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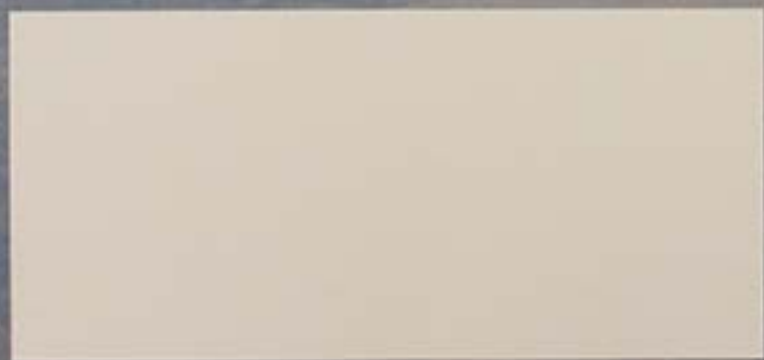
JOURNAL OF THE AIR FORCE ASSOCIATION

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JOURNAL OF THE AIR FORCE ASSOCIATION MAGAZINE

December 2009, Vol. 92, No. 12



About the cover: Three F-16Cs of a combined Air National Guard-Air Force Reserve weapons test unit. See "The Testers From Tucson," p. 42. Photo by Jim Haseltine.

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The F-35 Dice Roll

This fall, the F-35 Lightning II fighter got clobbered with bad news. The military Web site InsideDefense.com on Oct. 22 reported warnings of huge cost increases and delays. It cited as a source a secret review by the "Joint Estimate Team" of Pentagon, Air Force, and Navy experts. Other media soon piled on.

DOD seemed rattled. Spokesman Geoff Morrell suggested the JET might have been overly "pessimistic." DOD noted it was working up plans to steer the F-35 away from the JET-predicted dangers. Technical explanations were adduced.

All of that happened before anything bad had really taken place, a fact noted by our own John A. Tirpak in "Washington Watch: F-35's Death Spiral?" on p. 8. "No new costs have actually been added yet," he said, though DOD may be "procedurally required" to raise its cost estimates at some point.

As should be evident to all, top Pentagon leaders have become awfully twitchy about any problems—real or imagined—threatening the F-35 program. They should be. They have laid down a massive bet on this fighter. As Morrell noted, "We have a great deal riding on ... this program."

Indeed. The Air Force, Navy, and Marine Corps are on the hook to build F-35s through 2035. USAF would take 1,763 F-35As; 680 B and C models would go to the sea services. There are no really good alternatives. So, it is no stretch to say that US combat aviation hinges—worryingly to some—on the success of this lone \$300 billion fighter project.

In this matter, the Air Force Association is not neutral. We strongly back the F-35 as the key to the recapitalization of the aged USAF fighter force. It should be fully funded at a high rate of production. We are aware that there can be honest differences about total numbers, but, like Defense Secretary Robert M. Gates, we believe "we cannot afford ... not to have this airplane."

Having turned our cards face up, however, we feel free to offer some perspectives on the current controversy gripping the fighter program.

First, the veracity of the JET's claims about the program is virtually unknowable because the claims deal with future events. F-35 critics and supporters

alike can make plausible cases for their positions, but they are, in the end, unprovable.

F-35 critics note the F-35's total program cost, as calculated today, runs to \$298.8 billion. According to the Pentagon's most recent acquisition report to Congress, that sum reflects cost growth of more than 44 percent since 2002.

Moreover, say the detractors, prime contractor Lockheed Martin is behind schedule on its flight tests, which breeds suspicion.

US combat aviation hinges—worryingly, to some—on this lone \$300 billion fighter project.

Others flatly reject the JET's predictions. For example, Loren B. Thompson, a defense analyst with the Lexington Institute, insists, "The JET estimates are wrong." He asserts it has been "forced to trim earlier predictions of an \$800 million cost overrun in Fiscal 2011, because the program is performing better than it expected."

Additional pro-F-35 claims are recounted by Tirpak in his report. None, however, offer a definitive response to the JET's charges.

The second point to make is that a burst of F-35 criticism at this time was perfectly predictable. The pattern of the past four decades has been that, when a major aircraft program nears full production, it is targeted and attacked as "unaffordable" and "unnecessary," if not actually ineffective or dangerous.

In the 1970s, critics found fault with the new E-3 Airborne Warning and Control System aircraft, branding it as an expensive piece of junk lacking any real mission.

In the 1980s, "military reformers" claimed the F-15 air combat fighter was too complex to operate or maintain and would prove to be ineffective against smaller and nimbler adversaries.

In the 1990s, the B-2 bomber was the target of many predictions, including a feckless claim that its stealth coatings would "melt" in the rain.

The most recent airplane to be so attacked was USAF's F-22 Raptor.

As we all now know, however, these are among the all-time great performers in the history of US military aviation.

Until now, the F-35 has gotten by unscathed. Those days surely are over. With its eye-popping total program cost, it has become the latest fat target for Congressional and media scrutiny and complaint.

The third point to make is that the Obama Administration, with Gates in the lead, banked far too heavily on the F-35 program. In doing so, it needlessly placed USAF fighter aviation—and thus national defense—at risk.

This spring and summer, as Gates and the anti-F-22 brigade pressed to kill that fighter program, the Pentagon chief asserted his faith in a forthcoming buildup of F-35s. He claimed it would permit the Air Force to safely halt F-22 procurement at 187 fighters, half of the real requirement.

Even at the time, others warned that, until the F-35 has been successfully demonstrated and produced at higher annual rates, DOD should play it safe and keep the F-22 line going. Gates dismissed this argument, convinced Congress he was right, and got his prized F-22 kill.

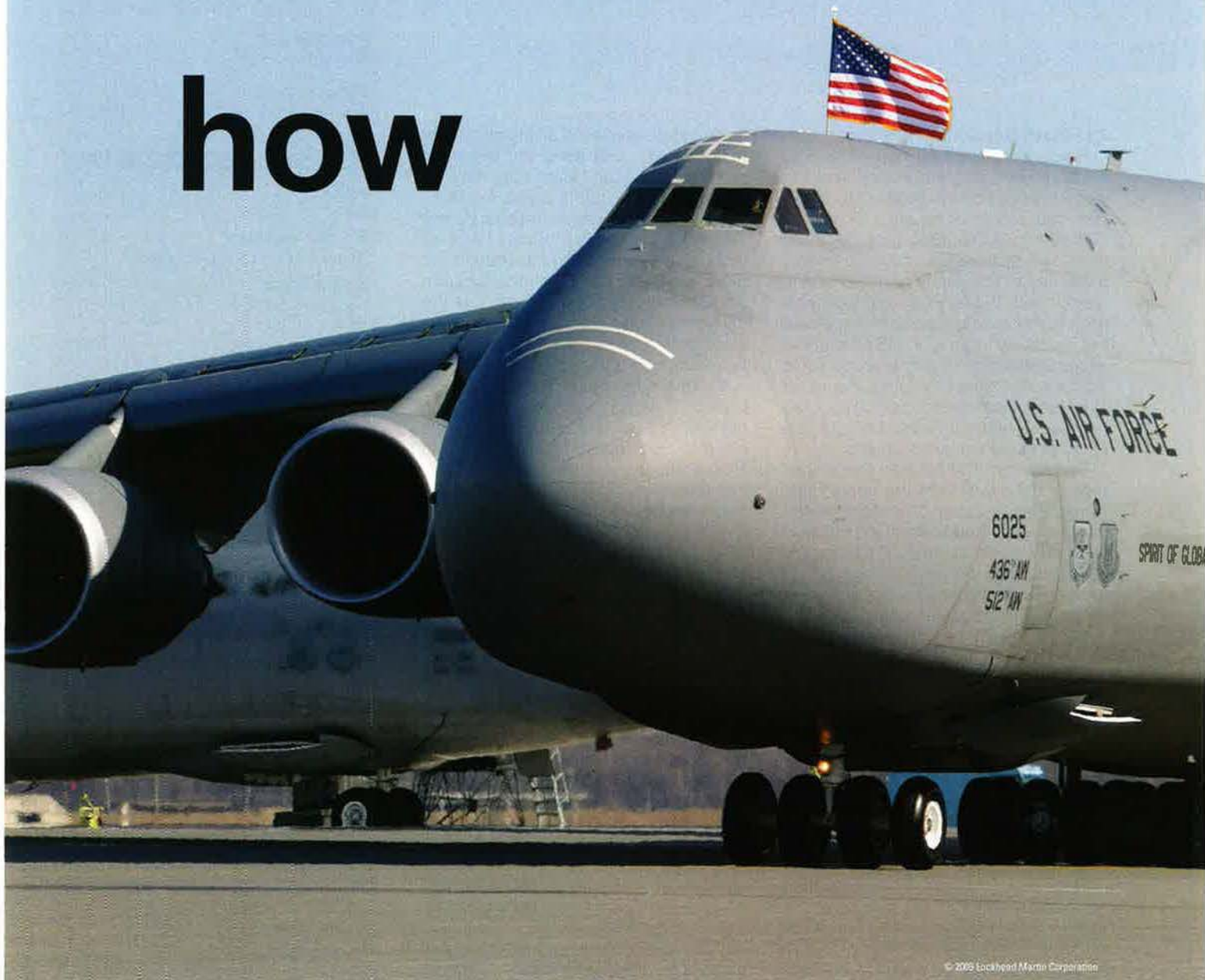
Thus, in the Pentagon's unintentionally funny approach to the stewardship of Air Force airpower, top officials took what was a broad and fully funded plan and whittled it to a single fighter program.

In so doing, DOD officials advanced the argument that this new single-fighter approach would afford greater efficiency and flexibility, not only for the Air Force but also for the other US services and for many allies. Now, however, the F-35 has begun to experience political and developmental turbulence, and we shall see. We can only hope that we are not in for an unwelcome comedy of collapsing scenery and exploding cigars.

If we want to maintain a capable fighter force, we must get on with the F-35 and do whatever possible to make it work.

Gates and his amen chorus in Congress have rolled the dice. Now, he—and we—must hope that this gigantic fighter program does not come up snake eyes. ■

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The Sixth Generation Fighter

Since the Air Force bought its first F-100, every fighter that has entered the inventory has had the ability to fly faster than the speed of sound [*"The Sixth Generation Fighter," October, p. 38*]. It has been an article of faith that supersonic capability is absolutely required in any new aircraft. The Air Force has even had a few bombers with supersonic capability. Yet, as far as I know, no USAF combat aircraft has needed to employ supersonic flight in order to successfully accomplish its mission. Even when supersonic aircraft have gone head-to-head, the fight has taken place at subsonic speeds.

The Air Force has a supersonic trainer. How many pilots have the opportunity to experience supersonic flight during pilot training? And to what end, if they will never need to employ supersonic speeds in accomplishing their operational missions? Will the eventual replacement for the T-38 be a supersonic aircraft?

We have a fighter (the F-22) that has the ability to supercruise. However, I suspect the F-22's range is so short that the supercruise capability is of no real utility.

I was an electronic warfare officer, not a fighter pilot. When I have queried fighter pilots on why a fighter needs to be able to fly at supersonic speeds, I have received reactions ranging from blank stares to an honest statement that there is no reason at all.

Now I read that the Air Force's sixth generation fighter is likely to have the ability to fly at hypersonic speeds. Supersonic capability is expensive at all stages of an aircraft's life cycle, from design and development through production to operations and maintenance. Supercruise is more expensive yet. Hypersonic speed will be hyper-expensive. Perhaps Congress will finally get its wish from the early 1900s. The Air Force will only be able to afford one airplane, and the pilots will have to take turns flying it (perhaps by remote control). Why should we pay for speed we will likely never need?

Making speed a requirement is a subversion of requirements logic. Speed should be a solution driven by real mission requirements. I would like to see a mission requirement that forces the design of an aircraft with supersonic capability. Until then I will remain a skeptic.

This logic applies to all the glitzy new technologies proposed for the sixth generation fighter. While they may be interesting and fruitful areas for R&D, proposing them for an operational aircraft is putting the cart before the horse. No new technologies should be included in the procurement of an operational weapon system until it is clearly shown that the capabilities they bring address real mission needs, and that those needs cannot be met by already mature technologies.

Cutting-edge technologies can be traded off against aircraft production numbers to get the force structure we need to accomplish the mission. The F-22 production cutoff at 187 airframes has taught us a bitter lesson. I hope we can learn from it.

Lt. Col. Richard F. Colarcc,
USAF (Ret.)
Colorado Springs, Colo.

I enjoyed reading the article in your October 2009 issue on "The Sixth Generation Fighter." What puzzles me is that you categorize both the F-22 and the F-35 as fifth generation fighters. The F-22 has supercruise and the F-35 does not. The F-22 has supermaneuverability and the F-35 does not. The F-35, in short, is degrading the definition of the fifth generation fighter. The F-35 should be a perfectly capable fighter-bomber, but let's not pretend that it is in the same category as the F-22 air superiority fighter.

Randy Carey
Arlington, Va.

I am sure you will get a number of e-mails regarding the fighters you left out in the article on fighter generations. As president of the Super Sabre Society, I feel I can speak for our nearly 1,400

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members that leaving the F-100 out of the Century Series fighter list was, to say the least, an oversight. The Hun was the first operational USAF jet capable of straight and level supersonic flight. It not only flew the first fighter strike mission in the Vietnam War, it flew more combat missions in Vietnam than any other fighter. It was the mainstay of the tactical nuclear strike force for most of the Cold War. I, of course, could go on, but I think you get my point.

Maj. Gen. Bill Gorton,
USAF (Ret.)
Park City, Utah

Ballistic Missiles

This article ["The Day of the Atlas," *October, p. 60*] brought back many memories of ballistic missile defense 50 years ago. As a captain with a background of flying the F-51, F-86, F-80, F-89, and F-100, I was assigned to BMD Re-entry Development section. The pace of activity and competence of the BMD personnel was amazing. My first task was to assure that the Mark II re-entry vehicle and warhead met the scheduled Strategic Air Command operational date for Atlas D at Vandenberg Air Force Base, Complex 576B.

During this process, an interesting event occurred. Nikita Khrushchev was in the United States. He had made statements concerning the USSR's superior ICBM program. Now he was in California and planned to take the train from Los Angeles to San Francisco. Our problem was that this route went directly past Vandenberg, and was in sight of Complex 576B. I recall the discussions of what we should do. After considering many options, we concluded that we should afford him the opportunity to see the Atlas ICBM "on alert, armed, and ready" as the train passed Vandenberg. At the time, we had no information about his reaction, but years later, I learned he may not have been too impressed, mistaking the Atlas for an anti-aircraft missile.

It is interesting, however, that on May 20, 1960 BMD fired this Atlas from Florida to the Indian Ocean. This flight demonstrated that the Atlas had a range of over 9,000 miles. (I'm sure the USSR took note.)

By then my job was development of the Mark 6 re-entry vehicle for the Titan II. In the spring of 1963, we turned the Titan II over to SAC as an operational system. Then my career returned to manned systems (MOL and space shuttle), but I will always remember the dedication and excitement of the BMD "Cold-War warriors" of the 1950s and 1960s.

Col. J. L. Fisher,
USAF (Ret.)
Las Vegas

The excellent article about the Atlas ICBM detailed all aspects of the program but failed to mention the issue of transporting ICBMs to and from their bases. Initially, they were moved overland on a transporter, a slow and hazardous process. The thin-skinned missiles were exposed to any number of hazards. As one comment put it, "a kid with a BB gun" could disable an Atlas.

The solution to this problem was to transport ICBMs by air. This mission became standard for the Douglas C-133 Cargomaster heavy transport. The C-133A first flew in April 1956 and was soon routinely hauling the Thor IRBM to bases in England. The prospect of faster, more reliable, and safer ICBM delivery led to modification of the C-133 airframe that enabled ICBMs to be loaded. Douglas built a C-133B fuselage as a test article, which was used for initial loading testing at Long Beach. The last three C-133A airframes were modified to B standard by changing the aft cargo doors to the now-familiar clamshell configuration and the first of these was delivered to the Air Force in October 1959. They were followed by 15 C-133B aircraft. All 18 aircraft were assigned to Travis Air Force Base and were flown by the 84th Military Airlift Squadron.

ICBM airlift was calculated to be 20 to 30 times faster than other methods, 20 percent cheaper, and far more secure. The first airlift of an Atlas was on 3 Nov. 1959, moving the rocket from NAS Mira-

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mar to F. E. Warren AFB, Wyo. Over the years, Atlas missiles were moved to nine operational bases across the US. They were also hauled from those bases to Vandenberg for periodic actual launches, including the first launch of an Atlas D in June 1960. C-133s also transported Atlas rockets to Cape Canaveral to support the space program. These included the Atlas used to launch John Glenn's Mercury flight.

The Titan and Minuteman ICBM programs also employed C-133s for deployment. The first Titan flight was in November 1958, when the rocket was moved from Lowry AFB, Colo., to Cape Canaveral. Titans were flown from Lowry to seven other bases, until the C-133 was retired in 1971.

The Minuteman program made heavy use of the C-133. More than 500 Minuteman I and II missiles were delivered from Hill AFB, Utah, to six operational bases between January 1962 and November 1963, with many more to come before the Cargomaster's retirement in August 1971. The missile and transporter weighed as much as 73,000 pounds, presenting big challenges for a takeoff in summer temperatures at Hill's elevation and in winter icing conditions.

The C-133 was also heavily involved in the space program. One C-133 was actually dedicated to NASA support for several years. The airplane was so important to NASA that it was described as "the first stage of all our missiles."

Without the C-133, the ICBM program would have been far more expensive and much less secure in delivering missiles to their destinations.

Lt. Col. Cal Taylor,
USAF (Ret.)
Olympia, Wash.

Who Built the Airplanes?

Yes, this is a good question. It was raised in the "Chart Page" [p. 36] in your October issue. The chart and text is designed to show the great contribution of the established aircraft industry, as compared to the automakers, to airplane production during World War II.

I think this analysis shortchanges the automakers in two ways, one directly and the other indirectly.

First, the chart overlooks the 8,685 B-24 heavy bombers produced by Ford during the war, a number almost equal to the 8,810 total of Martin airplanes. And the chart overlooks the 5,280 FM-1 and FM-2 Wildcat Navy fighters and 7,546 TBM Avenger Navy torpedo bombers, built in General Motors plants. That total of 12,826 GM planes is close to the number of planes built by Bell.

Secondly, while not specifically addressed by your chart, I think you will

agree that the engines that drove the planes were probably their most important component. In this case, I found a scholarly contemporary report with tables, which unfortunately only showed aircraft engine production through 1944. Even so, the numbers are impressive.

Packard built 26,759 Merlins. Buick built 63,568 Wright R1820s and Studebaker built another 57,077. Chevy built 54,672 P&W R1830s. Dodge built 6,053 Wright R3350s. Ford built 44,198 P&W R2800s, while Nash-Kelvinator built another 11,957.

I believe these contributions by the auto industry to World War II aircraft production were significant.

Sam V. Smith
Arlington, Va.

McNamara Again

I was stunned at the criticism of your McNamara editorial [*"The No-Brainers of Robert S. McNamara,"* August, p. 2] by William Phillips and Karl Larew; it is fatuous, wrongheaded, historically inaccurate, myopic, and generally bizarre [*"Letters: Arrogance from the Secretary,"* October, p. 4].

Eisenhower thought Laos was the center of gravity in Southeast Asia; it was John F. Kennedy who decided that it was Vietnam. The coup that ousted Diem and his brother (and resulted in their murders) was approved by Kennedy on the strong recommendation of our ambassador, Henry Cabot Lodge, whom JFK had banished to Vietnam to weaken Lodge's position as the GOP Presidential candidate against whom Kennedy would have to run in 1964. The imperious and condescending Lodge was probably the worst choice Kennedy could have made. Phillips' contention that the Cuban Missile Crisis "turned out well" is simply silly. As H. R. McMaster pointed out in his definitive work on the McNamara-Johnson War, *Derelection of Duty*, our Secretary of Defense learned all the wrong lessons from the Cuban fiasco and assumed that "graduated response," which had worked in that situation, was the silver bullet that [would] work in any crisis. Our defeat in SEA proved that was only one of McNamara's myriad misjudgments. The list of "other powerful people" offered by Phillips does nothing to bolster his case. Dean Acheson, Bobby Kennedy, and Clark Clifford were all consistently wrong about what should have been done in "The Great War To Make Southeast Asia Safe for Democracy." Larew's contention that "McNamara (and President Johnson and Cabinet) were far better placed to make basic policy judgments than were the Joint Chiefs of Staff" is risible, as is his contention that a more aggressive and militarily sound approach would have

"almost certainly ... led to all-out war with China and perhaps with Russia as well." There is absolutely no credible evidence to support such a ludicrous assertion.

