,000-pound M121 and BLU-82 bombs, including sorties to destroy the infamous Thanh Hoa Bridge in North Vietnam.

Loadmasters served on other aircraft in Vietnam, particularly AC-47 gunships and rescue HC-130s. Mobility



USAF photo by MSGt. Jeffrey Allen

**SSgt. Peter Jensen watches airdrop bundles just released from the back of a C-17 over Afghanistan.**

loadmasters often worked at forward airfields.

Vietnam saw the only award of a Medal of Honor to an enlisted Air Force aircrew member when A1C John L. Levitow received it for actions as an AC-47 gunship loadmaster in 1969.

### Integral Role

The highest award to an airlift loadmaster was the Air Force Cross awarded to SSgt. Charles L. Shaub, one of two loadmasters carrying out a C-130 airdrop over the besieged town of An Loc, South Vietnam, in 1972.

The exact number of loadmasters who lost their lives in Southeast Asia is not known due to the Air Force practice of sometimes using previous specialty codes for cross-trainees in casualty records. The USAF tactical airlift history relates that 229 transport crewmen died in Southeast Asia. Given that air-drop and special missions carried two or more loadmasters, at least 30 percent of those were likely loadmasters, not including men assigned to gunships or ground duty.

In 1970 Lockheed's gigantic C-5A entered operational service with Military Airlift Command, the successor to MATS. The revolutionary Galaxy increased responsibilities for loadmasters. Its complicated forward and aft cargo door and kneeling systems were so technologically advanced that C-5

loadmasters had a special suffix on their AFSC. In the mid-1970s the loadmaster career field moved from air transportation to a new operations career field made up entirely of aircrew skills.

At the end of the Vietnam War the tactical airlift mission was removed from tactical commands and assigned to MAC, which advocated deployment as its primary role. MAC leaders pressed for a new generation airlifter, calling for an airplane that would combine tactical as well as outsize load carrying capabilities. The solution was the McDonnell Douglas C-17, which requires a three-man flight crew, one of them a loadmaster. With the C-17, loadmasters assumed responsibilities previously belonging to flight engineers.

Lockheed continued development of the C-130 based on lessons learned in Vietnam, ultimately leading to the C-130J, which like the C-17, is designed for a crew of two pilots and a loadmaster.

Today's loadmasters are an integral part of the airlift aircrew. They receive basic training at the aircrew training school at Lackland's Medina annex in Texas, prior to aircraft-specific training at Altus AFB, Okla., or Little Rock AFB, Ark. Aircraft, organizations, locations, and equipment have evolved considerably since the term loadmaster first appeared in 1950, and the loadmasters themselves continue to evolve with the mission. ■

*Sam McGowan served 12 years in aircraft maintenance and as an aircraft loadmaster in Military Airlift Command, Pacific Air Forces, and Tactical Air Command. He is a Vietnam veteran, a retired corporate pilot, and freelance writer who resides in Missouri City, Tex.*



By Robert S. Dudley

## Price to Pay

"At a minimum, [new budget cuts] would slash all of our investment accounts, including our top-priority modernization programs such as the KC-46—the tanker—the F-35 Joint Strike Fighter, the MQ-9 remotely piloted aircraft, and the future long-range strike bomber. It would raid our operations and maintenance accounts, forcing the curtailment of important daily operations and sustainment efforts [and] surely diminish the effectiveness and the well-being of our airmen and their families."—**Gen. Norton A. Schwartz, USAF Chief of Staff, House Armed Services Committee, Nov. 2.**

## Cringeworthy Cliche

"I cringe whenever anybody makes a pronouncement that al Qaeda is on its last legs. I think one day we are going to look around and say it's been a long time since we have heard from al Qaeda, and maybe then we can say it is on its last legs."—**Army Maj. Gen. Jeffrey S. Buchanan, US military spokesman in Iraq, New York Times, Nov. 6.**

## Three Still Better Than Two

"I continue to stand by the need for a triad [of strategic nuclear weapons], and I think that certainly in the near term ... we can sustain a triad."—**USAF Gen. C. Robert Kehler, US Strategic Command, Remarks to the Defense Writers Group in Washington, D.C., Oct. 18.**

## The Troops Need Help

"This is, in many ways, the next 'greatest generation.' These are men and women in uniform who have really dedicated themselves to serving this country. ... They put their lives on the line. ... There's no reason why the leadership in Washington can't also sacrifice a little bit to find the solutions that this country needs, but more importantly that the rest of this country can't sacrifice a little bit in order to give them the opportunity that they fought and died for. ... Today, ... over 11 percent of returning veterans are unemployed. ... That is no way to repay the sacrifice that all of them have made."—**Secretary of Defense Leon E. Panetta, Remarks at a New York roundtable on veteran employment, Nov. 7.**

## Thanks for Nothing

"God forbid, if ever there is a war between Pakistan and America, Afghani-

stan will side with Pakistan. If Pakistan is attacked and if the people of Pakistan need Afghanistan's help, Afghanistan will be there with you."—**Hamid Karzai, President of Afghanistan, Interview with Geo Television, reported by Reuters, Oct. 22.**

## Wounded Warrior

"Why don't you just poke me in the eye with a needle! You've got to be kidding me. ... I'm sorry, we just gave you \$11.6 billion and now you're telling me, 'I don't really care?'"—**Army Maj. Gen. Peter N. Fuller, deputy commander of a program to train and equip Afghan security forces, responding to remarks by President Hamid Karzai, Politico, Nov. 3.**

## Chips Are Up ...

"We've got to step up the game; we've got to talk about our offensive [cyberwar] capabilities and train to them, to make them credible so that people know there's a penalty to this. ... You can't have something that's a secret be a deterrent because, if you don't know it's there, it doesn't scare you."—**Retired USMC Gen. James E. Cartwright, former JCS vice chairman, referring to US cyber capabilities, Reuters.com, Nov. 6.**

## ... And Chips Are Down

"I really don't know to what extent the weapon systems that have been developed over the last 10 years have been penetrated, to what extent the chips are compromised, to what extent the code is compromised. I can't assure you that as you go to war with a cybersecurity-conscious, cybersecurity-capable enemy that any of our stuff is going to work."—**Richard A. Clarke, former top White House terrorism advisor, Remarks at a Washington, D.C., cyber conference, Nov. 7.**

## Race Against Time

"The debate [over Iran's nuclear arms program] must recognize that time is no longer on the West's side: Further temporizing in the face of our choice of evils inevitably means that Iran will get to make the choice for us. Israel may soon have to forsake its own (conventional) military option as Iran moves its nuclear assets to hardened installations. The US doesn't suffer from Israel's military limitations, but further delay only increases the complexity and uncertainties of

any strike."—**Foreign affairs columnist Bret Stephens, Wall Street Journal, Nov. 8.**

## No Hollow Air Force

"We would rather be a smaller, capable Air Force than one that is larger and not ready. That's the strategy we're going to follow."—**Gen. Norton A. Schwartz, USAF Chief of Staff, Remarks to airmen at JB Andrews, Md., Nov. 1.**

## Snooping on Our Satellites

"Such interference poses numerous potential threats, particularly if achieved against satellites with more sensitive functions. Access to a satellite's controls could allow an attacker to damage or destroy the satellite. An attacker could also deny or degrade as well as forge or otherwise manipulate the satellite's transmission."—**Report of US-China Economic and Security Review Commission, claiming hackers, possibly Chinese, interfered with two US satellites, Bloomberg.com, Oct. 27.**

## Sending Signals

"When America sends a bomber overseas, it sends a signal. Call it what you will, ... we believe that signal is part of deterrence. And there are allies of the world who would probably like us to do it a little more."—**USAF Maj. Gen. William A. Chambers, assistant chief of staff for strategic deterrence and nuclear integration, Capitol Hill speech, Oct. 28.**

## Shielding the Sacred Cow

"The problem is that, to date, defense has contributed more than half of the deficit reduction measures we've taken and there are some who want to use the military to pay for the rest, to protect the sacred cow that is entitlement spending."—**Rep. Howard P. McKeon (R-Calif.), chairman of House Armed Services Committee, Statement, Nov. 2.**

## Tick, Tock, Tick, Tock

"I believe so [that Israel is moving toward military action against Iran]. I estimate that intelligence services of all these countries are looking at the ticking clock, warning leaders that there is not much time left."—**Israeli President Shimon Peres, interviewed by Channel Two News, Reuters.com, Nov. 4.**

By **Frances McKenney**, Assistant Managing Editor

## Orientation for the Field

Nearly 40 Air Force Association region and state presidents attended the annual orientation session held in Arlington, Va., in October. Sixteen of these field leaders were new to the job.