I recommend that both Phillips and Larew read McMaster and Mark Moyar. Had both gentlemen read their books, they would have been well-informed enough not to write such silly and un-informed letters. McNamara and LBJ micromanaged the war from the Oval Office, and neither was even a talented amateur. Had the professionals been allowed to take charge, we might well have won. McNamara and LBJ must be held accountable for their incompetent and ham-fisted prosecution of the war and for what McMaster rightly labeled "derelection of duty."

Lt. Col. Frank Howe,
USAF (Ret.)
Denver

Rules of Engagement in Afghanistan

Wow, I bet those Taliban and al Qaeda commanders in Afghanistan were overjoyed to hear that our new military air approach will involve "Buzzing, Not Bombing" [*"Air Force World: Buzzing, Not Bombing?"* October, p. 10]. I wonder how our ground troops, who depend on timely and strong air support for their survival, will feel about this new policy?

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Who does our new Air Forces Central commander think we are fighting—a crowd at an air show? Our enemies are tough, fanatical, and totally dedicated to killing as many of our troops as they can. You can't negotiate with these people, treat them with kid gloves, or "scare" them off by airplane noise.

Can you imagine our fathers in World War II firing noisy blanks rather than actually trying to shoot down the kamikazes? In a war, you have to kill the enemy, who is dedicated to killing you before they actually *do* kill you—a practice we followed in World War II but have apparently forgotten in Korea, Vietnam, and now it appears in Afghanistan. This isn't a warm fuzzy courtroom scenario where you can negotiate with the enemy—this is a war whose final outcome will depend on one side soundly defeating the other—remember World War II? If a country does not want to engage in the reality of war, then they should not be in one, let alone place someone in a position of authority who believes in the superiority of noise over bullets and bombs to decide the war's outcome. Either fight the war to kill the enemy or pull out, come back home, and hunker down and hope the enemy doesn't get to our shores. If we don't get the military focused back to the basic mission of killing and defeating the enemy, then we will just steadily continue to lose our young men and women.

We will have accomplished nothing to enhance our security or the security of the region and the world—remember Korea and Vietnam? It's not wrong to win a war—much better than to lose one. Actually, we could just subcontract the air war out to the Israelis—they don't play silly noise games, and they understand the meaning of kill or be killed. At the very least, put a Marine Corps aviator in charge of air ops. Just makes me nervous when we are at war and an active Air Force commander begins to sound more like a politician than a warrior.

Don Hultin
New York

After reading the main articles in the October issue that were replete with examples of "change" and reductions sweeping our Air Force, I cannot help but be very concerned about our national security interests and the extent to which airpower must safeguard these interests. Many readers have also opined along these same lines of late. I think what summoned up my total disgust was when, in the "Air Force World" section, I read the comments of Lt. Gen. Mike Hostage III, commander, US Air Forces Central Command. You reported that he stated in his comments at Shaw Air Force Base Aug. 13, prior to departing for his command in Southwest Asia, that "it may be better to fly over enemy

forces to scare them into dispersing." I would simply observe that dead enemy combatants or potential terrorists (killed by airpower or other means) do not return to fight or terrorize another day in Iraq, Afghanistan, or elsewhere where they may kill tens, hundreds, or even thousands. Jimmy Doolittle and Curtis LeMay are—no doubt—barrel rolling high in righteous fury that a US air combatant commander would even suggest such a tactic when in contact with the enemy. I guess we can hope for change.

Don Garrison
Greenville, S.C.

ATC in Afghanistan

Your article "Spooling Up in Afghanistan" was a great coverage of the air war there [*October, p. 22*]. However, there was one element which was overlooked. That was the air traffic control (ATC). One might assume that is just radar; however, there is no radar in Afghanistan. My son is in ATC there, and he had to memorize dozens of routes, turning points, and altitudes before he was certified to work there. Now he works 12-hour shifts to keep planes from 10 or 12 countries from running into each other. He often leaves a shift soaking wet with sweat.

Col. David W. Saxton,
USAF (Ret.)
La Plata, Md.



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Washington Watch

By John A. Tirpak, Executive Editor

JSF in the JET age; On C-17, nothing nefarious; A vanishing arsenal

F-35's Death Spiral?

No new costs have actually been added yet, but the Pentagon acquisition system may be procedurally required to estimate the price of the F-35 program at a level \$15 billion higher than had previously been calculated.

That, in turn, could mark the beginning of a vicious cycle in which F-35 quantities are slashed, unit costs go up, leading to more quantity cuts, and then higher unit costs, in a kind of death spiral.

The potential F-35 cost increase was contained in an October report presented to Pentagon acquisition chief Ashton B. Carter. It was prepared by the F-35 joint estimate team, better known as the JET, which comprises experts in program analysis, engineering, and cost estimation from DOD, the Air Force, and the Navy.

Officials familiar with the report said that the JET revealed little progress in the F-35 program since the last such review, concluded in April 2008. However, the methodology of the review equates risk, and therefore cost, to proven aircraft flying qualities and capabilities, as demonstrated in flight tests. Lockheed Martin is behind schedule in accumulating F-35 flight tests, and the JET is obliged by acquisition rules to treat these delays as a symptom of deep problems and an indicator of future cost increases.

The \$15 billion figure, confirmed by Pentagon officials, flirts with the \$17 billion increase that would denote a breach of the Nunn-McCurdy acquisition law, which says that a program that exceeds its baseline cost by 15 percent or more requires certain certifications be made to Congress that steps are being taken to get costs under control.

If cost or schedule spikes over 25 percent of baseline estimates, the Secretary of Defense must certify that the program is essential, that there is no alternative, and that cost-cutting measures have been put in place. Otherwise, under Nunn-McCurdy, the program must be canceled.

Lockheed Martin officials have previously said the JET methodology doesn't give enough credit for new techniques in risk reduction, such as verifying software and sensors on its flying avionics laboratory. The JET also assumes that the concurrency of building production aircraft before flight testing is complete will result in costly changes to production if problems are discovered. So far, that hasn't proved to be the case.

"We disagree with their conclusions," Lockheed Martin spokesman John R. Kent said in November, because they are "driven by pessimistic assumptions regarding the time required to deliver the remaining [development] aircraft, complete development, and conduct the flight-test campaign."

While Lockheed Martin acknowledged "modest risks to our cost and schedule baselines exist, ... we envision no scenario that would justify a substantial delay to completion of development or transition to production milestones. We are on track" to fielding the F-35, he said. Kent asserted that "engineering development is 85 percent complete and yielding outstanding results in early ground and flight tests, compared to legacy" fighters of the F-15 and F-16 vintage.

Flight tests have been delayed because of the need to redesign the way the F-35's wing is assembled, creating a



Dodging pessimistic analysis.

several-month gap in deliveries. Other causes range from small technical glitches to a run of unusually bad weather for testing.

Marine Corps Brig. Gen. David R. Heinz—the program executive officer and now a major general—told reporters in June that the wing fix is in and the program should be "caught up" in late 2011.

The Pentagon confronted the rumored JET results in a regular late October press briefing. Defense Department chief spokesman Geoffrey S. Morrell said that it is the JET's "job to be pessimistic, and we appreciate that." However, he said Defense Secretary Robert M. Gates would seek "the sweet spot" between the JET's worst-case assessment and that of Heinz's program office, "which is generally much more optimistic."

No Handshake on C-17s

The Air Force should think about how it sets requirements and then coordinate how it communicates those needs to Congress if it wants to avoid confusion, according to the Pentagon's inspector general.

That was the upshot of an IG report sent to the Air Force for comment in early October. The audit was requested by Sen. John McCain (R-Ariz.), who launched it two years ago because he thought the Air Force was sending mixed messages to Congress and improper messages to Boeing about how many C-17s the service actually needed. The Air Force has until early this month to comment on the audit.

McCain was upset because he felt the Air Force was lobbying Congress in late 2007 to add more C-17s to its spending plan, even though it was not formally asking for the aircraft in its budget. More C-17s appeared on the Air Force's \$18.7 billion "unfunded requirements list," which subsequently went to Congress after the Fiscal 2009 budget request.

According to Senate Armed Services Committee staff and Pentagon officials, the IG audit, not yet released, concluded that the Air Force didn't improperly communicate with Congress about the C-17 in 2007, although the IG noted that some briefings about the airlift situation, given to Congress,

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weren't in harmony with the Air Force's plans not to ask for any more of the airlifters. The Air Force discussed with members various mixes of new C-17s and old C-5s that would be upgraded, but no laws were broken, the IG decided.

McCain had openly wondered why Boeing had chosen, at its own expense, to keep the C-17 production line going in the absence (then) of any international orders or official budget requirement by the Air Force. He surmised that there had been a secret handshake deal with the company, and that it had been improper, and asked the IG to investigate. Then-Air Force Secretary Michael W. Wynne responded at the time that Boeing had simply sized up the political situation, concluded Congress would add more of the aircraft, and bet accordingly.

In the new audit, the IG said Boeing's unsolicited proposal for 30 more C-17s was just that: unsolicited.

McCain told Bloomberg News in October that, at the time of his request for the probe, the issue had raised enough questions to warrant an inquiry, but that he would accept the IG's conclusions.

Air Force Secretary Michael B. Donley in November was reviewing the audit and would make any necessary response by early December, a spokesman for Donley said.

Members of the Senate at the time complained in a letter to Defense Secretary Robert M. Gates that the Pentagon was gaming Congress, failing to add C-17s to its budget because it knew sentiment in Congress was strong for adding more of the aircraft. The Senators warned that the Pentagon was on thin ice if it expected to keep doing business that way.

Nevertheless, while the Pentagon in 2007 said that 190 was an adequate number of C-17s, Congress has authorized 213 of the aircraft so far, and 205 are under contract. Depending on the outcome of the House-Senate Fiscal 2010 defense appropriations bill, between three and 10 more may be approved for the next fiscal year. That could bring the C-17 total as high as 223 aircraft.

Between 2001 and 2005, when he was head of Air Mobility Command and US Transportation Command, Air Force Gen. John W. Handy (now retired) maintained that the Air Force's C-17 requirement was 222 aircraft. The original requirement, set in the 1980s, was for 210. It was reduced to 120 in then-Defense Secretary Richard B. Cheney's "major aircraft review" in 1990, but has been revised upward ever since, as the C-17 has proved useful in a wide variety of airlift missions.

The Air Force, at Gates' direction, is no longer allowed to offer Congress an "unfunded requirements list."

Empty Drawing Board

The number of new starts in military aircraft has fallen dramatically in recent years, leading to a potentially dangerous atrophy of the American aerospace enterprise and raising concern about its ability to provide the Air Force with cutting-edge technologies in the future.

"We need to understand the risks" of putting the aerospace industrial base on less-than-subsistence diet, according to Rebecca Grant of the Mitchell Institute for Airpower Studies. Right now, "it's impossible to assess" the long-term effects of focusing only on aircraft that meet the needs of "the wars we're in."

Presenting a paper, "The Vanishing Arsenal of Airpower," Grant said in an October speech in Arlington, Va., that the industrial base has little to work on that pushes the state of the art in large combat aircraft. The design phase of the F-35—"the only game in town" in fighters—is over, and while there is new design work being done on unmanned aircraft, the other new starts of the 2000s have revolved around military conversions of commercial aircraft. A new bomber is on hold, and the Air Force is focusing on modest adapta-



USAF photo by SSgt. Jacob N. Bailey

No beef in the McCain complaint.

tions of civil airplanes for counterinsurgency work. There has been a dearth of experimental and new operational aircraft programs to sustain design capability in industry, as well as the workforce necessary to keep it vibrant, Grant said.

The new starts may be "dwindling to the point where they will unravel the process," she said.

She noted that in the 1950s, there were more than 50 first flights of new experimental or operational fixed-wing aircraft, leading to an explosion of know-how and technical capability in the American aerospace industry. Moreover, there was public "consensus" for obtaining and preserving a technology edge over US aerospace rivals. In the 2000s, though, thanks to slashed budgets and a declining US share of world economic output, the US will only have made nine first flights. Of those, two were F-35 prototypes, one was an electronic warfare variation on the F/A-18E/F, three were unmanned aircraft, and one was the upgraded version of the 45-year-old C-5 Galaxy.

Looking ahead to the 2010s, Grant said, "the prospects are ... simply very bleak" for new aircraft programs. There may be a new aerial tanker, a light strike aircraft, and a stealthy unmanned air vehicle, and the Navy plans to seek a replacement for the F/A-18, but that could easily slip into the 2020s.

"This is the first time anyone can remember ... that there are no new programs going forward," Grant said.

Moreover, a large percentage of the design workforce in the industry is graying rapidly, with most engineers either within five years of retirement or already eligible. Without new projects to offer, it will be tough to attract a younger generation to take up the profession, Grant said.

"We can't turn this around quickly," she pointed out, saying it will take many years to develop new experienced designers, and even then, they won't have the benefit of having worked on a variety of programs.

Grant said it's necessary to preserve a "nucleus of manufacturers" that can keep combat aircraft know-how advancing, even when there is no perceived imminent threat to the nation. She also recommended that the military services—and not the broader Defense Department—be the keepers of "core industrial policy." The Navy, she noted, already has a significant basis of policy to preserve ship-building facilities and workforce in the nation, but there is no similar body of policy regarding aerospace technology.

The Air Force and the Navy should "resume an active role in assessing the health of the industry" and take steps to keep it going in periods when program efforts slow to a crawl. There is a precedent, she observed, in that the government "deliberately" threw work on the nascent technology of stealth to both Lockheed and Northrop, hoping to stimulate competition and create a new industrial base for the technology. It worked, and created the stealth systems on which the nation depends today. ■



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F-16s Collide, Pilot Dies

Capt. Nicholas Giglio, an F-16 pilot with the 77th Fighter Squadron at Shaw AFB, S.C., died Oct. 15 when his airplane collided with another F-16 from Shaw over the Atlantic Ocean about 40 miles east of Folly Beach, S.C., during a night training mission.

The second pilot, Capt. Lee Bryant, managed to land his aircraft at Charleston AFB, S.C. Despite an exhaustive 48-hour search by Air Force, Coast Guard, and Navy air and sea assets over some 8,000 square nautical miles of sea, Giglio's body was not recovered. However, debris was found, thought to be from his F-16.

Col. Joe Guastella, commander of Shaw's 20th Fighter Wing, said Oct. 17 the ongoing accident investigation had "revealed that the midair collision itself was traumatic." Indeed, the impact breached the canopy of Giglio's aircraft, leading investigators to believe that "the trauma [Giglio] sustained was fatal," Guastella said, adding that Giglio "never had the opportunity to eject."

Weather Sat Enters Orbit

An Air Force and industry team at Vandenberg AFB, Calif., on Oct. 18 successfully placed a Lockheed Martin-built Defense Meteorological Satellite Program spacecraft into orbit aboard a United Launch Alliance Atlas V rocket.

Designated DMSP Flight 18, this satellite will provide data for weather prediction for US military forces and the civilian community. It is the third DMSP spacecraft in the Block 5D-3 configuration, which has features such as a larger sensor payload, compared to earlier generations.

F-18 was the first DMSP satellite launched since November 2006. Overall, it is the 37th DMSP spacecraft successfully put in space since 1965, according to Lockheed Martin. After F-18, the Air Force has two more DMSP spacecraft available for launch.

McCain Suggests Tanker Watchdog

Sen. John McCain (R-Ariz.), ranking member of the Senate Armed Services Committee, said Oct. 21 he favors tasking an independent watchdog organization to oversee the Air Force's

new KC-X tanker competition to ensure that the process of choosing a winning aircraft is fair.

Speaking at a Reuters summit in Washington, D.C., McCain suggested the Government Accountability Office, as chief Congressional watchdog, would be a good fit to serve in this role and track the progress of the KC-X contest between Boeing and Northrop Grumman, Reuters news service reported Oct. 21.

"I would trust their judgment as to whether the whole process is biased toward one side or the other," said McCain. His comments came as political rumblings already started to emerge from supporters of both tanker camps on Capitol Hill over the fairness of the competition, as the Air Force conversed with industry on the draft KC-X solicitation.

C-17s Pull Disaster Duty

Air Force C-17s operating from Hawaii flew 17 sorties over an 11-day period starting on Sept. 30, delivering 632.5 short tons of relief supplies and a multiagency disaster-response team to American Samoa after the island was ravaged by a powerful earthquake on Sept. 29. The earthquake unleashed 15-foot ocean waves that destroyed entire villages.

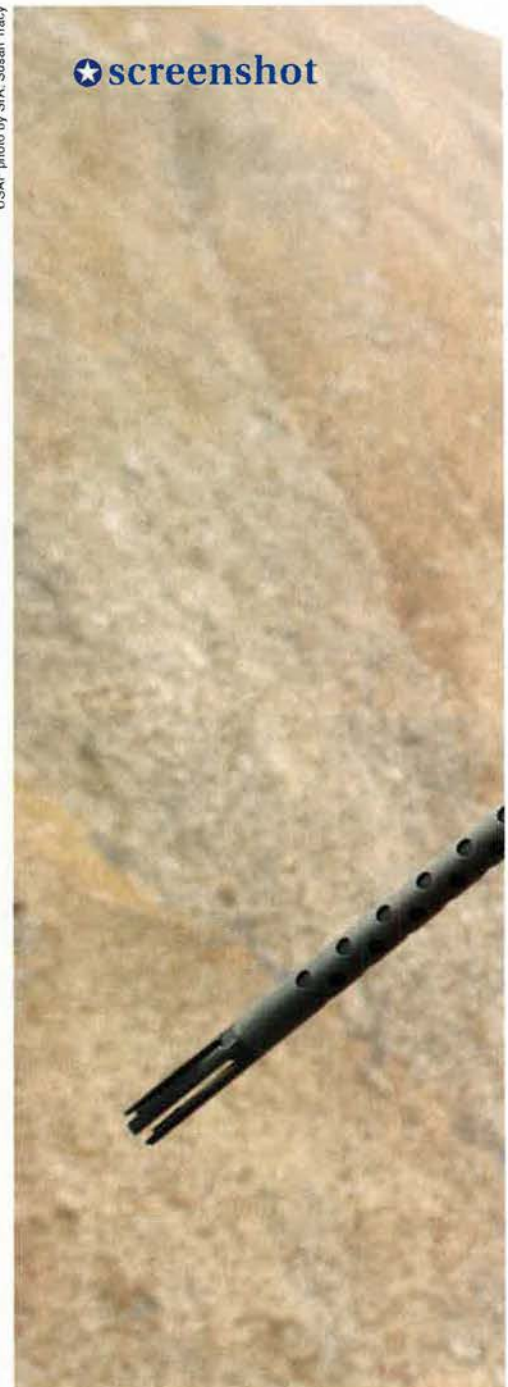
Pacific Air Forces also dispatched its 68-member humanitarian assistance rapid response team and 200,000 pounds of medical supplies by C-17 to Padang, Indonesia, on Oct. 5. The team was sent to provide medical treatment to local residents after a devastating earthquake struck Indonesia's West Sumatra province Sept. 30.

After setting up a field hospital, the team treated more than 1,900 patients, alleviating the burden on local hospitals severely damaged in the earthquake.

ICBM Anniversary Commemorated

Air Force officials gathered Oct. 7 at F. E. Warren AFB, Wyo., to celebrate the 50th anniversary of the nation's operational ICBM fleet. It was on Oct. 31, 1959 that three long-range, liquid-fueled Atlas D missiles armed with nuclear warheads went on full combat alert at Vandenberg AFB, Calif., usher-

USAF photo by SRA, Susan Tracy



11.02.2009

ing in a new era of strategic nuclear deterrence for the nation.

F. E. Warren is home to 20th Air Force, which oversees the current Minuteman III ICBM fleet, and the 90th Missile Wing, which oversees 150 of USAF's 450 ICBMs.

The three days of events included Air Force Secretary Michael B. Donley's keynote address on Oct. 8 and a memorial service for deceased mis-sileers on Oct. 9.

Congress Slows Fighter Retirement

The conference version of the Fiscal 2010 defense authorization bill, passed by the House on Oct. 8 and the Senate on Oct. 22, includes language prohibiting the Air Force from executing its legacy fighter retirement plan until at least 30 days after the service provides a "detailed" report to Congress.

The lawmakers want the Air Force to explain how it will address the force structure and capability gaps resulting

from the retirement of a combination of up to 254 F-15s, F-16s, and A-10s in this fiscal year. They also called for a description of the follow-on mission assignments for each affected base.

This mandate is similar to language included in the Senate's version of the Fiscal 2010 defense appropriations bill, passed in September, that was introduced as an amendment by National Guard Caucus Chairmen Sen. Christopher S. Bond (R-Mo.) and Sen.



Air Force SSgt. Justin Schramm of Eugene, Ore., keeps a close watch on the Afghan countryside below while on an HH-60 Pave Hawk mission. Schramm is an aerial gunner from Kadena AB, Japan, who is currently assigned to the 33rd Expeditionary Rescue Squadron at Bagram Air Base in Afghanistan. The Pave Hawk, equipped with two .50-caliber machine guns, is used for combat search and rescue. Schramm is trained to use his machine gun to protect service members while they are providing aid to injured persons on the ground.

Command Shake-ups at Nuclear Minot Wings

The commanders of the nuclear missile and bomb wings at Minot AFB, N.D., were both relieved of command in October, in the latest manifestation of the Air Force's no-excuses nuclear policies.

Maj. Gen. Roger W. Burg, commander of 20th Air Force, which oversees USAF's ICBM forces, on Oct. 14 removed Col. Christopher B. Ayres as commander of the 91st Missile Wing at Minot. Ayres had been in command since May 2008. Replacing Ayres was Col. Ferdinand B. Stoss III, who had been vice commander of the 90th MW at F. E. Warren AFB, Wyo.

Ayres was relieved "due to loss of confidence in his ability to command," according to an Air Force Space Command release.

AFSPC said Ayres was not relieved for any alleged misconduct or wrongdoing, but a series of incidents—including a vehicle transporting non-nuclear Minuteman III ICBM components overturning on Aug. 31 near Minot—contributed to the loss of confidence.

"We must have complete confidence in our leadership as we continue the revitalization of the nuclear enterprise," said AFSPC Commander Gen. C. Robert Kehler. Air Force leaders have maintained that perfection is the standard by which all airmen will be judged in the nuclear field.

"This is a tough business we're in. There are many requirements," Stoss told reporters when asked about the removal of his predecessor, reported the *Minot Daily News* Oct. 16. The Minuteman ICBM "is a complex system, and it requires the utmost professionalism."

Two weeks later, on Oct. 30, Maj. Gen. Floyd L. Carpenter, commander of 8th Air Force, removed Col. Joel S. Westa as commander of the 5th Bomb Wing at Minot. Westa was replaced by Col. Douglas A. Cox, who had been serving as vice commander of the 36th Wing, Andersen AFB, Guam.

Westa himself had been brought in as a replacement commander at the 5th Bomb Wing. He assumed command in November 2007, when the previous commander was fired after nuclear cruise missiles were accidentally and unknowingly flown from Minot to Barksdale AFB, La.

Like Ayres, Westa was not relieved for any specific misconduct or wrongdoing. An "inability to foster a culture of excellence, a lack of focus on the strategic mission during his command, and substandard performance during several nuclear surety inspections" led to his removal, USAF officials said in a release. The newly activated 69th Bomb Squadron being deemed "not ready to perform its nuclear mission" contributed to the loss of confidence.

"While the shortcomings in recent inspections did not translate to an inability to accomplish the mission, they did show a departure from the standards of perfection that we demand in the nuclear enterprise," said Gen. William M. Fraser III, commander of Air Combat Command. "Our leaders must set and enforce the standards across all of our mission areas."

As for the Aug. 31 ICBM warhead accident, AFSPC investigators determined that a large insect was responsible for the chain of events that led to the transport vehicle overturning.

According to the findings of AFSPC's accident investigation board, the large insect flew through the driver's open window and landed on his back, distracting him. The driver failed to maintain control of the vehicle as he tried to remove the insect, which led to the vehicle overturning in a ditch.

Eighth Air Force, 20th Air Force, and both nuclear wings at Minot are all scheduled to become part of Global Strike Command.

Patrick J. Leahy (D-Vt.) out of concern over how the fighter retirements would impact the air sovereignty alert mission.

C-17s Move All-Terrain MRAPs

The Air Force on Sept. 30 began transporting the US military's new all-terrain version of the mine-resistant, ambush-protected vehicle to Afghanistan from Charleston AFB, S.C. On that day, a C-17 flown in from McChord AFB, Wash., carried two of these vehicles, known as M-ATVs, to Southwest Asia.

Charleston is serving as the sole air distribution center for the overseas shipments of the M-ATVs, which are lighter than previous MRAP versions and are more suited to the rugged terrain of Afghanistan.

The Air Force expects to move between 300 and 500 M-ATVs by air each month through the end of the year to Afghanistan. The US military will also begin transporting M-ATVs to Southwest Asia by sea before the end of the year.

Northrop Wins KC-10 Work

The Air Force on Oct. 1 awarded Northrop Grumman a \$3.8 billion contract to perform contractor logistics services for the KC-10 tanker fleet. Northrop Grumman usurped Boeing, which produced the KC-10s and has been performing the workload.

The contract covers depot-level maintenance and modifications, supply chain management, and other support tasks for USAF's 59 KC-10s and two Dutch KDC-10s over a nine-year period. Boeing's current contract expires in January.

"Our clear focus now is to conduct a flawless phase-in that will facilitate the superior program performance that both the US Air Force and Northrop Grumman demand," said James Cameron, president of Northrop Grumman's technical services sector.

Crash Causes Identified

The pilot's failure to recognize his altitude during a nighttime training mission while practicing low-altitude, high-angle strafing led to the crash of an F-16 fighter on June 22 at the Utah Test and Training Range, Air Combat Command announced Sept. 28.

The pilot, Capt. George B. Houghton, was killed upon impact, and his F-16, assigned to Hill AFB, Utah's 388th Fighter Wing, was destroyed, ACC said, citing the findings of its accident investigation board.

On Oct. 13, Air Force Materiel Command announced that "a failure in the rudder operating mechanism" was determined to be the cause of a T-38 aircraft crash near Edwards AFB, Calif., during a training flight on May 21. The mishap claimed the life of student pilot Maj. Mark Paul Graziano, and seriously injured his navigator, Maj. Lee Vincent Jones.

JASSMs Fly Right

The Air Force and Lockheed Martin said in October that the AGM-158 Joint Air-to-Surface Standoff Missile performed well in a series of 16 flight tests that concluded on Oct. 4 at White Sands Missile Range, N.M., with the release of four JASSMs from a B-52 bomber.

The official results showed that JASSMs were "successful" in 15 of the 16 flights. One missile "failed to detonate," a spokesman said. All of these missiles came from Production Lot 7.

This test series, meant to assess JASSM's reliability, was considered a crucial indicator of whether the Air Force would buy more of the missiles, which despite their prowess, have been plagued by reliability issues. With the

success, Lockheed Martin anticipated USAF awarding a production contract for Lot 8 missiles.

F-35 Units Take Shape

On Oct. 1, the 33rd Fighter Wing at Eglin AFB, Fla., formally embraced its new role as the lead joint training wing for the F-35 Lightning II stealth fighter as it moved from Air Combat Command to Air Education and Training Command. The wing shed its F-15 force per BRAC 2005 and expects to see its first F-35s in late summer 2010.

In a related development, the Air Force Operational Test and Evaluation Center, headquartered at Kirtland AFB, N.M., on Oct. 2 stood up a detachment at Edwards AFB, Calif., to lead F-35 operational test and evaluation. It will be conducted with the Navy and Marine Corps as well as the British Royal Air Force and the Netherlands Air Force.

B-2 Radar Hits Full-rate Production

The Air Force on Oct. 16 authorized full-rate production of the new radar system for the B-2A stealth bomber. Northrop Grumman leads an industry team including radar maker Raytheon that is providing the upgraded radar,

Congress Poised To Fund More C-17s

In a 93-to-seven vote, the Senate on Oct. 6 passed its version of the Fiscal 2010 defense appropriations bill, a measure that includes \$2.5 billion to procure 10 C-17s that the Air Force did not request.

The bill appropriates to defense a total of \$636.3 billion, of which \$128.2 billion was earmarked for ongoing wars.

The C-17 measure was controversial. Sen. Daniel K. Inouye (D-Hawaii), chairman of the Senate Appropriations Committee, pushed for the aircraft, arguing that it would be unwise to shut down C-17 production before the Pentagon has made far-reaching decisions on its airlift fleet.

The Senate measure would push the Air Force's total C-17 buy to 223. Air Force officials have said they would welcome retiring one C-5A transport for every new C-17 that is acquired beyond 205.

On two occasions during floor debate, Sen. John McCain (R-Ariz.) proposed to strip the C-17 funding and reapply it to boost the US military's readiness accounts. Both measures were resoundingly repudiated by robust bipartisan majorities.

The House included three C-17s in its version of the bill that was passed in July. President Obama signed the bill Oct. 28 with final numbers of C-17s still unresolved.

Rep. John P. Murtha (D-Pa.), head of the House Appropriation Committee's defense subcommittee, said Oct. 21 he thought conferees would ultimately agree to 10 C-17s, *CongressDaily* reported Oct. 22. However, he wanted C-17 maker Boeing to reduce the per-unit cost of the aircraft by about \$25 million, edging it closer to its \$200 million price tag in previous multiyear buys.

The White House on Sept. 25 reiterated that it "strongly" objected to the C-17s. But those words fell short of actually threatening a Presidential veto of the spending bill.

USAF photo by TSgt. Eric Petosky



A Chile Host: Two F-15 Eagles of the 159th Fighter Wing maneuver during a mission over Chile in Exercise Salitre, a multinational exercise focused on interoperability. Participating air forces included the US, Brazil, Argentina, and France.

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which features advanced electronically scanned array antennas, for USAF's 20 B-2s under a \$1.2 billion modernization initiative.

Already Northrop Grumman has supplied six production-representative radar sets for six of the B-2s. The Air Force in March took delivery of the first combat-ready B-2 fitted with the upgraded radar. Northrop Grumman is installing the remaining five sets.

The full-rate production sets will be fabricated as part of the \$468 million production contract signed in December 2008 for the remaining 14 radar sets, plus two spare sets. Northrop Grumman's team is already producing some of the production units as part of the contract's low-rate production phase. All B-2s are expected to be fitted with the upgraded radar around 2011.

First HC/MC-130J Assembled

The keel for the Air Force's first Special Mission Hercules aircraft was laid in ceremonies at Lockheed Martin's facilities in Marietta, Ga., on Oct. 5, marking the start of final assembly of this aircraft. This is a new model of the C-130J based on the Marines Corps' KC-130J tanker, but with added features for combat search and rescue and special operations forces.

The company will build both an HC-130J CSAR variant of this model for Air Combat Command and an MC-130J tanker version for Air Force Special Operations Command right on the standard C-130J production line.

New Communications Satellite Supports the Fight

WGS-2, the Air Force's second Wideband Global SATCOM spacecraft, is now fully operational and supporting ground troops in Afghanistan and Iraq by relaying data and imagery across the battlespace at unprecedented high rates of speed, Boeing, the satellite's maker, announced in early October.

Launched in April and now residing in geosynchronous Earth orbit over the Indian Ocean, WGS-2 was cleared for use back in August by US Strategic Command, the company divulged in a release Oct. 6.

WGS-2 is supplanting the commercial communications satellites that have been used over that region in the past to support the US military. It is also designed, as all WGS spacecraft are, to replace the Air Force's legacy Defense Satellite Communications System spacecraft. Each WGS satellite has more than 12 times the throughput capacity of a single DSCS satellite, according to Boeing.

WGS-2 joins WGS-1, which sits over the Pacific Ocean and has been operational since April 2008, supporting US military operations in the entire Pacific region.

Boeing is under contract to build six WGS satellites for the Air Force, but the service has already indicated a desire for more.

WGS-3, the next satellite in the series, was shipped on Sept. 28 from Boeing's assembly facility in Los Angeles to Cape Canaveral AFS, Fla., in preparation for its placement in orbit, which was scheduled in mid-November.

Bill Reiner, assistant director of satellite communications and cyber security for Boeing's government operations sector, told reporters Oct. 7 in Washington, D.C., that WGS-3 will reside in orbit over the eastern Atlantic Ocean. It will provide coverage of the US East Coast, Europe, Africa, and like WGS-2, the Middle East and Central Asia, thereby augmenting WGS-2 there.

WGS-3 will be the last spacecraft in the Block I configuration. The next three WGS spacecraft will be in the more robust Block II configuration.

The Air Force has said it wants 78 HC-130Js and 37 MC-130Js to replace earlier model HC-130s and MC-130s that are already 40 years old or more. The first two HC-130Js will be delivered in 2010—including the one for which the keel was laid. Ten MC-130Js will be built in 2011.

Engine Project Advances

The Air Force Research Laboratory announced Oct. 15 that it will continue to sponsor teams from General Electric and Rolls Royce through 2012 under Phase II of its Adaptive Versatile Engine Technology, or ADVENT, program.

Both teams began working in early 2008 under Phase I on maturing next generation variable-cycle turbine engines that combine fuel efficiency and high performance.

AFRL said it wanted Rolls Royce's LibertyWorks advanced concept shop in Indianapolis to complete its technology demonstrator engine development

Special Delivery: B-25 Mitchell bomber Special Delivery and a replica Japanese A6M2 Zero form up over downtown San Antonio on Nov. 5. The Disabled American Veterans organization arranged flights in historic and experimental aircraft for wounded servicemen being treated at the San Antonio Military Medical Center, Ft. Sam Houston, Tex.

USAF photo by Lance Cheung



Operation Enduring Freedom—Afghanistan

Casualties

By Nov. 16, a total of 913 Americans had died in Operation Enduring Freedom. The total includes 911 troops and two Department of Defense civilians. Of these deaths, 654 were killed in action with the enemy while 259 died in noncombat incidents.

There have been 4,472 troops wounded in action during OEF. This number includes 1,841 who were wounded and returned to duty within 72 hours and 2,631 who were unable to return to duty quickly.

Airpower Helps Hold Back Taliban in Deadly Battle

US airpower played a key role in halting a devastating Taliban assault on a remote Afghan base Oct. 3 in Kamdesh, Afghanistan, that claimed the lives of eight US soldiers and three Afghan Army personnel, according to US military sources and wire reports.

At the time, it was the deadliest such attack on coalition troops in 2009.

Around dawn that day, a force of about 200 to 300 Taliban fighters attacked the outpost with a barrage of small arms, rocket-propelled grenades, and mortar shells, peppering the outpost from three sides. According to US officials, the Taliban attacked an observation post on a ridge near the outpost and were able to breach the base perimeter.

US reinforcements were flown in nearby by helicopter, traveling the rest of the way on foot to the besieged base.

The main battle lasted nearly seven hours, with fierce firefights often at close quarters. A combination of small-arms fire and repeated close air support eventually drove back the attacking force.

Coalition air assets provided a rapid response to the attack, according to Air Forces Central. Two F-15Es already aloft when the attack came were quickly diverted to support the base, and four more F-15Es scrambled from Bagram Air Base to help, World Press Review reported Oct. 9., based on interviews with USAF officials at Bagram.

A B-1B bomber also performed at least one air strike, and Army attack helicopters carried out attacks.

Air Force pararescue units flew the wounded from the outpost.

NATO International Security Assistance Force officials estimated that around 100 militants died in the battle. US officials reported 24 US troops were wounded in the attack, along with 10 Afghan soldiers.

Operation Iraqi Freedom—Iraq

Casualties

By Nov. 16, a total of 4,364 Americans had died in Operation Iraqi Freedom. The total includes 4,351 troops and 13 Department of Defense civilians. Of these deaths, 3,476 were killed in action with the enemy while 888 died in noncombat incidents.

There have been 31,566 troops wounded in action during Operation Iraqi Freedom. This number includes 17,686 who were wounded and returned to duty within 72 hours and 13,880 who were unable to return to duty quickly.

Iraqi Air Force Begins Independent C-130 Operations

The Iraqi Air Force began fully independent C-130 operations on Sept. 29 at New Al Muthana AB, Iraq, marking the end of the US air advisory mission there.

USAF and IqAF officials held a ceremony that day, noting the latter's Squadron 23 assuming complete responsibility for its operations, maintenance, and training.

At the same time, USAF's 321st Air Expeditionary Advisory Squadron, which stood up in 2006 (as the 370th AEAS) to help the Iraqis, was deactivated.

"The Iraqi pilots, navigators, flight engineers, loadmasters, and maintainers have clearly demonstrated that they are ready to perform their missions and, most importantly, to do it well," said Maj. Gen. Robert C. Kane, who headed the Coalition Air Force Transition Team at the time.

He also praised the USAF advisors for their work.

and testing during Phase II. It also called on GE Aviation in Evendale, Ohio, to continue with its technology demonstrator core development and testing, and to conduct risk-reduction activities for some components.

C-130 Laser Zaps Vehicle

Boeing announced Oct. 13 that its Advanced Tactical Laser aircraft, a modified C-130H that fires the laser out of a belly turret, achieved another milestone when its high-energy laser successfully engaged a moving ground vehicle for the first time during a Sept. 19 test at White Sands Missile Range, N.M.

The laser was fired at the vehicle as the aircraft flew overhead; it put a hole in the vehicle's fender, said Boeing. This test built upon a previous engagement against a stationary vehicle back in August.

U-2s To Stay Over Korea

The US military will maintain U-2 surveillance aircraft on the Korean peninsula until there is no doubt that there are enough RQ-4 Global Hawk unmanned aerial vehicles in the Pacific region to take over the U-2's missions, Army Gen. Walter L. Sharp, commander of US Forces Korea, told defense reporters Sept. 29 in Washington, D.C.

"The Air Force has committed that to me," said Sharp. He added, "They are not going to pull off U-2s until the Global Hawks are not only in place, but there is some overlap so we can make sure the systems and all are working."

The Air Force currently operates some U-2s from Osan AB, South Korea. Sharp said the Global Hawk Block 30 variant, featuring a robust signals intelligence collection suite in addition to imagery sensors, is the version envisioned to support military operations on the peninsula. The first RQ-4 destined for Pacific basing is expected to arrive at Andersen AFB, Guam, in mid-2010.

Wyatt Wants More "Associates"

Lt. Gen. Harry M. Wyatt III said Oct. 6 he wants to see the creation of more associate pairings of his units with their active duty and Air Force Reserve Command counterparts that go beyond the changes already being instituted under BRAC 2005.

"We need to continue doing that," he told an audience at the Minuteman Institute for National Defense Studies in Washington, D.C., when discussing the role of associations in the Air Force's Total Force integration.

Since new weapons systems are capable of around-the-clock operations, as opposed to more limited cycles, manpower becomes the limiting factor, and the Air Guard's involvement could

Senior Staff Changes

NOMINATIONS: To be General: Mark A. Welsh III. **To be Lieutenant General:** Kurt A. Cichowski.

CHANGES: Brig. Gen. Darryl W. **Burke**, from Vice Cmdr., 12th AF (AFSOUTH), ACC, Davis-Monthan AFB, Ariz., to Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex. ... Maj. Gen. Garry C. **Dean**, from Dep. IG of the AF, OSAF, Pentagon, to Cmdr., 1st AF, ACC, Tyndall AFB, Fla. ... Brig. Gen. Mark W. **Graper**, from Cmdr., 354th FW, PACAF, Eielson AFB, Alaska, to Vice Cmdr., 9th Air Expeditionary Task Force, ACC, Shaw AFB, S.C. ... Brig. Gen. Otis G. **Mannon**, from Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex., to Vice Cmdr., AFSOC, Hurlburt Field, Fla. ... Maj. Gen. Harold L. **Mitchell**, from Mobilization Asst. to the Cmdr., TRANSCOM, Scott AFB, Ill., to Dep. IG of the AF, OSAF, Pentagon ... Maj. Gen. Henry C. **Morrow**, from Cmdr., 1st AF, ACC, Tyndall AFB, Fla., to US Defense Representative, US Liaison Office, CENTCOM, Abu Dhabi, United Arab Emirates ... Brig. Gen. Marvin T. **Smoot Jr.**, from Dir., Manpower, Personnel, & Svcs., AFMC, Wright-Patterson AFB, Ohio, to Commandant, Jt. Forces Staff College, NDU, Norfolk, Va. ... Brig. Gen. (sel.) Jerry P. **Martinez**, from IG, AMC, Scott AFB, Ill., to Dep. Cmdr., Political-Mil. Affairs, Combined Security Transition Command-Afghanistan, CENTCOM, Kabul, Afghanistan.

SENIOR EXECUTIVE SERVICE CHANGES: Eugene **Collins**, to Dep. Dir. of Log., ACC, Langley AFB, Va. ... Richard P. **Deavel**, to Dep. Asst. SECAF for Reserve Affairs, Office of the Asst. SECAF (Manpower & Reserve Affairs), Pentagon ... Richard W. **McKinney**, to Spec. Asst. to the Administrative Asst. to the SECAF, USAF, Washington, D.C. ... John W. **Steenbock**, to Dir., Manpower, Personnel, & Svcs., AFMC, Wright-Patterson AFB, Ohio ... Patricia J. **Zarodkiewicz**, to Principal Dep. Asst. SECAF for Financial Mgmt. & Comptroller, OSAF, Pentagon. ■

be pivotal in exploiting these systems to their full potential, said Wyatt.