Before the two days of information briefings, workshops, and meetings got under way, Suzie Schwartz, wife of Air Force Chief of Staff Gen. Norton A. Schwartz, addressed the gathering.

She has had a hand in numerous Air Force family-focused initiatives and described for her AFA audience several of them. One is the Key Spouse program, aimed at supporting and maintaining contact with families of deployed airmen.

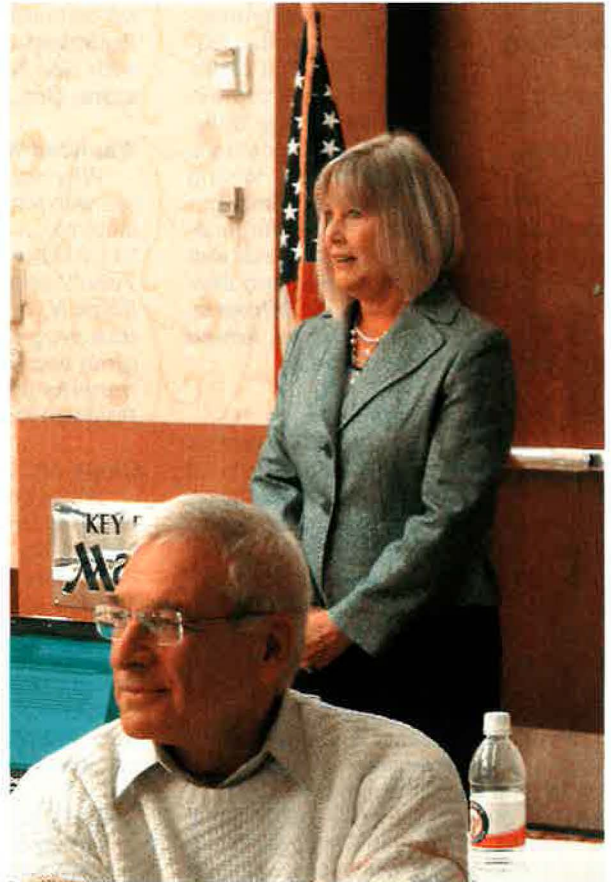
AFA region presidents then took part in an orientation session, led by AFA Chairman of the Board S. Sanford Schlitt and Vice Chairman of the Board for Field Operations Justin M. Faiferlick. As part of this meeting, each region leader gave an update on chapters in their area.

In another room, AFA state presidents held a videoconference with former Texoma Region President David Dietsch who was in Texas. He presented a primer on keeping a chapter active.

Build relationships, he said. Seek out the local-office staff members who work for your US Senators and Representatives. Develop a tie to local-media reporters. Encourage members of like-minded associations to join AFA as well. "Leverage" the inherent interest of AFROTC, AFJROTC, Civil Air Patrol cadets—"great sources of enthusiastic, energetic manpower," he said—and sign up their parents as AFA members. Offer Community Partners benefits such as access to the military and a chance to sponsor educational activities: CyberPatriot, Visions of Exploration, and sending cadets to summer encampments. Local businesses "love to be tacked on to education," Dietsch pointed out. Invite all of these groups to brief the chapter; it informs the AFA members and it involves the cadets and local businesses in a chapter activity.

Director Jay Lavender spoke to the AFA leaders that evening and screened his documentary, "Wounded Warriors' Resilience." The 20-minute film debuted in September and pays tribute to the US military members.

*At AFA's Region and State Presidents Meeting, Suzie Schwartz, wife of USAF Chief of Staff Gen. Norton Schwartz, fields a question from the audience, while AFA Board Chairman Sandy Schlitt (foreground) listens in.*



More photos at <http://www.airforce-magazine.com>, in "AFA National Report"

On Saturday morning, Lt. Gen. Larry D. James, the Air Force's deputy chief of staff for intelligence, surveillance, and reconnaissance, wrapped up the roster of VIP guest speakers with a presentation on "The State of Airpower."