Nuclear Components Demilitarized

The Air Force announced Sept. 30 that it is demilitarizing more than 100,000 nuclear weapons-related parts and components no longer needed from its legacy ICBM, aircraft, and space test programs.

Under this initiative, excess assets from more than 6,000 distinct stock numbers are being removed from the active inventory. Already, as of July 31,

45,000 assets had been disposed of in 2009. The goal is to eliminate another 52,000 by Sept. 30, 2010.

Arizona Trolls for F-35s

Arizona government officials, including Gov. Jan Brewer (R), and state business leaders on Oct. 14 launched a "Luke Forward" campaign to secure the F-35 Lightning II stealth fighter for Luke Air Force Base when the Air Force begins phasing out the F-16s currently based there.

At a press conference, Brewer called Luke, currently USAF's largest F-16 training base, "the ideal location" for an F-35 schoolhouse. Supporters cite, for example, Luke's robust and modern infrastructure and its proximity to the Barry Goldwater training range.

However there are some dissenting voices. The *Phoenix Business Journal* reported Oct. 16 that the El Mirage community close to Luke is considering legal action to keep the F-35 away. Like the city of Valparaiso, Fla., near Eglin Air Force Base, which is slated to be the initial F-35 training site, there is concern in El Mirage over the F-35's comparatively higher noise levels.

Cyber Wing Activated

Air Force officials activated the service's first combat communications wing, the 689th CCW, during a ceremony Oct. 5 at Robins AFB, Ga. The unit falls under 24th Air Force, USAF's new cyber operations organization that stood up in August at Lackland AFB, Tex.

The 689th CCW will provide expeditionary and specialized communications, air traffic control, and landing systems to support US and coalition operations in austere, forward locations. Nationwide, it will have some 6,000 airmen, along with civilian and contractor support.

The wing is one of three under 24th Air Force, along with the 67th Network Warfare Wing and 688th Information Operations Wing. The latter two are headquartered at Lackland.

Reaper Unit Stands Up

The Air Force's first MQ-9 Reaper maintenance field training detachment was dedicated during a ceremony Oct. 2 at Hancock Field in Syracuse, N.Y., home of the New York National Guard's 174th Fighter Wing.

The wing, which relinquished its F-16s in June 2008 per BRAC 2005 for the Reaper mission, will now operate the only schoolhouse in the Air Force dedicated to training MQ-9 maintenance personnel. Conversion of the wing's former aerospace ground equipment facility to the schoolhouse began in September 2008 and was completed in May 2009.

Reserve Seeks Active Ties

Air Mobility Command and Air Force Reserve Command announced Oct. 6 that they are working to establish three new active associate flying squadrons that will partner with Reserve units at Keesler AFB, Miss., March ARB, Calif., and Peterson AFB, Colo., by 2012 to operate C-130 transports or KC-135 tankers.

Already the 52nd Airlift Squadron, a C-130 flying unit, stood up Oct. 3 at

USAF photo by SSGT Brian Ferguson



Lights Out: Airmen from the 51st Security Forces Squadron hold off "enemies" during a night training exercise at Osan AB, South Korea. The base operational readiness exercise simulated a car bombing of a building, infiltration by opposing ground forces, and evacuation techniques.

Peterson to cooperate with AFRC's 302nd Airlift Wing there to fly and maintain the wing's 12 C-130H aircraft. At March, the projected date for activating the 912th Air Refueling Squadron is Oct. 1, 2010. This unit will support AFRC's 452nd Air Mobility Wing, which flies 12 KC-135s.

No date has been set for activation at Keesler of the 345th AS, which will partner with AFRC's 403rd Wing in operating and maintaining its eight C-130Js.

Vietnam War Unit Honored

Members of Det. 1 of the 314th Troop Carrier Wing received the Presidential Unit Citation for their service during the Vietnam War during an Oct. 9 ceremony at Hurlburt Field, Fla. Chief of Staff Gen. Norton A. Schwartz presented them with the high honor, which recognizes extraordinary heroism in action against an armed enemy.

These former special operations airmen flew MC-130E Combat Talons in support of the Military Assistance Command Vietnam Studies and Observations Group from 1966 to 1968 on missions such as transport, air rescue, and leaflet drops over enemy territory.

Although the MACVSOG and its supporting units received the citation in April 2001, Det. 1 was not included as a supporting unit on the citation, prompting former Capt. Richard Sell, formerly of Det. 1, to wage a six-year campaign to serve the unit's recognition. It came in June.

Career Path Solidified for UAV Pilots

The Air Force leadership approved the creation of an 18X Air Force Specialty Code for officers who operate remotely piloted aircraft, during an intelligence-surveillance-reconnaissance summit at the Pentagon.

This new, yet-to-be-named career field will be considered "rated," carry a six-year active duty service commitment, and will qualify for aircrew incentive pay, the Air Force said in a release Oct. 2.

The leadership said it wanted more time to come up with a name for this career field that better articulates what the new mission area entails. The "unmanned" aircraft label appeared to be losing appeal since, as Chief of Staff Gen. Norton A. Schwartz said, these platforms are "anything but that." UAV operators are ever vigilant at the controls, even though physically separated from the aircraft.

Future 18X pilots will earn an occupational badge, a new set of wings designed by SSgt. Austin May, a public affairs specialist with the 100th Air Refueling Wing at RAF Mildenhall, Britain.

For enlisted airmen, the USAF leadership decided at the summit that the previously created 1UOX sensor operator career field will be a subcategory under career enlisted aviators.

It also gave the nod for a new set of sensor operator wings that is similar in appearance to standard enlisted aviator wings but with a different shield.

Also, the leadership decided, for now, to stick with the service's current intelligence-surveillance-reconnaissance structure—built around the Air Force ISR Agency, which reports directly to the Air Staff—instead of pursuing a separate ISR major command or ISR numbered air force.

EOD Airman Receives Bronze Star

TSgt. Michael Williams, an explosive ordnance disposal technician with the 437th Civil Engineer Squadron at Charleston AFB, S.C., on Oct. 15 received a Bronze Star Medal for valor. Williams was critically injured by an anti-personnel landmine during a patrol Aug. 2 near Mushan village, Afghanistan.

Although he lost the lower portion of his left leg, he continued a post-blast crater analysis, gathering critical intelligence,

Let It Snow: B-1 bombers collect snow and ice during the season's first big snowfall at Ellsworth AFB, S.D., on Oct. 29. The 28th Bomb Wing, Ellsworth's host unit, supports B-1 operations.



USAF photo by A1C Corey Hook



Extra Vigilant at Minot: A B-52H takes off at Minot AFB, N.D., during the rapid launch portion of Exercise Prairie Vigilance, a combined-wing nuclear operational readiness exercise. One after the other, seven B-52s successfully launched, confirming the wing's agile and timely response capabilities.

while insurgents engaged his team with small-arms fire. Williams also aided his own medical care and manned his weapon to help protect his colleagues as they evacuated him.

Ex-POW Johnson Honored

The Congressional Medal of Honor Society awarded the National Patriot Award, its highest civilian recognition, to Rep. Sam Johnson (R-Tex.) on Oct. 10 during a gala dinner in Dallas with more than 30 living MoH recipients in attendance.

Johnson, a 29-year Air Force veteran who spent nearly seven years as a pris-

oner of war in Vietnam, was recognized for his tireless work to support America's men and women in uniform as well as his efforts on behalf of veterans.

"It is a deep honor to be surrounded by so many living Medal of Honor recipients," said Johnson at the dinner. He added, "I do not take this recognition lightly." Past recipients of the National Patriot Award include retired Army Gen. H. Norman Schwarzkopf (2002) and Sen. John McCain (R-Ariz.) (2005).

Land-Use Plan Scrapped

The Michigan Air National Guard no longer plans to have long-unused land

at Selfridge Air National Guard Base undergo commercial redevelopment because government business at the facility is now booming.

The *Detroit News* reported Oct. 17 that the Air Guard had selected Beztak Companies to develop the land by building a hotel, retirement community, medical facilities, and more on about 670 acres.

However, the federal government now plans to build a new intelligence operations center on the base that the US Border Patrol, Michigan State Police, and their Canadian counterparts will use.

Obituary

Richard T. Whitcomb, 88, famed aviation engineer who developed the so-called "Area Rule" that overcame drag problems in transonic flight, died of pneumonia Oct. 13 in Newport News, Va. In 1951, while working for the National Advisory Committee for Aeronautics (predecessor to NASA), Whitcomb discovered that aircraft could travel faster using the same amount of fuel by incorporating a "wasp-waist" body design. Convair was the first to take advantage of the Area Rule, redesigning an F-102 prototype that flew with 25 percent less drag and about 100 mph faster. Other companies followed suit. He received the 1954 Collier Trophy at the age of 34 and the Exceptional Service Medal from the Air Force in 1956. Whitcomb was born Feb. 21, 1921, in Evanston, Ill.; he grew up in Worcester, Mass. ■

News Notes

- Adm. Timothy J. Keating relinquished command of US Pacific Command to Adm. Robert F. Willard during an Oct. 19 ceremony at PACOM headquarters at Camp Smith, Hawaii. Keating, who is retiring after 38 years of service, led the command since March 2007.

- President Obama on Oct. 16 nominated Army Lt. Gen. Keith B. Alexander for promotion to the rank of general to take command of the new US Cyber Command, a subunified command under US Strategic Command. In this post, Alexander would continue to lead the National Security Agency.

- Lt. Gen. Charles E. Stenner Jr., Air Force Reserve chief and Air Force Reserve Command commander, on Oct. 11 moved his permanent residence from Bolling AFB, D.C., to Robins AFB, Ga., home of AFRC.

- The Air Force announced Oct. 21 that it has a new "X-plane" with the designation of its Advanced Composite Cargo Aircraft technology demonstrator

as the X-55A. The ACCA is a Dornier 328J aircraft modified with an advanced composite structure.

- The US military's first triservice facility, Joint Base McGuire-Dix-Lakehurst, N.J., officially stood up on Oct. 1. The joint base is an amalgam of McGuire Air Force Base, Ft. Dix, and NAES Lakehurst mandated by BRAC 2005.

- A C-17 loaded with supplies for troops in Afghanistan flew a new route from Ramstein AB, Germany, to Manas AB, Kyrgyzstan, on Oct. 7, becoming the first Air Force transport to traverse Russian airspace under a new US-Russia transit agreement signed in July.

- SrA. Joshua Livingston of the 90th Civil Engineer Squadron at F. E. Warren AFB, Wyo., was selected as the Department of Defense's Firefighter of the Year, the Pentagon announced Oct. 16. Among his achievements, he has saved an infant's life.

- Recognized with a Bronze Star Medal for meritorious service in Southwest Asia was SMSgt. Shawn Ricchuito,

a firefighter with the 886th Civil Engineer Squadron at Ramstein AB, Germany. TSgt. Rudy Moreno of the 355th Fighter Wing at Davis-Monthan AFB, Ariz., on Oct. 16 received an Army Bronze Star Medal for his leadership during convoy operations in Iraq.

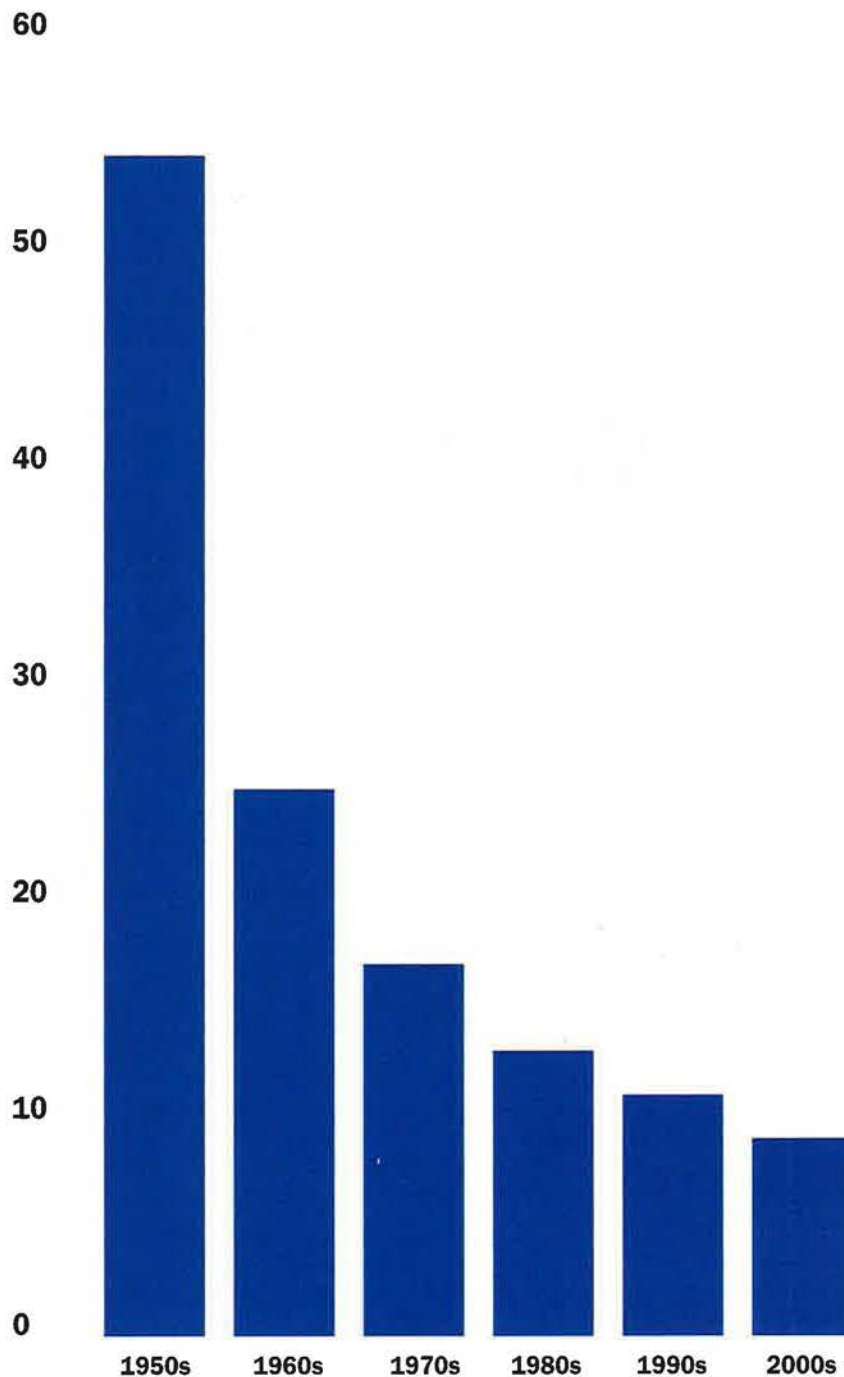
- One dozen airmen each carrying 50-pound rucksacks on Oct. 16 completed an 11-day, 824-mile march from Lackland AFB, Tex., to Hurlburt Field, Fla., in honor of special tactics airmen who have been killed in Afghanistan and Iraq.

- A C-17 from the 12-nation Strategic Airlift Capability consortium's Heavy Airlift Wing at Papa AB, Hungary, on Sept. 29 flew the unit's first mission to Afghanistan in support of NATO's International Security Assistance Force.

- The US military in September vacated Forward Operating Location Manta at Eloy Alfaro AB, Ecuador, and formally returned the installation to the control of the Ecuadorean military on Sept. 18, according to press reports. ■

Aircraft Program Fade-out

USAF and Navy First Flights by Decade



For 60 years, major aircraft programs have been the prime source of aerospace innovation. Around 1950, the aerospace industry entered a period in which many firms competed on a wide variety of projects. Some were experimental. Some were forgettable. Some produced classics. The point was that there was a striking diversity in the number and types of aircraft designs. The chart depicts the steady decline in first flights of military fixed-wing aircraft for USAF and the Navy. Today, there are few plans for new program starts, which in the next decade will limit first flights—and innovation.

Source: Rebecca Grant, "The Vanishing Arsenal of Airpower," October 2009, Mitchell Institute for Airpower Studies, Arlington, Va.

Why the C-17 Has Lived On

Since 2007, DOD has been laboring mightily on a new mobility capability study. An explicit goal of this study is to determine airlift needs in future years. The C-17 is the only long-range airlifter still in production, so one would have thought it was safe, pending the study's completion.

One would have been quite wrong. For the better part of a year, top Washington figures have tried hard to kill the C-17, well in advance of the conclusion of the study. That is nothing if not strange.

Current plans call for the Office of the Secretary of Defense and joint-service US Transportation Command, the prime contributors of this new assessment, to complete it this month. Yet influential government officials such as Sen. John McCain (R-Ariz.) and Defense Secretary Robert M. Gates have pressed an anti-C-17 offensive for months.

McCain: The US has "more than necessary strategic airlift capacity" and should not buy C-17s.

Gates: The Pentagon "does not need additional C-17 aircraft."

The question is, how could either of them possibly know?

Gates and McCain were reacting to Congressional proposals to allocate up to \$2.5 billion to buy up to 10 new C-17s, airplanes the Air Force had not included in its 2010 budget request.

Gates wrote on Oct. 14: "Analyses by DOD have shown that the C-17s already in the force or on order, together with existing ... C-5 aircraft, are more than adequate to meet the department's future needs, even under the most stressing of situations. Procuring additional C-17s is an inefficient use of critical defense resources that could be put to better use elsewhere."

If only it were that simple. Ending C-17 production now would leave the nation without a source of widebody military airlifters, even though strategic lift is in high demand and in short supply worldwide.

The assertion that the US does not need additional C-17s is simply that—an assertion. No study supports it.

Gates' claim that analysis shows that existing C-17 and C-5 fleets are good enough is obsolete. The last time DOD comprehensively studied strategic airlift requirements was in 2005, before the Army and Marine Corps were expanded by 92,000 troops and the C-5's Reliability Enhancement and Re-engineing Program was dramatically scaled back.

The 2005 MCS called for 292 to 383 strategic airlifters. The following year, DOD's Quadrennial Defense Review specified 180 C-17s and 112 fully modernized C-5s, but plans now call for only 52 C-5s to be fully modernized. The other 59 C-5s (all older and less reliable A models) will only receive an avionics upgrade.

Meanwhile, TRANSCOM upped its C-17 requirement to 205 aircraft—the number built and on order—but that number as-

sumed all of the C-5 modernization programs would henceforth go without a hitch.

As for the claim that \$2.5 billion to build 10 C-17s is an inefficient use of defense dollars that could be better put to use elsewhere, it is hard to determine Gates' priorities.

In his successful drive to kill the F-22, Gates repeatedly blasted the Raptor as unnecessary overkill not needed for today's wars. The C-17 is exactly what is needed—for both today's conflicts and possible large-scale future wars.

No one doubts the C-17's capabilities; even Gates and McCain laud its performance. The airlifters are being flown, in combat, at rates 25 percent greater than expected. They can operate on much shorter runways (including dirt strips), have dramatically better reliability, and cost less than half as much to operate.

For critics, however, the only real issue is cost. "The C-17's excellence is one of those facts that is indisputably true but irrelevant to the issue at hand," opines *Los Angeles Times* business columnist Michael Hiltzik.

What is relevant, however, is that new requirements are due and no one knows whether they can be met without more C-17s.

Indeed, said Sen. Barbara Boxer (D-Calif.), the US "cannot take the chance that we 'may' have enough aircraft." She points out the obvious fact that it would be irrational to kill production before Congress has a chance to review the forthcoming study.

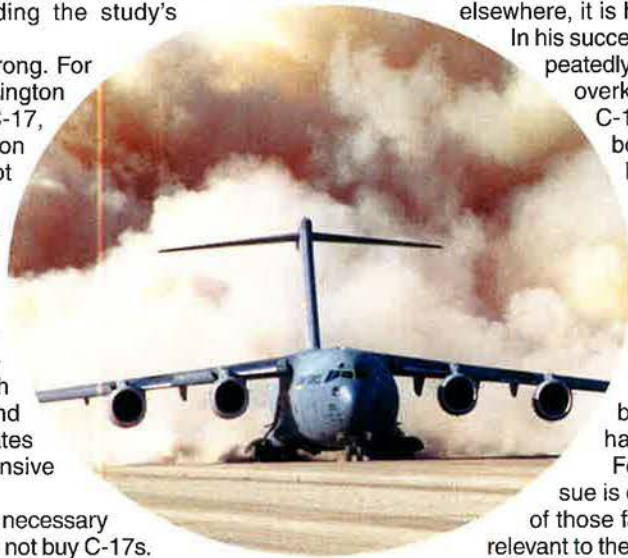
The Congressional support is a mixed blessing; the Air Force desperately needs the right to manage its airlift inventories. Air Mobility Command would like to retire old C-5As on a one-for-one basis as additional C-17s are purchased, but Congress prohibits AMC from doing so.

"Too much aluminum is almost as bad as not enough," noted Gen. Norton A. Schwartz, USAF Chief of Staff.

Meanwhile, both chambers of Congress have passed funding bills including C-17 purchases. In the Senate's consideration of the 2010 defense appropriations bill, McCain proposed an amendment to strip out all \$2.5 billion in C-17 funding. He got torched, with his amendment going down to defeat by a 68-to-30 margin. The House appropriations bill also included C-17 money. There is no conference report yet, however, and no Presidential signature.

Meanwhile, December is looking to be a big month for the C-17—either up or down. The MCS is due for delivery. So is an independent assessment by the Institute for Defense Analyses. It now seems that lawmakers will decide this month how many C-17s to buy (up to 10) in 2010.

So it won't be a case of "ready, fire, aim" after all. ■



More information: <http://www.gao.gov/new.items/d0950.pdf>

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Airlift Upsurge

USAF's mobility force is the glue that holds together US forces in Afghanistan.

During the past summer and fall, USAF's air mobility forces turned in record-setting performances in Southwest Asia. The aircrews, month after month, air-dropped ever larger amounts of supplies and cargo to US forces operating in isolated parts of Afghanistan.

Undoubtedly, USAF airlift plays a vital role in helping land forces survive in a dangerous and alien environment. Numerous US troops are scattered among remote firebases in the landlocked country, fighting an increasingly deadly enemy. This fact has led to a sharp upsurge in airdrops from C-130s and C-17s, operations that bring in food, water, ammunition, and other essentials.

In June, mobility aircraft dropped what was then a record 3.2 million pounds of cargo into Afghanistan. A month later, the Air Force dropped 3.3 million pounds of cargo, and followed this up with 3.8 million pounds of supplies in August. In September, said Air Forces Central, the trend continued. USAF mobility forces dropped 4.1 million pounds of cargo. Final figures for October and November weren't yet available, but all signs were that the cargo numbers continued to rise.

Gen. Arthur J. Lichte, then commander of Air Mobility Command, said AMC is "working very hard, no doubt about it."

Airlifters have similarly delivered thousands of troops out of Iraq and into Afghanistan this year without any major

snags, said Lichte. In fact, improved fleet management practices mean AMC is managing its operations better than it has in years. Despite the monthly delivery records, operations have actually attained a "steady state," according to USAF's airlift commanders.

AMC and US Transportation Command officials have nearly completed work on the first major review of mobility requirements since the Mobility Capability Study of 2005. The new study should be finished up sometime this month. Some trends are already apparent.

The health of the Air Force's mobility fleet is strong, said Lichte, but the weak link is the tanker fleet, which may have arrived at a tipping point between success and failure. The general admitted

A C-17 Globemaster III assigned to the 97th Air Mobility Wing, Altus AFB, Okla., takes off from a runway at Nellis AFB, Nev., during a May mobility exercise.

USAF photo by A1C Brett Chelmsman

to look at reskinning the aircraft and installing new wires and flight controls.

After 2020, the force's newest tankers—the KC-10 fleet—will be due for a service life extension program, also focusing on rewiring and replacing the airframes' skin. Time is clearly running out on the healthy tanker fleet.

Despite the tanker difficulties, officials say the Air Force overall has a good handle on its mobility fleet. This requires a delicate balancing act, particularly with the strategic airlifters—the C-17 Globemaster III and C-5 Galaxy.

Half the C-5 fleet has undergone the Avionics Modernization Program (AMP), with operational testing of

three fully re-engineered and re-engined C-5M Super Galaxys now under way. AMC is now hoping Congress will lift the retirement restriction on the C-5As, which were previously pulled from the C-5 Reliability Enhancement and Re-engineing Program (RERP).

Due to Congress' recent proclivity for adding C-17s to the Air Force's inventory (the program of record now stands at 205), senior leadership has urged lawmakers not to block the service from retiring some of the oldest, poorest performing C-5As. Some of these Vietnam-era Galaxys are notoriously fickle, with high maintenance costs.



By Marc V. Schanz, Associate Editor

he would give his tankers a grade of D and soon an F—if a replacement aircraft does not come on line quickly.

Wrapped Up

The Air Force sent the last KC-135E, from the Maine Air National Guard, to the "Boneyard" at Davis-Monthan AFB, Ariz., in September. It now serves as a parts supplier for the slightly newer R/T models remaining on active duty.

Seventy-four KC-135Es will be in storage at the Boneyard, effectively in "bubble wrap," according to Lichte, and available for restoration per Congress' direction.

Costs to maintain the remaining KC-135s will accelerate from \$2 billion a year up to \$6 billion starting in 2018, Lichte said. The Air Force will then have



A C-17 drops a container delivery system during the same exercise at Nellis. The training has proved valuable as C-17s have air-dropped ever greater quantities of supplies to isolated forces in Afghanistan.

USAF photo by SSgt. Taylor Worley



Left: A C-17 soars over the Pyramids of Giza during Exercise Bright Star, a joint international military airdrop exercise in October. Above: Airmen and Army paratroopers board a C-130J.

Air Force Secretary Michael B. Donley told reporters in September that he has urged Capitol Hill to allow retirement of older C-5As, so the strategic fleet can be maintained at around 300 tails as new C-17s arrive. The 2010 defense appropriations bill, for example, saw the Senate adding 10 C-17s while the House added three. The bill was headed to conference as of early October.

Lichte called the ability to retire old C-5As a “big deal,” noting that otherwise, if the Air Force starts going above 205 C-17s, AMC starts running out of money, manpower, and ramp space. “It’s a physical limitation,” Lichte said. This trade-off would preserve needed capability since a C-17, while not as large as a C-5, can make up for capacity with “velocity” and reliability.

Lichte is bullish on the prospects for the planned C-5 RERP, saying flight testing has so far gone well. (A C-5M,

taking off from Dover AFB, Del., unofficially set 41 new aeronautical world records on Sept. 13, climbing to 12,000 meters in less than 28 minutes with a 178,000-pound payload—setting time to climb, payload, and altitude records, among others.)

Hot Strategic Airlift Production

The Air Force needs the 52 planned C-5Ms, Lichte said, a program that would consist of RERP upgrading all 49 “AMPed” B models, one A model, and two C-5Cs.

With the number of C-17s still to be determined, AMC needs flexibility just with its C-5A inventory.

This past fall, it appeared Congress may be ready to relent on its C-5 retirement restrictions. Sen. Daniel K. Inouye (D-Hawaii) called the C-5As “hard to maintain, and often broken,” adding that he expected the Pentagon to conclude it

has a requirement for a “hot” strategic airlift production line in the ongoing mobility review. In October, however, the 2010 defense authorization act passed with a provision which prevents the Air Force from retiring any C-5As until USAF completes operational testing and evaluation of the one C-5A converted to the C-5M configuration.

There are concerns about the health of the C-17 fleet as well. Globemaster use in Iraq and Afghanistan has quickly outpaced the expected flying hour program: The Air Force initially planned on flying C-17s about 1,000 hours a year for 30 years, Lichte said, and when the US “went into Afghanistan and Iraq, ... we started flying much harder.”

Just a few years ago, operations were pushing fleet usage rates north of 1,250 hours a year per C-17, on average. But as more C-17s have entered the fleet (the 190th was delivered in October), the average use rate has begun to come down. Currently, the Globemaster



fleet averages 1,035 hours a year per airframe.

“We can spread that flying time out,” Lichte said. “It’s all about fleet management.”

The Air Force has greater flexibility now with a larger inventory to manage the fleet as it sees fit, moving tails from one base to another, shifting Air National Guard and Reserve assets into use, and other initiatives.

The Air Force is reassured because the Civil Reserve Air Fleet—commercial partners that aid movement of materiel and personnel around the globe—is in better shape than it was just 18 months ago, when airlines were feeling the effects of the economic crunch. Commercial contribution to strategic lift is crucial to daily success of the air mobility enterprise, according to US Transportation Command. CRAF provides 1,083 aircraft through 34 companies, and on any given day, 170 of the 480 airlift missions tracked by TRANSCOM are flown by commercial airlift.

In fact, most of AMC’s passengers are moved on commercial air. “Our commercial partners, air and sea, have been instrumental in our ability to handle

Below: Airmen and soldiers jump from the bay of a C-130J Super Hercules during an airdrop over Germany in May.



USAF photo by S/A Kenny Holston



Soldiers from Bravo Company, 1st Battalion, 4th Infantry Regiment, settle into a C-17 Globemaster III at Manas AB, Kyrgyzstan, en route to a deployment.

the surge going into Afghanistan,” said Gen. Duncan J. McNabb, commander of TRANSCOM.

The airline industry has raised concerns about the future of CRAF business, as Iraq operations wind down and because the Afghan buildup won’t last forever. Lichte said AMC is meeting with the commercial partners every six months to work out concerns, and talking with lawmakers about giving the fleet enough work to stay viable.

“Their big concern is, OK, we’re doing [well] now, and we’re sustaining ourselves. What happens when this all comes to an end?” Lichte said.

The upcoming mobility study should help illuminate CRAF requirements for the next several years.

While the Air Force is trying to balance its heavy airlift and tanker programs, its tactical mobility portfolio—revamped just over a year ago—is suddenly facing new questions.

Last August, the Air Force updated its plans for the C-130 Hercules fleet, with the centerpiece being the purchase of 132 C-130J aircraft, the retirement of all C-130Es by 2015, and modernization programs for 221 C-130H models. The money saved by retiring the E models would go toward C-130Js.

“We have three ... out testing now; they’re doing very well,” Lichte said of the C-130H Avionics Modernization Program. Unfortunately, the future of the program may be decided by cost management instead of operational need.

The Air Force has spent \$1.4 billion developing AMP, and the cost per kit

is now about \$8 million. A contract for low rate initial production of the first two AMP kits was signed in September 2008, and testing ran ahead of schedule this past spring. The current contract requires Boeing to manufacture 26 kits and install the modification on 11 aircraft.

A Piecemeal Plan

The plan, however, has run afoul of Congress. C-130 AMP funding was zeroed out of the Fiscal 2010 defense spending bill. Both the House and Senate Armed Services committees noted that USAF has been unable to spend its Fiscal 2008 and 2009 funding on the program until this past summer—citing a one-year delay in beginning production.

In September, Air Force Chief of Staff Gen. Norton A. Schwartz said the service was exploring other options for the AMP program—citing affordability as a prime concern.

Under consideration at the time was a piecemeal improvement plan for existing avionics to meet global air traffic requirements, instead of the AMP’s more comprehensive “glass cockpit” approach.

If C-130 AMP is not revived, safety and obsolescence will become a concern in older C-130H aircraft, Lichte said.

The fleet’s C-130Js are doing well (the Air Force recently took delivery of its 67th J model), have modern avionics, and are highly interoperable with several allied air forces, Lichte said. Adding to the C-130J buy as an alternative to a scrapped AMP is an idea worth considering, he said. International

flight restrictions on aircraft that do not feature robust avionics (such as those in the J models) will kick in around 2015.

Questions regarding the Air Force’s tactical mobility mission come at a time when the service is taking on the Army’s direct-support needs—assuming sole ownership of the C-27J mission, formerly the Joint Cargo Aircraft, with the Fiscal 2010 budget. The size of the program has contracted from 78 to 38 aircraft, and the Air Force and Army remain in discussions over final basing and deployment. In late September, AMC was studying how the Air Force could successfully implement the direct-support mission. By the fall of 2010, Lichte anticipates the first deployment of C-27Js in theater.

Defense Secretary Robert M. Gates may have something to say about this, however. He has commented on the C-27J program several times, including saying that his perception is that the JCA mission overlaps with the Air Force’s C-130 mission.

National Guard officials have stood by the original 78 aircraft as the standing requirement, and Donley stated the revised 38-aircraft program is the “floor, not the ceiling,” for the program.

Lichte believes there are “synergies” rather than overlap in the C-130 and C-27J missions. With the Joint Cargo Aircraft, AMC will be able to accomplish some of the direct-support mission in addition to the intratheater mission, he said.

AMC is expanding its associate units across the force to meet the needs and better use iron across the active, Guard, and Reserve inventory. The Air Force has decided its future is in associate constructs. These include both the classic associate, with the Guard or Reserve working with an active duty unit, and active associate units (such as the active duty 30th Airlift Squadron, which operates and works with the Wyoming ANG’s 153rd Airlift Wing).

The Air Force plans to eventually make all of its KC-X units some kind of associate unit, Lichte said.

In December 2008, the Air Force announced three ANG KC-135 wings would become active associate units, with full operational capability by September 2011. Active duty airmen are being assigned to the 117th Air Refueling Wing at Birmingham Arpt., Ala., the 126th ARW at Scott AFB, Ill., and the 157th ARW at Pease Intl. Tradeport ANG, N.H. The Guard units will now host the active duty aircrews, maintain-

Hard All the Time

"In truth, it is, I think, accurate to observe that, as in Iraq in 2007, everything in Afghanistan is hard, and it is hard all the time."—*Army Gen. David H. Petraeus, commander, US Central Command, Times (of London), Sept. 18.*

Promotion Advantage

"It's going to be pretty hard for a promotion board, picking the next one-star generals, to pick a colonel who hasn't commanded a UAV wing over a colonel who has. The UAV commander has the experience, and he has a larger, less insular view of the battlefield than, say, an F-22 pilot at Langley."—*C. R. Anderegg, historian of the Air Force, a former F-15 squadron commander, and two-time fighter group commander with 170 combat missions in Vietnam, Newsweek, Sept. 28.*

Just Here To Help You

"As I see it, there is only one way to move forward: Washington should agree to the Russian proposal for a joint assessment of missile threats. Let the experts from both countries have a frank discussion that would reveal which threats are real and must be dealt with, and which are imaginary. This would help to avoid misguided projects like the Polish-Czech missile shield, and could help move us from a state of mutual deterrence to a goal of minimum nuclear sufficiency for self-defense."—*Former Soviet President Mikhail Gorbachev, op-ed column, New York Times, Sept. 25.*

What Madness Is This?

"Beijing plans to cut back its vast Army to allocate more resources to the Navy and Air Force ... as part of its drive to modernize the world's biggest military into a leaner, high-tech force."—*Reuters, South China Morning Post, Oct. 1.*

Just Like the Vatican

"If Taliban wants to make a religious state, OK, like the Vatican. Vatican doesn't constitute a danger against us? No. It's a religious country, very peaceful. And if Taliban wants to make an Islamic emirate, who said that the Taliban is an enemy?"—*Libyan leader Muammar Qaddafi, speech to UN, Sept. 23.*

Of Less Concern

"I think the Taliban are, obviously, exceedingly bad people that have done awful things. Their capability is somewhat different, though [from al Qaeda], on that continuum of transnational threats."—*White House Press Secretary Robert Gibbs, Oct. 8.*

Share the Risk

"Preoccupied with protection of our own forces, we have operated in a manner that distances us—physically and psychologically—from the people we seek to protect. ... ISAF [International Security Assistance Force] cannot succeed if it is unwilling to share risk, at least equally, with the people."—*Army Gen. Stanley A. McChrystal, top US and NATO commander in Afghanistan, report to the Secretary of Defense, Aug. 30, disclosed by the Washington Post, Sept. 21.*

Risk of Sharing Risk

"I am troubled if we are putting our troops at greater risk in order to go to such extremes to avoid Afghan casualties."—*Sen. Susan M. Collins (R-Maine), member of the Senate Armed Services Committee, Washington Post, Sept. 23.*

Affirming the Core Mission

"We're making real progress in our core mission: to disrupt, dismantle, and defeat al Qaeda and other extremist networks around the world. We must never lose sight of that goal. That's the principal threat to the American people. ... We will target al Qaeda wherever they take root; we will not yield in our pursuit; and we are developing the capacity and the cooperation to deny a safe haven to any who threaten America and its allies."—*President Obama, National Counterterrorism Center, Oct. 6.*

Airpower and Propaganda

"If all else fails, the enemy will seek to neutralize our asymmetric advantage by using propaganda to attempt to influence the media, putting pressure on our freedom to exploit airpower capabilities to the full; again, this ploy has been used in Afghanistan, where one of the most significant

challenges that we currently face—particularly as our land forces are so reliant on air support—is to make sure that we can counter the allegations that the majority of civilian casualties are caused by air attack. We all deeply regret innocent civilian casualties in war, but the growing perception that all civilian casualties are caused by air-delivered weapons is far from the truth."—*Air Chief Marshal Stephen Dalton, Royal Air Force Chief of the Air Staff, Sept. 14.*

Not for Public Consumption

"In this process, it is imperative that all of us taking part in these deliberations—civilians and military alike—provide our best advice to the President candidly but privately."—*Secretary of Defense Robert M. Gates, Association of the US Army, Oct. 5, four days after McChrystal, in a London speech, spoke on strategy in Afghanistan.*

Synergy of the Force

"Since our reorganization in 1992, which was based largely on functional realignment, Air Force members have tended to view events through a mobility perspective, a combat air forces perspective, or a space perspective, rather than an airman's perspective. We need to recognize and reinforce the idea that the value of an independent Air Force lies in the synergy it provides across these functional capabilities—not in the effectiveness or efficiency of the independent capabilities themselves."—*Retired Lt. Gen. Robert J. Elder Jr., former commander of 8th Air Force, Air & Space Power Journal, Fall.*

The End Is Near

"I will end 'don't ask, don't tell.'"—*President Obama, Human Rights Campaign dinner, Oct. 10.*

Senior Official's Measure of Strategy

"A ground-based interceptor is generally about a \$70-million-per-missile asset going after a \$10-\$15 million [Iranian] missile. The trade is not a good one economically. It's not a good one from a military strategy position."—*Senior Administration official, Wall Street Journal, Sept. 21.*



The Testers From Tucson

The Air National Guard-Air Force Reserve Command Test Center, or "AATC," seeks low-cost improvements for the whole force.

Photography by Jim Haseltine



A quartet of F-16C fighters, loaded with ordnance, head for the live weapons range at Nellis AFB, Nev. The aircraft belong to a combined Air National Guard-Air Force Reserve weapons test unit.

If you thought the Guard and Reserve flew every kind of mission except flight test, think again. The Air National Guard-Air Force Reserve Test Center, AATC, located at Tucson Arpt., Ariz., organizes and implements the testing of munitions, software, and other equipment flown by the Air Reserve Components. The ARC has its own money to install economical upgrades in its aircraft, and sometimes these prove so successful—like night vision goggles—that they are adopted by the active force. **11** F-16C releases flares on a test mission. The aircraft is loaded for bear, with air-to-air missiles, satellite guided bombs, extra fuel tanks, and a Litening pod for target designation. **12** A three-ship of AATC F-16 Block 30s prepares to test CBUs, or cluster bomb units, over the Nellis range.



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13 Two CBU-103 Wind-Corrected Munitions Dispensers are riding on a recent addition to the F-16: the BRU-57 dual-smart weapons rack, which doubles the load an F-16 can carry on a single pylon. **14** Lt. Col. Bruce Brown signals after completing his preflight procedures and taxis for a mission at Davis-Monthan AFB, Ariz., where the AATC maintains a detachment for test flights.



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11| A pair of the AATC's seven F-16s en route to the Barry Goldwater Range complex in southern Arizona, where they will release GBU-38 Joint Direct Attack Munitions, or JDAMs. Missions are flown with operationally representative loads to heighten realism. 12| The center's flagship "AT" F-16 awaits ordnance at the live load area of Davis-Monthan. 13| Two GBU-24 2,000-pound laser guided

bombs are "ripple"-released over the Goldwater range. 14| The center's headquarters at Tucson Airport. The center uses National Guard and Reserve Equipment Account funds to rapidly buy and test commercial, off-the-shelf hardware and software that can improve the capability of its aircraft. It also carries out tests for every major command that uses equipment fielded by the Guard, from

F-15s and helicopters to bombers. The Litening targeting pod and the Situational Awareness Data Link are just two systems first explored by the AATC that have now spread into the active force. 15| MSgt. Ruben Perez secures a JDAM to a BRU-57 rack for a test mission as TSgt. Harold Lewis maneuvers the loader.

111 Col. Mike Schwamm flies fingertip formation with an AATC F-16 en route to a sortie on the Nellis range. 121 An F-16 maneuvers under the sun. The AATC's motto is "Test and Innovation for the Air Reserve Component," but it performs both developmental and operational test missions for the Total Force. 131 During a series of test missions to prove out the latest F-16 software, SCU-7, the team dropped more than 150,000 pounds of weapons in 10 days. Perez (1) and TSgt. Mitzi Eggers load munitions. 141 An F-16 launches an AGM-65 Maverick missile in a live-fire software test. 151 What the well-dressed Falcon is wearing, from wingtip to centerline: AIM-120 AMRAAM and AIM-9 Sidewinder dogfight missiles, BRU-57s, with two WCMD cluster bombs, extra fuel tanks, and a Sniper targeting pod.