## On the Hill

While in the Washington, D.C., area for September's AFA Air & Space Conference and National Convention, **Central Florida Chapter**, **Hurlburt Chapter**, and **Falcon Chapter** representatives made office calls on their US senators.

They met Sen. Marco Rubio (R-Fla.), a first-termer whom some have called a contender for the vice presidential nomination, and several of his staff members.

They also met with staffers in the office of Sen. Bill Nelson (D-Fla.).

Months of work lay behind the Tuesday morning visits. Falcon Chapter

President Lawrence A. Belge explained that Dennis M. Moran of the Central Florida Chapter began the process by making phone calls to determine who would be on the Hill when the conventioners were in town.

Belge said: "Each one of the 15 chapters in Florida also [asked] their local representative's office for their congressman's availability. ... These inquiries and requested confirmations by AFA Florida delegates [continued] up through the day before our Hill visit."

Along with Belge and Moran, James B. Connors, from the Hurlburt Chapter, and John Timothy Brock, Bonnie B. Callahan, James E. Callahan, and President William A. Yucuis from the Central Florida Chapter formed the AFA Florida delegation.

Bonnie Callahan said each AFAer specialized in a topic: supporting air-

men, caring for veterans, recapitalizing the aircraft fleet, investing in airpower, securing space and cyberspace, strengthening the nuclear mission, and CyberPatriot. Divvying up the subject areas gave every person a chance to cover AFA's Top Issues, as well as its cyberspace competition.

"At both meetings, staffers took notes and asked questions," Callahan said. "I think we all felt the meetings were productive and worthwhile."

### Happy Birthday Hoedown

September marked the 64th anniversary of USAF's founding as an independent service, and the **Tarheel Chapter** in North Carolina invited guests to celebrate it "cowboy style."

"Line dancing lessons if needed," they promised.

Taking their cue, the 50 guests showed up for the barbecue dinner and dance at the American Legion post in Raleigh decked out in gingham, cowboy hats, boots, jeans, and leather vests.

Chapter Secretary Joyce W. Feuerstein reported that the male AFROTC cadets from the University of North Carolina at Chapel Hill and North Carolina State University were shy at first. But they eventually tried the Texas two-step.

"Boot Scootin' Boogie," a 1990s hit by country music duo Brooks & Dunn sparked a line-dancing revival then and proved just as popular at this party.

Special guests included Community Partner Chioma Ugwa, a pharmacist, whom Joyce Feuerstein credited with funding the key to this birthday: the disc jockey, Clayton Fincher.

Other local businesses provided raffle items, some of them quite practical: an oil change and tire rotation, for example. Feuerstein said a hamper for separating laundry was a surprisingly hot item.

Call the evening a success. "No one was eager to leave," Feuerstein said, and the students asked for an encore hoedown next year. "Any time we can get a teenager to offer an opinion as well as a compliment, it's very special," Feuerstein noted.

### USAF's Birthday at Keesler: It's Back

For the first time since Hurricane Katrina, the **John C. Stennis Chapter** sponsored the Air Force Ball in September for the airmen of Keesler AFB, Miss.

It had been the chapter's annual project until the 2005 hurricane hit the Gulf Coast, causing extensive storm-surge damage to the base.

The chapter itself didn't get back on its feet until May 2008.

This September's birthday celebration at Keesler included several days of activities ranging from sports and games to live music.

The Saturday evening Air Force Ball featured music by the Biloxi High School Jazz Band, a POW/MIA ceremony per-

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- A CEO gathering with senior Air Force and DOD leaders held in conjunction with the AFA Annual Conference in September
- Invitations to meet senior leaders from foreign air forces at numerous events, including AFA's Annual Air Attache Reception and official foreign air chief visits

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- Up to 50 AFA individual memberships



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formed by the Keesler Honor Guard, and retired Col. Murphy Neal Jones as guest speaker.