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11 TSgt. Saul Dojaquez monitors an engine run on an AATC F-16 between missions. The AATC aircraft bear the tail flash of the the Arizona Air National Guard, and are hosted by the Guard's 162nd Fighter Wing. 12 A JDAM is released during SCU-7 testing. Software updates tell the aircraft's computers how to recog-

nize and "talk to" loaded ordnance, identify threats, and help the pilot employ weapons. The "tapes" must be periodically updated to add new weapons, new versions of weapons, and revised threat profiles. 13 An F-16D two-seater rolls in to launch a Maverick missile. 14 The real deal: Live GBU-38 JDAMs await a test

mission, double mounted on a BRU-57. 15 An AGM-65K Maverick is launched by AATC Vice Commander Lt. Col. Leonard Dick. The TV-guided Maverick was headed for retirement, but proved its utility in Iraq during the early part of the decade. The K model extends its range with better resolution.

111 Brown inspects a Triple Ejector Rack loaded with two CBU-87 cluster bombs during the preflight walk around. 121 Maj. Chad Greer checks out conditions en route to a sortie over the Goldwater Range. Note the AATC patch, which gives equal billing to the Guard and Reserve. 131 The unit's sole F-16D, loaded up with a Litening targeting pod, a Sidewinder, and four LAU-131 rocket pods bearing 2.75-inch rockets. 141 Left to right, Eggers, Lewis, and Perez upload a smart rack on an F-16 wing. 151 A 2,000-pound JDAM leaves the wing of an AATC F-16 during a SCU-7 test sortie. The JDAM uses Global Positioning System satellite guidance and routinely strikes within 16 feet of its intended target. Its accuracy has almost single-handedly changed the calculus of strike from sending multiple aircraft to destroy a single target to sending one aircraft to destroy multiple targets.





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1 A four-ship of F-16s bearing JDAMs and Litening pods line up en route to a live-fire test mission. **2** An AATC F-16 carrying an AIM-120 AM-RAAM, AIM-9 Sidewinder, and a GBU-38 JDAM. The blue color indicates a nonlive weapon. **3** An F-16 breaks away, revealing its weapons load. **4** A last look at an AATC F-16 during SCU-7 tests. In addition to threats and weapons functions, the software updates also add electronic warfare improvements and air-to-air capability enhancements. For the F-16 Block 30, mission capability is doubled. ■

A Specter Haunts

The growing threat posed by China, not to mention political woes, has shaken up the US Navy.

Petty Officer 2nd Class Raul Barrios guides an F/A-18C Hornet onto a catapult aboard the aircraft carrier USS John C. Stennis.

“By the next decade, China will have more warships than the United States,” wrote Rear Adm. Terry B. Kraft in the September 2009 issue of US Naval Institute’s *Proceedings*.

Detailed, tactical attention to the prospect of an air battle with China has taken on new importance in the last few years.

China’s advanced aircraft, air defenses, and ballistic missiles pose a threat to carrier aircraft. Modified ballistic missiles such as the DF-21 may target carrier strike groups. A direct hit on a carrier is such a nightmare scenario that *Proceedings* ran an artist’s rendition of the aftermath of a missile hitting a Nimitz-class carrier as a cover illustration this year.

Yet a direct hit is not the chief scenario. Saturation attacks, to disrupt US operations, are more within China’s near-term technical reach.

Trying to launch or recover aircraft under threat of a missile barrage would be extremely taxing. The missile threat could disrupt flight deck operations or force carriers to operate farther from the shore. Like Air Force expeditionary wings, carrier air wings are very busy, but unlike the deployed Air Force wings, they don’t operate any stealth aircraft or unmanned air vehicles.

That is about to change, provided the Navy can survive Quadrennial Defense Review-driven budget cuts.

The Navy has several new aircraft types in the works. At a time when Air Force aviation budgets have been under siege, Navy aviation procurement—known as the APN account—is



DDP photo by Petty Officer 3rd Class Walter M. Whyman

Navy aviators have begun a quiet but earnest threat reappraisal. “You will face an adversary who believes he can beat you, your airplane, your tactics, and your sensors,” four-star Adm. Patrick M. Walsh warned carrier pilots in late 2009.

The Navy is taking emerging threats in the Pacific seriously, and China looms large in this regard. Walsh, in fact, was intentionally repeating an identical remark voiced in 2008 by Adm. Robert F. Willard, who in October took over command of US Pacific Command.

Official statements from the Navy have begun cautiously to acknowledge a growing threat. Adm. Timothy J. Keating observed the Pacific near-peer for two years while commanding PACOM.

“They’ve got 65-some submarines,” he said of China’s military. “They’ve got some relatively sophisticated and capable air force assets. Their defense budget is apparently growing. It is hardly transparent to us how much money they spend, much less what they’re spending that money on.”

the Carrier

By Rebecca Grant



USN photo by Mass Comm. Spec-2nd Class Raleel Figueroa Medina

enjoying a bonanza period. Purchases of F/A-18E/F Super Hornets began in 1997 and totaled 449 by 2009. Navy aviation funding grew by \$4.2 billion from Fiscal 2009 to Fiscal 2010 alone.

First flights of the Navy EA-18G Growler electronic attack fighter, the E-2D Advanced Hawkeye surveillance aircraft, and the land-based P-8 Poseidon patrol aircraft have all taken place in the last few years. Up to 68 Global Hawks modified for broad area maritime surveillance (BAMS) are on order. The combined buys for maritime surveillance of roughly 108 P-8s and up to 68 BAMS will total 176.

The stealthy F-35C carrier variant rolled out in 2009 and will begin rigorous flight tests in 2010.

Archiving over all these naval airpower modernization plans is an ongoing debate about the size of the Navy's carrier force. Eleven is the preferred number—but that force is under quiet attack.

Through the 1990s, the Navy maintained 12 carriers, but it decommissioned the conventionally powered *John F. Kennedy* without bringing on a replacement, bringing the fleet to 11. The Navy wants to dip briefly to 10 in 2012, but return to an ongoing posture of 11 when *Gerald R. Ford* is delivered in 2015.

A Little-Noticed Slow Down

The reason for the temporary drop is the need to retire USS *Enterprise*, the nation's first nuclear-powered carrier. *Enterprise* is a unique ship with eight nuclear reactors, compared to two in the modern Nimitz-class. *Enterprise* was commissioned in 1961—and is more than ready for retirement. The 95,413-ton *Nimitz* entered service on May 3, 1975. The final ship of this class, CVN-77, *George H. W. Bush*, was commissioned in January 2009.

Secretary of Defense Robert M. Gates cast doubt on the long-term plan

USS Dwight D. Eisenhower and its carrier strike group under way in the Atlantic Ocean. In July, the carrier completed a five-month deployment for Enduring Freedom.

with a little-noticed April 2009 decision to slow production rates for the next generation Ford class, stretching the purchase rate from one new carrier every three years to every five years.

For now, the Navy has strong Congressional support for its 11-carrier plan. Rep. Gene Taylor (D-Miss.), who leads the House Armed Services sea power subcommittee, told *Politico* that he understood dropping briefly to 10 but clarified that he does "not think 10 is the proper number," for the long term.

CVN-78, *Ford*, will open a new class. CVN-78 is based on the Nimitz hull but looks substantially different. The island is farther back, and electromagnetic catapults will replace 1950s-era steam-driven catapults. *Ford* was designed for



USN photo by Sean Seremet

An EA-18G Growler conducts touch-and-go landings aboard USS Dwight D. Eisenhower. The Growler is replacing the Navy's EA-6B Prowler electronic attack aircraft.

much greater electric power generation and some reduction in crew size.

These new flattops will boast the F-35C Lightning II stealth fighter, the Growler's electronic warfare capabilities, and advanced weapons and jamming pods tuned to defeat near-peer threats.

Currently the Navy maintains 10 carrier air wings (figuring at least one of its 11 carriers is usually in overhaul). Marine Corps squadrons often join the air wing, too.

Navy squadrons are small, with typically 12 aircraft per fighter squadron and smaller numbers for the EA-6B Prowler electronic warfare aircraft and supporting E-2s. The number of strike fighters in the air wing is the crucial variable in how many sorties each carrier can generate.

Navy plans call for keeping 44 strike fighters in each carrier air wing. Operational experience had shown that 44 worked well for the type of operations common for Iraq and Afghanistan, where commanders needed continual presence for strike and nontraditional intelligence-surveillance-reconnaissance. A Pacific scenario, of course, would require all the airpower that could be stuffed on the deck.

However, fading health of the "classic" F/A-18Cs may open a fleetwide capability gap in the middle of the next decade. Retirements could create a major shortfall in the inventory required for keeping 44 strike fighters

for each of 10 air wings. The Navy is the last US customer to take delivery of the F-35, so F-35C inventories may ramp up more slowly than needed.

Too Big To SLEP

"At the rate we are operating these aircraft, the number of our carrier-capable strike fighters will decrease between 2016 and 2020, which will affect our air wing capacity and effectiveness," Adm. Gary Roughead, Chief of Naval Operations, told lawmakers this summer.

The shortfall may be as large as 243 aircraft, and depends on variables such as whether the Navy opts for a service life extension plan for some Hornets.

The shortfall is "coming quicker than we anticipated a year ago," said Rear Adm. Joseph P. Aucoin, commander of Carrier Strike Group 3.

"If the F-35C were ready now, we'd buy it," he said. The Navy is "concerned about the gap" before the F-35 becomes operational.

A service life extension program for some classic Hornets might cost as much as \$26 million per jet aircraft, according to an estimate from Ronald O'Rourke of the Congressional Research Service. An extended SLEP is truly an emergency measure—and it would not be enough.

The gap is "too big to SLEP all of it," commented Aucoin. Another remedy under consideration is to buy more fourth generation Super Hornets, but Navy planners are adamant that they must field the stealthy, fifth generation F-35.

With the F-35C, the Navy is overcoming its distaste for stealth, an experience born out of failed efforts 20 years ago to build the stealthy A-12 attack aircraft. The cost and drama of the A-12 program left a generation of top admirals with a real antipathy toward stealth designs.

Technological advances, rising threats, and a new generation of leaders have changed that perspective. The F-35C should be—by far—the



Lockheed Martin photo

The Navy's variant of the F-35 Lightning II is displayed for the rollout ceremony at Lockheed Martin's facility in Fort Worth, Tex., in July.



USN photo by Mass Comm. Spec. 3rd Class John Phillip Wagner Jr.

An F/A-18 Super Hornet launches out over the Indian Ocean from the deck of USS Nimitz in October.

most capable carrier fighter-bomber ever built.

"The Navy really needs this airplane. This is our future," said Cmdr. Sarah Joyner, a Navy air warfare program officer at the Pentagon. As a former F/A-18C squadron commander, Joyner was lavish in her assessment of the F-35C's potential.

The F-35 is not a "first day only asset," Joyner said. It is designed to fight "through sustained operations. ... We have the opportunity to load it for bear and hang external ordnance," once the F-35 has helped defeat enemy air defenses, or for strike missions in low-threat environments.

Sold on Stealth

Current plans call for a mix of F-35Cs with the nonstealth aircraft. "For me, I'm very interested in getting to the [F-35], because I like to have more than one type of airplane on an air carrier deck," Roughead told *Politico*.

While the Navy is sold on stealth, the role for unmanned aircraft in

carrier air wings is far from certain. Like other services, the Navy invested heavily in the 1960s generation of unmanned vehicles and didn't like the results, and the rise of Predator as an ISR platform had no impact on naval aviation.

Earlier this decade, the Navy's plans called for incorporating a top-line unmanned system soon after CVN-78 was delivered in 2015. Naval Aviation Vision 2020 pictured a Navy unmanned reconnaissance air system also ready in about 2015, with a strike variant scheduled for

Who Has the Carriers?

The international trend is favoring larger carriers—although none come near the *Nimitz* or *Ford* designs, France's *Charles de Gaulle* is 24 percent larger than its predecessor, and Italy has nearly doubled its displacement tonnage with the 27,100-ton *Conte di Cavour*, commissioned in 2008. Britain's pair of new carriers, to be delivered in 2015, will be three times bigger than its current flattops.

Britain's upcoming carriers *Queen Elizabeth* and *Prince of Wales* displace 65,000 tons with a ski-jump design to carry short takeoff/vertical landing F-35 variants.

Part of the old Soviet fleet has been sold to India and China.

India is also buying a dozen or more navalized MiG-29Ks for its carrier to be christened INS *Vikramaditya*. This is a significant step up in size as well.

A September 2009 report announced that Russia has completed sea trials of MiGs aboard *Admiral Kuznetsov*, its remaining top-line carrier.

China has not conducted deck operations, but it has made a big show of procuring, dry-docking, and fitting out the former Soviet-fleet *Varyag* from Ukraine.

The nearly 10-year saga of *Varyag* began with the soap opera of towing the hulk from the Black Sea to the Pacific. Recently, the ship was spotted in a new dry dock decked in Chinese navy gray with an anti-skid primer on its deck. A Chinese carrier could well become a familiar silhouette in the Pacific in the next decade.

2020. As a first step, the Navy selected Northrop Grumman to demonstrate carrier suitability for a mature unmanned combat air system in a program called N-UCAS. The Northrop Grumman aircraft has a longer wingspan than an F/A-18 Hornet and the sleek look of the B-2 bomber. It is designed for stealth and endurance. The first carrier landings may take place in 2012.

As a stealthy unmanned ISR and strike asset, N-UCAS has the potential to give carriers a unique new role in major operations. "A cornerstone to this transformation is something long missing in the carrier air wing: a capable, unmanned surveillance-strike aircraft," wrote Thomas P. Ehrhard and Robert O. Work when both were analysts at the Center for Strategic and Budgetary Assessments. The strategic imperative is "to increase the range, persistence, and stealth of the Navy's carrier air wing" or risk eliminating the long-term tactical relevance of future carriers. Work is now undersecretary of the Navy, and Ehrhard is a special assistant to the Air Force Chief of Staff.

The Navy is not rushing to field the system, however—cost concerns have



Chinese Dongfeng 21 missiles, such as these being transported, can be used to target carrier strike groups. A direct hit would be a nightmare.

For all that, the Navy does have significant investment in unmanned systems. Top of the list is the Navy's own version of the Global Hawk UAV, modified

wing's goals for the future, and integrating surveillance and fires was a big driver behind the new E-2D Advanced Hawkeye surveillance aircraft.

The E-2D first flew in 2007 and should enter the initial operational test and evaluation phase around 2011. Up to 70 new E-2Ds will become the core maritime airborne surveillance force. Production variants will be capable of in-flight air refueling—something no other E-2s can do.

These D models are large aircraft hosting a much-improved radar tuned to detect small objects, such as cruise missiles, against a cluttered littoral background.

Whether flying irregular warfare missions or facing near-peer threats in the Pacific, the carrier aviators of the future will be a more joint force. The days when the Navy carved out its own territory for Route Pack missions in Vietnam are far in the past, and as aviation forces contract, there's a growing sense that the air component is in things together.

"When we pull out of Iraq and someday out of Afghanistan, it rests with our Navy and Air Force to have that forward presence overseas," said Aucoin. "You need a strong Navy and a strong Air Force." ■

Where Are the Carriers?

Aircraft carriers have been very active in operations over Iraq and Afghanistan. The Navy surged five carriers to bring strike fighters, E-2 Hawkeye battle managers, and helicopters to the Indian Ocean for Operation Enduring Freedom in 2001.

Two carriers were deployed to the Persian Gulf to send a message to Iran in 2007.

Typically, at least one carrier is on station in the North Arabian Gulf to fly sorties over Iraq or Afghanistan. F/A-18C Hornets or F/A-18E/F Super Hornets routinely fly show of force missions, drop Joint Direct Attack Munitions, and strafe enemy targets in the war zone.

kept aviators little more than lukewarm on the aircraft's potential.

With no experience in operating large unmanned vehicles, N-UCAS had not been slotted into future Navy operating concepts, a fact that perhaps made it easier to ignore. "N-UCAS on carriers is kind of far out," confirmed one expert.

Instead, Navy planners have started tossing around the idea of an unmanned system to replace the still-in-production Super Hornets. Such a system would not need to be operational until 2024, and delaying the aircraft that long would effectively take it out of current budget decisions. This is an unusual stance in a Pentagon otherwise infatuated with unmanned systems.

with sensors for land-based broad area maritime surveillance missions.

Other small reconnaissance UAVs, such as Scan Eagle and Fire Scout, are already in frequent use aboard the "small boys" and amphibious ships of the Navy's surface fleet.

Here the operating concepts are more developed, and the Navy is already looking ahead to whether its new P-8 maritime patrol crews might control BAMS aircraft and share targeting data.

Improving data flow and increasing ship survivability are central to the air

Rebecca Grant is a senior fellow of the Lexington Institute and 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 "JSTARS Wars," which appeared in the November issue.

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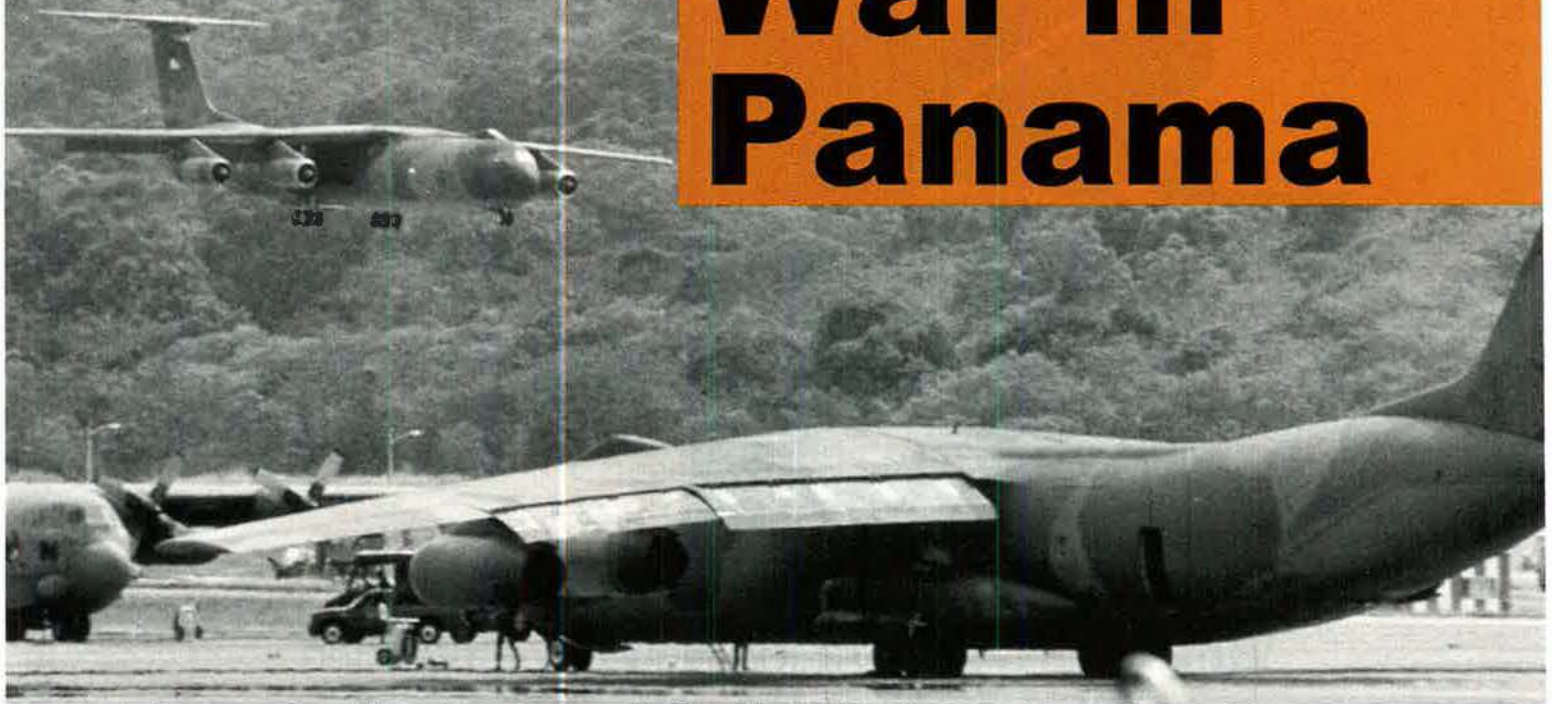


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A Small War in Panama



The main Air Force contribution to Operation Just Cause was the airlift, which doubled the number of combat troops in the country.

By John T. Correll

In 1989, the United States decided to take down the Noriega regime in Panama by military force. Manuel Antonio Noriega had been dictator of the country since 1983. Over the years, he had been on and off the CIA payroll, but that relationship soured as his corruption, repression, and collusion in drug smuggling became too blatant to ignore.

Noriega had risen in the service of Panama's previous dictator, Omar Torrijos, who called him "my gangster."

Torrijos died in an airplane crash in 1981, and Noriega eventually emerged as his successor—promoting himself from lieutenant colonel to four-star general. His power base was command of the Panama Defense Force, which included not only the armed forces but also the police, customs, and investigative services. The PDF owned hotels, liquor stores, and newspapers and extorted millions of dollars through its protection rackets. The nominal government leaders, the President and the national assembly, did Noriega's bidding.

"You could not buy Manuel Noriega, but you could rent him," said Gen. Colin L. Powell, Chairman of the Joint Chiefs of Staff.

In addition to his moonlighting for the CIA, Noriega had side deals with Cuba, Libya, and other intelligence customers, and he allowed the Soviet KGB to operate freely in Panama. His ties with the Medellín drug cartel in Colombia were close and of long standing.

Noriega was ruthless in eliminating the opposition. He ousted two elected Presidents when they resisted his will. In September 1985, the headless body of one of his enemies was dumped across the border in Costa Rica in a US mailbag. Roving paramilitary gangs called "dignity battalions" or "digbats" intimidated dissenters.

In June 1987, the US Senate adopted by a vote of 84-to-two a resolution calling for Noriega and his associates to "relinquish their duties" pending an independent investigation of the corruption and political violence charges against them. In February 1988, grand

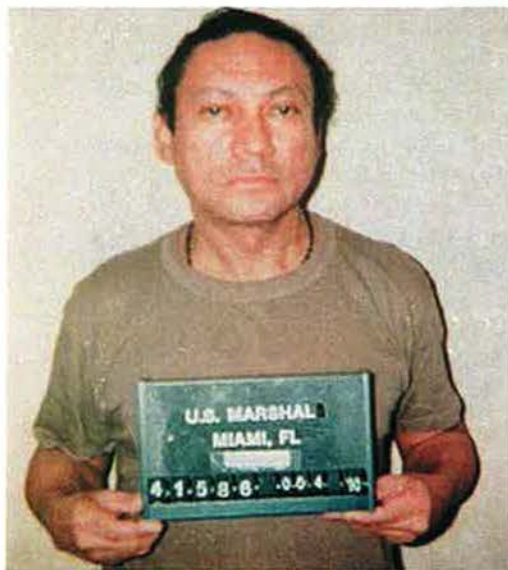
juries in Miami and Tampa, Fla., indicted Noriega on 13 counts of violating US racketeering and drug laws. The indictments said he took \$4.6 million in payoffs for allowing the Colombian cartel to use Panamanian ports and airports to ship cocaine to the United States. In retaliation, the PDF intensified harassment of US military members and dependents in Panama.

The United States had a stake in Panamanian affairs because of both the drug smuggling and continuing US responsibility for Panama Canal security. The treaty adopted in 1979 set a 20-year transition period, with full control of the canal to pass from the United States to Panama in 1999.

Until then, US forces were based at a dozen installations in what had previously been the Panama Canal Zone. The Army had an infantry brigade at Ft. Clayton. Rotational Air National Guard and Reserve units and some special operations forces were stationed at Howard Air Force Base in Panama. About 50,000 US citizens lived in



Facing page: C-141 and C-130 transports flew airlift missions into Panama, beefing up personnel and supplies in preparation for Just Cause. Above: Flames overtake city buildings during the operation.



Manuel Noriega holds a placard showing his federal ID number at his booking by the US Marshals Service in Miami.

Panama, 10,300 of them members of the armed forces. The headquarters of US Southern Command was at Quarry Heights in Panama City, 600 yards up the hill from PDF headquarters at the Comandancia.

The Bush Administration, which came to office in January 1989, took a hard line toward Noriega. Years earlier,

when he was director of the CIA, Bush had met with Noriega. As vice president in 1988, Bush had urged the Reagan Administration to support the grand jury indictments in Florida. His position became still tougher after the election in Panama in May 1989. The anti-Noriega coalition, led by Guillermo Endara, won by a three-to-one margin, but Noriega annulled the election results. Digbats armed with clubs and metal bars attacked Endara and the other winners. Endara, struck in the head, was hospitalized and afterward was attacked again. One of his bodyguards was killed.

Sand Fleas

Several days later, Bush sent 2,000 additional troops to Panama, supposedly to protect American lives and property. Southern Command conducted exercises called "Sand Fleas" to visibly assert US treaty and maneuver rights.

In September, Secretary of Defense Richard B. Cheney relieved Army Gen. Frederick F. Woerner in the middle of his tour as commander of Southern Command.

Woerner, regarded as too easygoing to handle the situation, was replaced by Gen. Maxwell R. Thurman, one of the hardest-charging officers in the Army.

Nothing had to be done to energize Thurman. "He is mobilized when he gets up in the morning, which is in the middle of the night," an admirer on the Joint Staff said. Thurman chose Lt. Gen. Carl W. Stiner to be his war planner, in command of Joint Task Force South. The chain of command was to be simple. "Carl Stiner is my warfighter, and everybody in Panama carrying a gun works for Carl Stiner," Thurman said.

Powell, a principal in the activity to come, became Chairman of the Joint Chiefs of Staff Oct. 1, 1989. On Oct. 3, three days after Thurman assumed command, disgruntled elements of the PDF attempted to overthrow Noriega in a coup that failed. As with a similar coup attempt that failed the previous year, the United States avoided involvement, seeing no advantage in trading one bunch of PDF thugs for another.

Thurman concentrated on preparations to carry out an operations plan, dubbed "Blue Spoon," to topple the regime and capture Noriega. The



AP photo/Terry Ashe

A C-130 Hercules skims the Panamanian coast en route to Howard AFB, Panama, during Just Cause.

Justice Department ruled that the restriction on use of military forces to enforce civilian laws—the Posse Comitatus Act—did not necessarily prevent forces from helping enforce US laws outside territorial jurisdiction of the United States. Execution of Blue Spoon awaited what planners called a “trigger event.”

The PDF did not amount to much as a military threat. Its total strength was 12,800, of which 4,000 were combat forces. It had 38 light airplanes, 17 helicopters, and no significant air defense capability. In a conflict, there would be no air attack on US ground forces. The United States had more than air superiority. It had an air monopoly.

Almost 13,000 US troops were in Panama prior to reinforcement. The operation would be mostly launched from the in-country US bases, which were close to the targets to be assaulted.

Thurman’s command center was in a secure area of Quarry Heights, next door to the Comandancia. Stiner’s headquarters was at Ft. Clayton. Army Maj. Gen. Wayne A. Downing, commander of the Joint Special Operations Task Force, was at Howard Air Force Base, just across the canal from Panama City. The force assigned to attack the Comandancia was at Ft. Clayton, only four miles from Panama City.

It was primarily an Army operation. The Marine Corps was ready to perform an amphibious landing, but that was ruled out. Marines and Navy SEALs would participate in the general assault, but their roles would be secondary. The main Air Force contribution would be an airlift that doubled the number of

US forces in Panama. Other Air Force elements, notably AC-130 gunships, would provide strong support for the operation.

A Loss of Security

“Trigger events” were not long in coming. On Dec. 15, Panama’s National Assembly passed a resolution declaring that a state of war existed with the United States. It named Noriega the “Maximum Leader.”

On Dec. 16, the PDF shot three American officers at a road block, killing one of them. The PDF also arrested and assaulted a US naval officer and his wife who had witnessed the shooting.

As D-Day approached, Operation Blue Spoon was renamed “Just Cause.” D-Day would be Dec. 20, with H-Hour at 1 a.m.

In November, Military Airlift Command C-5s had secretly delivered Army helicopters and tanks to Howard Air Force Base, where they were concealed in hangars and under cover. More troops and supplies arrived in December.

US paratroopers would jump on the big PDF base at Rio Hato, on the Pacific coast 100 miles west of Panama City, and on the Tocumen military airfield, adjacent to Torrijos Airport east of the city. The airlift began the afternoon of Dec. 19 when C-130s picked up Army Rangers from airfields at Ft. Benning, Ga., and Ft. Stewart, Ga. A few hours later, C-141s took off from Pope AFB, N.C., with 82nd Airborne paratroopers from Ft. Bragg, N.C. Other C-141s lifted heavy equipment for the airdrop from Charleston AFB, S.C.

However, all efforts to preserve tactical surprise soon evaporated. With C-141s landing at Howard every 10 minutes, it was obvious that something was about to happen.

US troops warned their Panamanian girlfriends to stay home. That information soon reached the PDF, as did reports of various conversations by Americans overheard by Panamanians.

At 10 p.m., Dan Rather reported on CBS that “US military transport planes have left Ft. Bragg. ... The Pentagon declines to say whether or not they’re bound for Panama.”

The loss of security might have been more serious except that the PDF’s key decision-maker, Manuel Noriega, was drunk and carousing. When the paratroopers landed at Tocumen, Noriega’s aides roused the groggy general and his companion of the evening from a nearby bungalow and rushed them into hiding.

Just before midnight, a new government—President Guillermo Endara and others who had been legally elected in May 1989—were sworn in at Quarry Heights by a Panamanian judge.

By H-Hour or shortly afterward, MAC had brought in 7,000 additional troops, including the paratroopers. Over the next several days, the airlift would deliver another 7,000, raising the total of US forces in Panama to 27,000, most of them combat forces.

The job for Stiner’s joint task force was to neutralize or secure 27 key positions and PDF installations, most of them



Army Gen. Maxwell Thurman became head of Southern Command in the months before Just Cause.

around the capital or along the Panama Canal. At 12:45 a.m., 15 minutes before H-Hour, three infantry battalions moved out from Ft. Clayton through Panama City to seize the Comandancia and the PDF's Ft. Amador and to protect the US Embassy.

About the same time, two F-117 stealth fighters swept down on Rio Hato. They had come from the Tonopah Test Range in Nevada and had refueled four times in flight. The F-117 had been operational since 1983, but this would be its combat debut. The assignment was to drop bombs near the PDF barracks to "stun and disorient" the inhabitants but not to hit the barracks themselves. Each fighter delivered a 2,000-pound GBU-27 laser guided bomb at 1:01 a.m. and vanished into the night.

Moments later, the Army Rangers jumped on Rio Hato from C-130s after a seven-hour flight from the United States. The base held out for five hours before surrendering.

A hundred miles to the northeast, 82nd Airborne paratroopers were landing on Tocumen airfield. At 1:55 a.m., the C-141s air-dropped pallets of heavy equipment at Tocumen. Noriega and his paramour had been at a PDF rest area next to the airfield and barely managed to escape. Meanwhile, US forces secured dozens of other H-Hour targets.

Air Force A-7s and OA-37s from Howard were in the air and available for fire support, but most of that was supplied instead by Army helicopters and Air Force AC-130 gunships. The AC-130s had deployed in advance and were in theater as part of the rotational force.

Speaking later at an Air Force Association symposium, Brig. Gen. Craig A. Hagan of the Army's Training and Doctrine Command testified to the soldiers' view of the AC-130. His son, Capt. Steve Hagan of the 82nd Airborne, and his unit were in a difficult situation that first night. Fortunately, Captain Hagan told his father, there was an AC-130 overhead.

"We explained our situation, and the guy [in the gunship] said, 'Where are you?' and we showed him, and he said, 'Where are the bad guys?' and we showed him that. There was a pregnant pause for a couple of seconds, and then he said, 'You need to move back 18 feet.'"

That done, the AC-130 guns took care of the problem.

Speaking from the White House at 7 a.m., President Bush said he had ordered the operation "to protect the lives of

Fantasy and Fact About the F-117 Strike

The F-117 strike at Rio Hato was a relatively minor part of the operation, but it played big in the political aftermath when Michael R. Gordon reported in the *New York Times* that the aircraft had missed their targets by more than 300 yards. According to Gordon and the *Times* editorial page, the Air Force had hoped that use of the stealthy F-117 in Panama would "buttress the case" for its "aeronautical cousin," the B-2 stealth bomber, and that its failure called the technology into doubt.

The editorial writers quoted the colonel who led the paratroop assault as saying that the bombs were supposed to hit the barracks, and that Air Force counterclaims, "even if true," raised troubling questions.

The F-117's "failure" to hit the barracks at Rio Hato has become part of the folklore of Operation Just Cause. In one account, the F-117's equipment began "acting up," and clouds and humidity "played tricks" on the targeting system.

There are some differences of opinion about what happened exactly, but the weight of evidence differs considerably with the oft-told tales.

Maj. Gen. Wayne A. Downing, commander of the Special Operations Task Force, had indeed argued for a direct hit on the PDF barracks, but he was overruled by Lt. Gen. Carl Stiner, who wanted the bombs to stun rather than kill the troops at Rio Hato.

The proposal to use the F-117s came initially from Stiner. According to an article in *Air Power History* by Stetson M. Siler, the Air Force was not eager to use the F-117 for an objective of such limited importance.

There was no precise target. The original plan was for the bombs to strike 50 feet from the buildings, on a parade ground and in an open field. Colin L. Powell increased the offset distance to 200 yards from one barracks and 250 yards from the other.

The most detailed reconstruction is by Malcolm McConnell in his 1991 book, *Just Cause*. "A shift in the forecast wind—from the west, not the northeast—made it preferable for the pilots to swap targets, with Lead hitting the field on the right and Two taking the parade ground to the left," McConnell said. "It was possible that smoke from the first bomb might disrupt Two's laser target designator's beam unless this swap was made."

At Rio Hato, however, Lead was "so intent on achieving the proper seaward offset from the barracks" that he erroneously bombed his original target, and Two keyed his drop on where Lead had bombed. The first bomb was almost precisely on target, but the second one fell wide.

How much difference that made in the stunning and disorienting is anybody's guess.

Questions about the F-117 itself were answered conclusively in the Gulf War two years later, where the Nighthawk achieved spectacular accuracy in precision attack. Gordon of the *Times* agreed that the F-117 was outstanding in the Gulf, but clung to his claim that it missed the target in Panama.

American citizens in Panama and to bring General Noriega to justice in the United States." At a briefing shortly afterward, Powell said that Noriega was "not running anything because we own all of the bases he owned eight hours ago."

A "Sound Barrier"

Most of the fighting was over by noon. There was no significant counterattack by the PDF, although scattered resistance by dignity battalions and PDF remnants continued for the next few days. Stiner's troops were in control of the Comandancia by early evening of Dec. 20.

Noriega hid out for several days in the houses of his supporters and in the province of Chiriqui. He then sought refuge from the papal nuncio, Monsignor Jose Sebastian Laboa, who granted him

temporary political asylum in the Vatican Embassy. The nuncio's representative picked up Noriega in the parking lot of a Dairy Queen and drove him to the embassy Dec. 24.

US troops surrounded the embassy. With Stiner's approval, a Special Operations Command psychological operations group set up speakers and blasted the nunciature with rock music, played around the clock at an earsplitting volume that could be heard blocks away.

As officially explained later, it was a "sound barrier" to prevent reporters with powerful microphones from eavesdropping on "delicate negotiations." That lacked something in credibility, and a spokesman for the Special Warfare Center admitted that the purpose had



Soldiers from 1st Battalion, 509th Infantry, jump from a C-130 Hercules into a drop zone outside Panama City during Just Cause.

been “a very imaginative use” of psychological tools.

It was one of the few boneheaded decisions of the campaign. With the spectacle playing on television in the United States, Powell called Thurman, told him that Bush viewed the tactic not only as politically embarrassing but also “irritating and petty,” and that Thurman was to stop the music.

Noriega surrendered Jan. 3. US troops took him to Howard, where agents of the Drug Enforcement Administration arrested him on the ramp of a C-130, which flew him to Homestead AFB, Fla. He was convicted in 1992 of drug trafficking and money laundering and sentenced to 40 years in prison.

Trial Judge William M. Hoeweler ruled that Noriega had been captured in the course of an armed conflict, which gave him prisoner of war status under the Geneva Convention. In 1999, Hoeweler reduced the sentence by 10 years, so that with time off for good behavior, Noriega was eligible for release in 2007.

Although he completed his sentence in September 2007, Noriega remains in jail while federal courts consider what to do with him. His lawyers are trying to block Panamanian requests for extradition (for murder) and French extradition requests (for money laundering) on the grounds that he is a POW and not subject to extradition.

The departure of US troops from Panama began Jan. 4 and Operation Just Cause was terminated Jan. 11. A public opinion poll found that nine out of 10 Panamanians favored the US intervention. Nevertheless, the UN General Assembly voted 75-20 (with 40

abstentions) to condemn the operation as a violation of international law.

Casualties and collateral damage were low, thanks to an extraordinary effort by Thurman and Stiner to contain the violence. Despite that, Ramsey Clark, former US attorney general turned international activist, denounced a “conspiracy of silence” about what he claimed was the killing of some 3,000 Panamanians.

Just Cause, a Template

Some reports imagined the death toll as high as 8,000. In actuality, 23 US servicemen were killed and 324 wounded. Enemy losses were 314 killed and 124 wounded. The best estimate of civilian casualties was 202 killed and 1,508 wounded. About 1,000 Panamanians were left homeless as the result of arson and looting by the dignity battalions between Dec. 20 and Jan. 1.

The PDF was abolished, although parts of it were reorganized as cadre for the new Fuerza Publica, or Public Force. The Comandancia was torn down.

In 1997, US Southern Command relocated to Miami, and full Panamanian control of the canal became effective at noon, Dec. 31, 1999.

For a while, there was a flurry of belief among ground force advocates that Just Cause would be the template for US military engagements of the future. The operation had been planned and run by the Army and it used an emphatic Army approach to the employment of joint

forces. It was the foremost example of the AirLand Battle doctrine, in which ground forces predominate and airpower was cast in a distinctly supporting role.

This notion was upset by the Gulf War of 1991, which showcased airpower and set the model for subsequent conflicts of the 1990s. Nevertheless, some ground power theorists saw Just Cause as a better model for future wars than Desert Storm.

Just Cause was “everything that subsequent US military operations were not: a rapid, decisive application of overwhelming might,” said Thomas Donnelly, former editor of the *Army Times* and a member of House Armed Services Committee staff from 1995 to 1999, writing in *The National Interest* in 2000. “One cannot help but wonder why the campaign has not been enshrined as a paradigm for the American way of war.”

In Donnelly’s analysis, Desert Storm was “fought for more limited goals than those of Operation Just Cause,” and “was also fought in a more limited fashion.” The Gulf War and subsequent operations were “incomplete victories,” he said.

Any legitimate comparison of Just Cause and Desert Storm must take into account differences in scope and distance as well as advantages unlikely to recur in future wars. Noriega had no airpower. The PDF was incompetent. The United States already had thousands of combat troops inside Panama and staging bases within easy reach of the targets. The airlift doubled the US force without opposition.

At a symposium put on in 2007 by the Association of the US Army, Lt. Gen. Thomas F. Metz, deputy commander of Army Training and Doctrine Command, described Just Cause as “the first war of the 21st century” and Desert Storm as “the last war of the 20th century.”

What can be said without argument is that Just Cause was a strong operation, well-planned, capably commanded, and executed with few mistakes. It was the first big success of US arms in many years. Just Cause broke the lingering attitudes and perceptions from Vietnam and re-established the recognition that US forces could fight and win. That was sufficient to earn its place in history. ■

John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributing editor. His most recent article, “The Air Invasion of Burma,” appeared in the November issue.

The 16th Chief Master Sergeant of the Air Force views stability as the enlisted force's top goal.

Chief Roy

By Peter Grier



USAF photo by AIC Corey Hook

The new Chief Master Sergeant of the Air Force, James A. Roy, reports he has been getting ready to serve as USAF's top enlisted airman for 27 years. That is how long the Monroe, Mich., native has been in the military. He said that from early jobs as a heavy equipment operator, through supervisory positions of increasing responsibility, to the post of senior enlisted leader and advisor, US Pacific Command, each of his stops along the way has helped prepare him for the responsibility he now faces.

Not that anyone would ever be 100 percent prepared for this post. It is the kind of leadership position that can only be learned by doing.

"We like to think we are ready, but there are always those nuances of the position that you just don't know until you step in," said Roy in an interview.

Roy became the Air Force's top enlisted sergeant June 30, when he took

over as Chief Master Sergeant of the Air Force from Rodney J. McKinley, who retired. Among the highlights of his first weeks on the job were spending the night in a missile alert facility, he said, and testifying before Congress on Air Force family support programs.