In June 1966, then-Captain Jones was part of a mission to destroy a petroleum storage facility near Hanoi when anti-aircraft fire brought down his F-105. He endured more than six years as a POW.

During his repatriation, Jones spent time recovering at Keesler Medical Center. His appearance at the Air Force Ball was a kind of homecoming for him, said Chapter VP John E. Anderson. Jones now lives in Louisiana and belongs to the **Maj. Gen. Oris B. Johnson Chapter**.

For the Stennis Chapter, sponsoring the birthday ball required hands-on organization of every aspect. Chapter Treasurer Teresa Anderson rounded up volunteers to set up online ticket sales, collect tickets at the door, oversee the party favors, and even arrange for audio-visual equipment at the ball's venue, Keesler's Bay Breeze Event Center. Chapter President Lt. Col. Scott Solomon pitched in to find sponsors in the business community. The chapter asked several organizations, such as the base protocol office and the Top 3 group of senior enlisted personnel, to tap their contacts for help in carrying out this event.

Some 300 guests attended the formal.

### Homecoming in Sumter

Fall means homecoming season, not only for schools but, apparently, for the city of Sumter, S.C., as well.

In September the **Swamp Fox Chapter** co-hosted its annual dinner with the Greater Sumter Chamber of Commerce, and three former 9th Air Force commanders, once stationed at nearby Shaw Air Force Base, turned out for the event: Pacific Air Forces Commander Gen. Gary L. North, retired Air Force Chief of Staff Gen. T. Michael Moseley, and retired Maj. Gen. William L. Holland.

Two former 9th Air Force vice commanders joined them: retired Maj. Gen. Thomas R. Olsen and retired Brig. Gen. Hugh C. Cameron. Both belong to the Swamp Fox Chapter, as does Moseley.

Maj. Gen. Stephen L. Hoog, who had only two weeks left as head of 9th Air Force, also attended the dinner, held at a country club. (Hoog assumed command at 11th Air Force, JB Elmendorf-Richardson, Alaska, on Nov. 7.)

Even US Rep. Mick Mulvaney stopped by for the social hour. The freshman Republican's district includes the base, and he also sits on the House Budget Committee.

A local newspaper, *The Item*, reported that North spoke to the crowd of more than 150 guests about the challenges

the US military faces in maintaining its "overmatching force" despite budget cuts.

Reporter Jack Osteen wrote in his column that North also told the gathering: "Sumter is the strongest military community I've seen in my 35 years of service in the Air Force."

The Sept. 29 dinner marked the 12th time the AFA chapter and local chamber of commerce have co-hosted the event, noted Chapter President David T. Hanson.

### The Transition to Reapers

The 174th Fighter Wing commander, ANG Col. Kevin W. Bradley, spoke to the luncheon meeting of New York City's **Iron Gate Chapter** in October.

He covered his four deployments to Iraq and Afghanistan in the F-16, the 174th's heritage, and the variety of aircraft the unit has flown—basically a history of USAF fighter aircraft in a nutshell: the P-47, F-84, F-100, A-10, F-16, and now the MQ-9.

The wing began operating the Reapers over Afghanistan in December 2009, from its operations center at Hancock Field in Syracuse. The 174th then became an MQ-9 formal training unit and maintenance training facility.

A few days after Bradley spoke to Iron Gate members, the unit received

FAA clearance for Reaper training flights over remote areas of upstate New York.

Chapter President Frank T. Hayes said his group learned about on-site operations, takeoff, landing, ground servicing, and rearming of the Reapers. "A lively Q&A followed," he said. Chapter members asked about integrating the MQ-9 with commercial traffic and about "stress after a day of intensive combat from a console."

### Shoe-in for Teacher of the Year

In Oklahoma City in September, the **Central Oklahoma (Gerrity) Chapter's** aerospace education VP presented the State Teacher of the Year award to an instructor who'd earlier been named its Chapter Teacher of the Year.

James Putnam presented the state-level award to Brandi Williams before an audience of her fellow teachers during an in-service workday for Westmoore High School in Oklahoma City.

Putnam said when the chapter submitted Williams' nomination for its award, the AFA state awards committee found it "so extraordinary" that they granted her the state award also and plan to nominate her as AFA's national Teacher of the Year.

A biology teacher, Williams has landed grants to fund new and more-diverse biology lab equipment for her

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students. She introduced them to DNA studies through course material from Cold Spring Harbor Laboratory, a research and education institution in Cold Spring Harbor, N.Y., specializing in molecular biology and genetics. Williams' students thus have "cutting-edge, exciting biotechnology activities to do in the classroom," commented Putnam.

#### More Chapter News

■ Three members of the **Thomas W. Anthony Chapter (Md.)** visited the Airmen Leadership School at JB Andrews, Md., in October. Harold Harris spoke to them about World War II, Korea, and Vietnam. He is 87 years old. He later described the value of AFA, stressing its role in advocating on Capitol Hill for young men and women in uniform. Maryland State President Joseph L. Hardy handed out a list of chapter activities on base and in the community. Shedrick S. Roberts, chapter aerospace education VP, was also on hand. Harris later represented the chapter at the ALS graduation, presenting the Academic Achievement Award and Commandant's Award.

■ AFA Vice Chairman of the Board for Aerospace Education George K. Muellner joined **Orange County/Gen. Curtis LeMay Chapter** members at a USAF anniversary celebration in September in Newport Beach, Calif. Chapter President Bryan Roland

helped an American Legion committee in planning the event and promoted it in his chapter's newsletter. Some 35 AFAers attended the celebration, held at the American Legion Post. The LeMay Chapter sponsored several guests for this evening of dinner and dancing: local-area recruiters TSgt. Jennifer Guevarra and SSgt. Vanessa Richardson and Lt. Col. John Kanuch, the deputy commandant of the US Air Force Test Pilot School at Edwards AFB, Calif. Retired USAF Maj. Gen. Donald G. Hard was guest speaker. Before retiring in 1993, he led space and strategic defense initiative programs in the Air Force's acquisition office.

■ In Minnesota, the **Richard I. Bong Chapter** held its September meeting at the local Commemorative Air Force museum at Duluth Airport. Dewayne H. Tomasek from the CAF—and a Bong Chapter member—provided an update on the collection that includes a hangar of vintage aircraft and military aviation memorabilia. Also during this meeting new Chapter President Keith Johnson presented information on an Honor Flight that he volunteered to help with in May. It was the first Honor Flight involving the Bong Chapter. Honor Flights bring war veterans who otherwise can't afford the trip to Washington, D.C., so they can visit the World War II Memorial.

■ Florida Region's new president, Michael H. Emig of the **RedTail Memorial**

**Chapter** in Ocala, Fla., and Joseph E. Sutter of the **Gen. Bruce K. Holloway Chapter (Tenn.)** were guest speakers at a regional conference of the Arnold Air Society and Silver Wings. AAS has been affiliated with AFA since the 1950s. Eighty-three students attended the conclave, held at the University of Florida, where Emig spoke about AFA. ■

reunions@afa.org

## Reunions

**324th FG**, including **314th FS**, **315th FS**, and **316th FS**. May 3-6 at the Menger Hotel in San Antonio. **Contact:** Winona Henry, 1618 Wishbone Dr., Abilene, TX 79603 (325-374-7985) (aggie79@engineer.com).

**Pilot Class 56-P and Nav Class 56-08C**. May 15-19 in Colorado Springs, Colo. **Contact:** Roger Dilling (864-944-1880) (rodilling@mindspring.com). ■

E-mail unit reunion notices four months ahead of the event to [reunions@afa.org](mailto:reunions@afa.org), or mail notices to "Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

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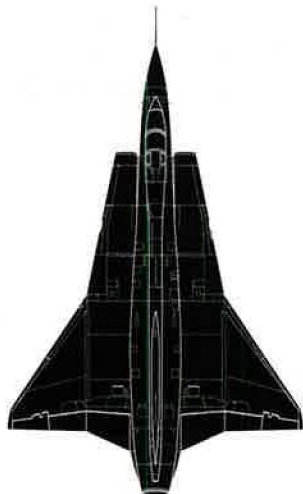
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## J35 Draken



The redoubtable J35 Draken, sporting a revolutionary double-delta wing design, served for nearly four decades as Sweden's principal fighter and reconnaissance aircraft. It was tailored to meet Sweden's special needs as an armed neutral, which it did through use of unique design features and rugged construction.

The Draken (or "Dragon" in English) had stiff requirements. Sweden called on Saab, the aircraft manufacturer, to build an interceptor with an extremely high rate of climb, supersonic speed of at least Mach 1.4, and the capability to operate from Sweden's defense system of reinforced roads used as runways. To do all of this, the Saab engineering team created a unique double-delta

design to obtain favorable flight characteristics at both high and low speeds. The double delta also provided adequate space for fuel and a variety of weapons. The radical concept was tested first on a 70 percent scale Saab 210 which made its first flight on Jan. 21, 1952. Three prototypes were built and production aircraft entered service in early 1958.

The single-seat interceptor was highly maneuverable, with a top speed exceeding Mach 2. Eight versions of Draken were built, each offering improvements in performance or equipment. All Swedish Drakens were interceptors with limited air-to-ground capability, though they measured up as effective supersonic Cold War fighters.

—Walter J. Boyne

**This aircraft:** Swedish Air Force J35F-2 Draken—#44—as it looked in 1978 when assigned to F13, Bravalla Air Force Wing based at Norrköping.



### In Brief

Designed, built by Saab ★ first flight Oct. 25, 1955 ★ crew one or two (trainer) ★ number built 644 ★ one Svenska Flygmotor RM6C (licensed RR Avon) turbojet engine ★ **Specific to J35F:** typical armament, one 30 mm cannon; two RB-27 and two RB-28 missiles; up to 2,250 lb of ordnance ★ max speed 1,317 mph ★ cruise speed 590 mph ★ max range 2,020 mi ★ weight (loaded) 28,000 lb ★ span 30 ft 10 in ★ length 50 ft 4 in ★ height 12 ft 9 in.

### Famous Fliers

**Notables:** Bruno Grossmeir, Teja Reichhuber, Bjorn Svedfeldt.  
**Test Pilots:** Stig Holmstrom, Bengt Olow, Per Pellebergs.

### Interesting Facts

Flown by air arms of Sweden, Austria, Denmark, Finland ★ built for operations from reinforced public roads ★ could be refueled and rearmed by conscripts in less than 10 minutes ★ exceeded Mach 1, accidentally, on first flight in afterburner ★ obtained emergency power from under-nose ram turbine ★ flown by "Acro Delta" exhibition team ★ used drag chutes to reduce landing distances ★ able to sustain 10G turning force ★ suffered from "Superstall," for which specific recovery techniques were taught ★ zoomed from takeoff to 33,000 feet in four minutes.



*The Austrian Air Force also flew the Draken.*



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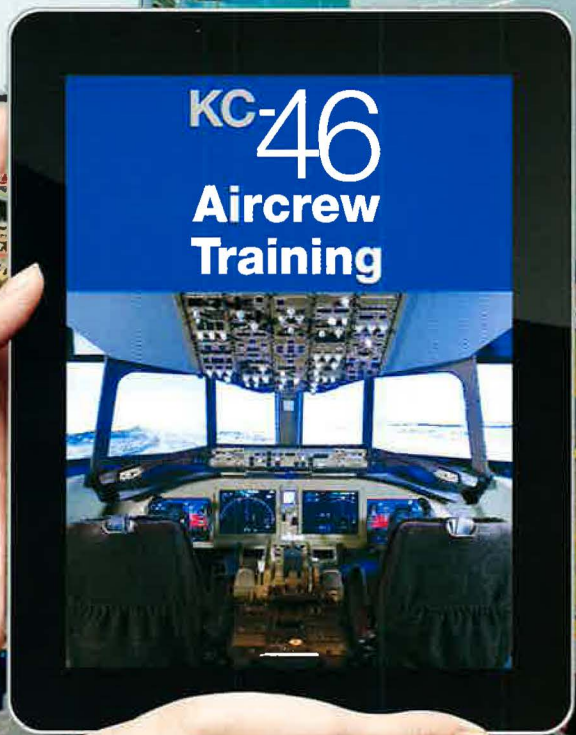
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