"Day 23," he said of his Congressional appearance. "And it was an honor to represent all of us, not just enlisted, but all the Air Force."

A Different Perspective

If Roy brings a different perspective to his job, it may be due to his recent service at Pacific Command. He is the first Chief Master Sergeant of the Air Force to come into the post directly from a geographic combatant command.

"The lens that I look through is a little different," he said. "Maybe I'm able to see things on a different plane." That means that today, as someone in the position of providing forces, he

CMSAF James Roy speaks with airmen and civilians at the financial services center at Ellsworth AFB, S.D.

may better know what those combatant commands need. He can ask himself what he and the airmen wanted at the combatant command.

"What was it that we needed? What capabilities?" he asked. "And then ... I try to provide that capability."

Roy's joint credentials are further enhanced by the fact that earlier in his career he served as an instructor at the Army's Ft. Leonard Wood, in Missouri.

Asked what his priorities are, Roy said that helping to reinvigorate the nuclear enterprise is *o.r.e.* Having spent some time at Air Force Space Command bases in his first months as Chief Master Sergeant of the Air Force, he said that energizing the nuclear mission is a priority that is on track. He himself was even denied entry at a facility until his identity was verified.



Airmen engage “enemy” targets during Road Warrior VII at Camp Guernsey, Wyo. Road Warrior is a joint Air Force Space Command and National Nuclear Security Agency training exercise.

“Our young airmen out there are complying with established procedures,” he said.

Developing airmen and their families is a second priority. Airmen’s development, he said, should include some educational experience that leaves them with knowledge of the other military services—and perhaps US allies as well.

“That’s the way we fight—joint teams and coalitions,” said Roy.

Not every enlisted member of the Air Force will need the same amount of joint education. Roy said he is looking at the whole continuum of Air Force training, from basic training through technical school, to see where changes should be made.

One way to expose Air Force personnel to possible coalition partners from other nations would be to do technical training together. That is already happening with some airframes.

“We’ve been sharing some training and such with some of our partner nations on [C-17] Globemasters,” said Roy, who added that he would like to see similar training in other areas, such as coalition professional military education, PME.

At Pacific Command, Roy helped select a promising senior master sergeant to attend Singapore’s warrant officer course. That sergeant came back with an increased appreciation for what US allies can provide.

“He is a much better airman today for having done that,” said Roy.

The Air Force now is working with Singapore and Canada to see if it can set up a formal process of PME exchanges. Such swaps could demonstrate to the

militaries of other nations that the US is interested in their progress, as well as provide benefits to the US airmen involved.

International Exposure

Canadian students already go through the US Air Force Senior NCO Academy. There are also USAF instructors in the Canadian system. The missing piece is the student—specifically, US students in Canadian PME.

“Not everybody needs it, but I believe it is an area where we could get our airmen exposed to other countries, and their cultural awareness increased,” said Roy.

Helping the families of airmen is another critical aspect in building a healthy Air Force. The entire service is

currently highlighting the importance of Air Force families, and top leaders have designated this as the “Year of the Air Force Family.”

By “family,” the Air Force means everyone who is part of its team, emphasized Roy. Single airmen are part of the Air Force family. In fact, there is going to be an Air Force conference in the near future devoted to the concerns of its unmarried airmen. Civilian employees are part of the Air Force family, too. So are the parents, spouses, and children of airmen.

One point of the effort is to rebuild some of the camaraderie and sense of community that has been lost with the closing of clubs and other facilities that long served as gathering places for the Air Force family.

“We want to build a sense of community back into our bases, reinvigorate that,” said Roy.

This does not necessarily mean the Air Force will institute new programs, said the service’s top enlisted leader. It does include fine-tuning programs that already exist.

The Air Force will be looking at such things as the quality of enlisted housing, whether it is on- or off-base, what those communities look like, and whether they foster professional development and recreation, said Roy.

“We’re looking at all elements,” he said.

Some family friendly projects that were on the back burner have been accelerated as part of this process. These include improvements to chapels, running trails, tennis courts, and other things that improve airmen’s quality of life.



At Whiteman AFB, Mo., TSgt. Damen Cipolla (r) checks the rotary launch assembly as it’s being lifted into a B-2. SrA. Gregory Lowe runs the lift controls.



Roy addresses the 316th Civil Engineer Squadron at Joint Base Andrews in Maryland.

Child care is another area of focus. In particular, officials will be looking at how to adapt child care to meet the demands of today's Air Force.

Airmen asked Roy if it might be possible to have 24-hour child care, for instance. He said that it is probably not going to be possible to have child care centers open around the clock, but there may be other means of providing such a service, targeted at individual needs.

The Air Force Exceptional Family Member Program—which aids those who have a spouse, child, or other dependent with long-term medical needs—might be tweaked as well. Right now, this effort focuses more on the assignment process than on actual support for airmen and family members. But the service is going to give additional training to Family Readiness Center technicians to allow them to work some of these concerns, according to the chief.

Health and wellness is yet another focus area this year. Among other things, the service is looking at how to change access to medical care, so that families can have a family health care provider, instead of just a number of individual providers.

"The year is focused on looking at the programs we have to make sure they fit," said Roy. "To make sure the communities are the communities they need to be. It's a large project, very multidimensional."

Nor is it limited to 365 days. The effort may be called Year of the Air Force Family, but it is intended to have long-term carryover. "We want to continue this over the ages," he said.

Roy said his own family is an example of a true Air Force Family, in that the spouse is the glue that helps hold it together.

He and his wife, Paula, grew up together. They started dating in 10th grade.

Today, their elementary school-age twin boys keep them busy at home—Roy and his wife are now trying to catch their boys up on some things that were not taught at their previous school in Hawaii, but are part of the curriculum at their current school in Maryland.

An Air Force at War

This is a minor illustration of a larger problem: making sure that the educations of the children of airmen flow smoothly, despite numerous moves. In later grades, for instance, transfer of credits can be difficult.

"In high school, it becomes much more of a challenge to get those credits to flow over," said Roy. "Though there are some good programs out there to help us."

As part of the Year of the Air Force Family, Paula Roy also will serve as the senior spouse champion for the Key Spouse program. Key Spouse is a communication network intended to enhance readiness and establish a sense of community among unit leaders, airmen, and their families. A video endorsement from Paula Roy will open each Key Spouse training session.

Asked his favorite job, Roy said it was his recent stint at PACOM. It was "dynamic" to be part of such a large entity, with its focus on jointness and partner nations.

The experience opened up his view of the world. When you work in the same environment every day, you become comfortable with your surroundings, he

said. But to break outside of that routine and serve at a job that is a little bit different than what you have normally done over the years is to challenge yourself.

"In that position I was able to discover, not more about myself, but more about us as a nation," he said. "So for me, that job is one that certainly ranks up there."

Stability.

In a word, that sums up one of the top concerns of airmen that Roy has heard as he travels to bases.

Airmen want stability and predictability as to when they will be deployed, he said. Knowing when to get ready to go back out helps them prepare their own families.

But not all airmen have jobs that will allow them to deploy forward to areas where the US is at war. Missile maintainers, for instance, have a specialty that will keep them in the continental United States. "I've had some airmen apologize because they couldn't deploy forward," said Roy. "I'm trying to get them to understand that their mission is so, so critical. We need them to do it here."

Roy said some airmen are "deployed in place." They operate satellites that provide GPS signals to soldiers in the front lines, for instance, or they spend days at a time in underground command centers, helping to provide nuclear deterrence.

"Sometimes we only focus on those forces that are forward deployed. We have an awful lot of forces deployed in place," said Roy.

The Air Force's enlisted leader said that one of his missions is to communicate the importance of these airmen to other services, and to the world at large. That is something that everyone in the service needs to remember, every day, Roy told the AFA's annual Air & Space Conference this fall.

On any given day, there are about 200,000 Air Force men and women who are either deployed or employed by combatant commanders. Of those, about 40,000 are actually forward deployed.

"We are an Air Force at war, and we need to make sure that we look like that, we act like that, and we think like that," Roy told the conference attendees. Airmen staying at home stations are performing critical nuclear, homeland defense, and command and control missions—among others. They're in the fight, he said. "They understand that we're a nation at war." ■

Peter Grier, a Washington editor for the Christian Science Monitor, is a longtime defense correspondent and a contributing editor to Air Force Magazine. His most recent article, "Toward a 'Community' of Airmen," appeared in the November issue.

FDR and Hap Arnold frequently clashed, but their partnership brought about the mighty Army Air Forces.

Commander and Chief

By Herman S. Wolk



At an airfield in Sicily, Arnold (l) visits with FDR, whom Arnold called the Army Air Forces' best friend.

Little known today, it is a fact that President Franklin D. Roosevelt and Gen. Henry H. "Hap" Arnold in World War II forged a strong working partnership, one that proved pivotal to the success of the Allied war effort. Roosevelt, as Commander in Chief, exercised a powerful influence upon Arnold, Chief of the US Army Air Forces, and thus on US airpower itself.

Up to his death in April 1945, Roosevelt was a staunch advocate for airpower and an ardent supporter of Arnold's use of the B-29 bomber and its attacks against Japan. The partnership went back further, to the prewar years. In the late 1930s, FDR and Arnold were sufficiently farsighted to press for a large increase in aircraft production and to build up the nation's air arm. Their actions proved fateful, as they got US

rearmament going before Japan's attack on Pearl Harbor.

In September 1938, upon the death of Maj. Gen. Oscar Westover in an air crash, Roosevelt appointed Arnold as Chief of the Army Air Corps. (In 1941, the AAC and a separate Air Force Combat Command were placed under a new entity, the USAAF, with Arnold as Chief.) Arnold immediately pushed for a major expansion of Army aviation, along with Assistant Secretary of War Louis A. Johnson and Harry L. Hopkins, confidante to Roosevelt.

"Our former technical superiority in aeronautical development," Johnson stated, "is no longer clearly apparent. Recent advances in other countries have equaled if not exceeded our efforts. ... It now appears that our research and development programs must be accelerated if we are to regain our position of technical leadership."

Johnson's views were shared by Roosevelt, who formed a group to assess the aircraft manufacturing industry and also discussed the urgency of building up the air forces with Hopkins.

In a major turning point in the history of US airpower, Roosevelt convened a meeting at the White House on Nov. 14, 1938 to direct a huge expansion of the Air Corps.

Concerned about Nazi Germany's Luftwaffe, Roosevelt called for a program of 10,000 aircraft over two years. Arnold was elated, later claiming, "To the surprise, I think, of practically everyone in the room except Harry [Hopkins] and myself, and to my own delight, the President came straight out for airpower. Airplanes—now—and lots of them!"

Arnold correctly determined the Air Corps now had a realistic program. "A battle was won in the White House that

day," Arnold emphasized. Roosevelt's call for aircraft marked a significant policy change. The official Army history noted that the President "concentrated his attention wholly upon the air forces, which up to this time had been a secondary consideration in Army planning."

Roosevelt in effect had turned the existing War Department policy upside down. He threw his weight and credibility behind Arnold and ordered a quick-start program. In the spring of 1939, Congress authorized \$300 million for an Air Corps of 6,000 aircraft.

When Germany attacked Poland on Sept. 1, 1939, with the Luftwaffe playing a key role, Secretary of War Henry L. Stimson stated, "Airpower has decided the fate of nations." In the wake of the German attack, Roosevelt and Arnold called for increased production of heavy bombers—the President informing Stimson that "no single item of our defense today is more important than a large four-engine bomber capacity."

However, at times Arnold's relationship with Roosevelt hit the rocks.

From 1939 to 1941, while Arnold attempted to build up the air arm, Roosevelt insisted on large numbers of production aircraft being sent to Britain. As a result, the British had more aircraft on order than the Air Corps during this time. Arnold persevered, emphasizing to Stimson and Army Chief of Staff Gen. George C. Marshall that the US "still had no Air Force," for in addition to aircraft, it required personnel, equipment, and bases.

In the spring of 1940, the relationship between Arnold and the President reached its nadir. Secretary of the Treasury Henry Morgenthau Jr. recalled a two-and-a-half-hour meeting in March 1940 at which Roosevelt admonished Arnold. When discussing aircraft production distribution to the British, Roosevelt looked directly at Arnold and stated: "When people can't control themselves and their people under them, you know what we do with those kind of people? We send them to Guam."

Arnold, however, recouped with the support of Stimson, Marshall, and the assistant secretary of war for air, Robert A. Lovett—all of whom pressed Roosevelt on the importance of structuring an air force with war raging in the Far East and Europe. After Pearl Harbor, Arnold and Stimson recommended "a complete redistribution of aircraft production" to Roosevelt. "Not a plane can be unnecessarily given away," Stimson informed FDR.

Roosevelt and Arnold soon got back on the same page, with the President inviting the airman to the White House in April 1942

to discuss what Stimson described as "a reorientation of our thought" to build "a powerful Air Force." Modifying FDR's call to be "the great arsenal of democracy," the post-Pearl Harbor Roosevelt Administration determined the top priority now would be to build up US military power—with emphasis on the air forces.

In early 1942, Roosevelt and Marshall came to a decision that Arnold's presence was required on the Joint Chiefs of Staff and the Combined Chiefs of Staff.

An Act of Barbarity

At the CCS level, Air Chief Marshal Charles A. Portal, head of the RAF, weighed in for the British air position, and thus Arnold's view was considered a necessity at the highest Allied strategic policy level. Roosevelt wanted Arnold and the AAF to retain a strong voice in making and implementing military policy, even though Arnold was subordinate to Marshall. A former assistant secretary of the Navy who did not especially like to fly, Roosevelt frequently eschewed the chain of command and insisted on writing Arnold directly or inviting him to the White House. This was unprecedented.

Marshall, clearly recognized the importance of airpower, pushed through the major War Department reorganization in March 1942—making the AAF coequal with the Army's ground and service forces.

One of the most sensitive issues faced by Arnold and Roosevelt was atrocities committed by the Japanese Imperial Army. It stayed in the forefront of Arnold's mind especially after the Doolittle raid in April 1942. Roosevelt had ordered the raid and, according to Arnold, was "overjoyed" at the effect on US morale. The Japanese took eight of the Doolittle Raiders prisoner. Of these, three were executed by firing squad and another died in confinement. Four survived imprisonment.

In March 1943, after being informed of the execution by the Japanese of several of the Doolittle fliers, Roosevelt called Arnold to the White House. In April, the President released a statement condemning "this act of barbarity," and informed the Japanese government that the US would hold "personally and officially responsible for these diabolical crimes all of those officers of the Japanese government who have participated therein and will in due course bring those officers to justice." True to FDR's pledge, in January 1946, four Japanese officers involved in the execution of these American airmen were convicted and sentenced by a US Military Commission.

Roosevelt was a keen student of strategic bombing. He followed the development of radar, observed attrition ratios, and was exceptionally interested in targeting. When AAF operational commanders came to Washington, FDR made it a point to invite them to the White House to discuss tactics and campaigns. Maj. Gen. George C. Kenney, Gen. Douglas MacArthur's air commander in the Southwest Pacific, was not above "going over Arnold's head," and visited with Roosevelt when in Washington.

The President enjoyed this sort of contact with theater commanders, and closely followed the air war over China. He corresponded with Maj. Gen. Claire L. Chennault when in January 1944 Chennault suggested Operation Matterhorn be integrated into his Fourteenth Air Force operations. Roosevelt finessed the issue, stating "people here in Washington"—a reference to Arnold—needed to control the B-29s. Once deployed to the theater, however, FDR indicated the bombers would be assigned to Chennault. This never materialized because Arnold, as commander of the Twentieth Air Force, reported directly to the Joint Chiefs and he was not about to relinquish this control.

Meanwhile, Chennault and Lt. Gen. Joseph W. Stilwell, Chinese leader Chiang Kai-shek's chief of staff and commander of US forces in the China-Burma-India Theater, argued over strategy. Stilwell, a distinguished infantry officer, wanted top priority for building up the Chinese Army. Chennault made the case for increasing air operations against Japanese forces advancing in China. Roosevelt supported Chennault, authorizing an increase in airlift over "the Hump" to support Chennault's operations. Arnold felt Stilwell never understood the B-29 campaign, and while admiring Chennault's tactical acumen, he thought the Fourteenth Air Force commander underestimated the logistics required for air operations in the CBI Theater.

Further, Chennault recommended air attacks on Japanese shipping and air bases be given priority over bombing the Japanese homeland. Roosevelt attempted to have it both ways: "You are the doctor and I approve your treatment. Nevertheless, as a matter perhaps of sentimentality, I have had a hope that we could get at least one bombing expedition against Tokyo before the second anniversary of Doolittle's flight. I really believe that the morale effect would help!"

This was characteristic of Roosevelt, who was not only proud of his role in the



B-29s, photographed through the nose of another Superfortress, bomb Japan in 1945.

Doolittle raid, but remained a strong public supporter of strategic bombing throughout the war. He frequently reiterated his desire to see the Axis powers bombed “heavily and relentlessly” and implored Marshall and Arnold to get B-29s into position to bomb Japan.

Arnold had long championed the development of the B-29 Superfortress, but the program was a huge, difficult gamble. In retrospect, Roosevelt’s support of Arnold during the perilous developmental and production cycles probably saved the bomber from failure.

The project endured over four years of engineering, testing, and production problems during which key officers in the Air Corps Materiel Division doubted the program would succeed. Brig. Gen. Kenneth B. Wolfe, who headed the program, stated, “Within the Air Force itself, there were certain people who didn’t think that we should spend our time and effort on a bomber that far advanced.”

Arnold, though, was absolutely determined to drive the airplane through to deployment. He insisted upon cutting developmental and procurement corners to accelerate production. Brig. Gen. Lauris Norstad, chief of staff of the Twentieth Air Force under Arnold, observed: “Arnold’s life was that B-29 and he was into every damn detail of it.”

In January 1943, at the Casablanca Conference, the President noted the great vulnerability of Japanese industry to air attack. The bombing of Japan, Roosevelt emphasized, would have “a tremendous morale effect on the Chinese people.”

Nonetheless, in 1943 and 1944, Arnold realized the B-29 program was in deep trouble; he relieved a number of top officers and responded with his “Air Plan for the Defeat of Japan,” presented at the Quadrant Conference in August 1943 at Quebec. The plan pleased Roosevelt, who

cabled British Prime Minister Winston Churchill: “We have under development a project whereby we can strike a heavy blow at our enemy in the Pacific ... with our new heavy bombers. This [is] a bold but entirely feasible project.”

Determined, if Not Obsessed

From time to time, Roosevelt showed his pique—especially evident in his frustration over delays in B-29 production. Roosevelt became frustrated when Arnold failed to meet self-imposed schedules of deploying B-29s to China, first by January and then by March 1944. The President admonished both Arnold and Marshall that “the worst thing is that we are falling down on our promises to China every single time.”

Arnold immediately began an all-out assault on the problems affecting B-29 deployment. He talked with Stimson and Hopkins; convinced the Joint Chiefs to assign top priority to the B-29 program; and activated XX Bomber Command, headed by Wolfe.

Arnold got attention at the highest levels of the War Department. Assistant Secretary of War Robert P. Patterson suggested Roosevelt sign an action memorandum to all officials involved in the program. Patterson stressed that B-29 production and deployment would “have a strong influence on the course of the war. No effort should be spared.”

Determined, even obsessed, to drive the B-29 program to success, Arnold suffered several heart attacks during the war, the last in January 1945 which almost killed him. Arnold realized that his reputation, if not his job, was on the line. Brig. Gen. Haywood S. Hansell Jr.,

who in late 1944 commanded the B-29s out of the Marianas, retrospectively observed: “The most courageous decision Arnold made was the acceptance of the B-29 before the damned thing had ever flown.” The ultimate success of the program has been described as an “unprecedented event in the history of industrial America.”

Arnold’s unflagging drive and persistence in restructuring the entire production program resulted in success in June 1944, with the B-29s being deployed to China in Operation Matterhorn.

This was followed by XXI Bomber Command’s B-29 campaign from the Marianas in the spring and summer of 1945, which collapsed Japan’s war production; imploded morale; pummeled Japan’s urban areas; and ended the Pacific war with the dropping of the atomic bombs. Thus, an invasion of the Japanese home islands—long planned and insisted upon by Marshall and MacArthur—proved unnecessary.

There is no doubt that had Roosevelt lived, he would have approved dropping atomic bombs on Japan, consistent with his policy of ending the Pacific war as soon as possible with the least loss of American lives. Throughout the war, the President remained fearful of a long, drawn-out island campaign in the Pacific. He stated that he wanted to avoid a campaign which “would take about 50 years before we got to Japan.”

Arnold had earned Roosevelt’s confidence, even admiration. Both leaders shared the trait of believing their subordinates could will themselves to accomplish much more, insisting they set their objectives much higher.

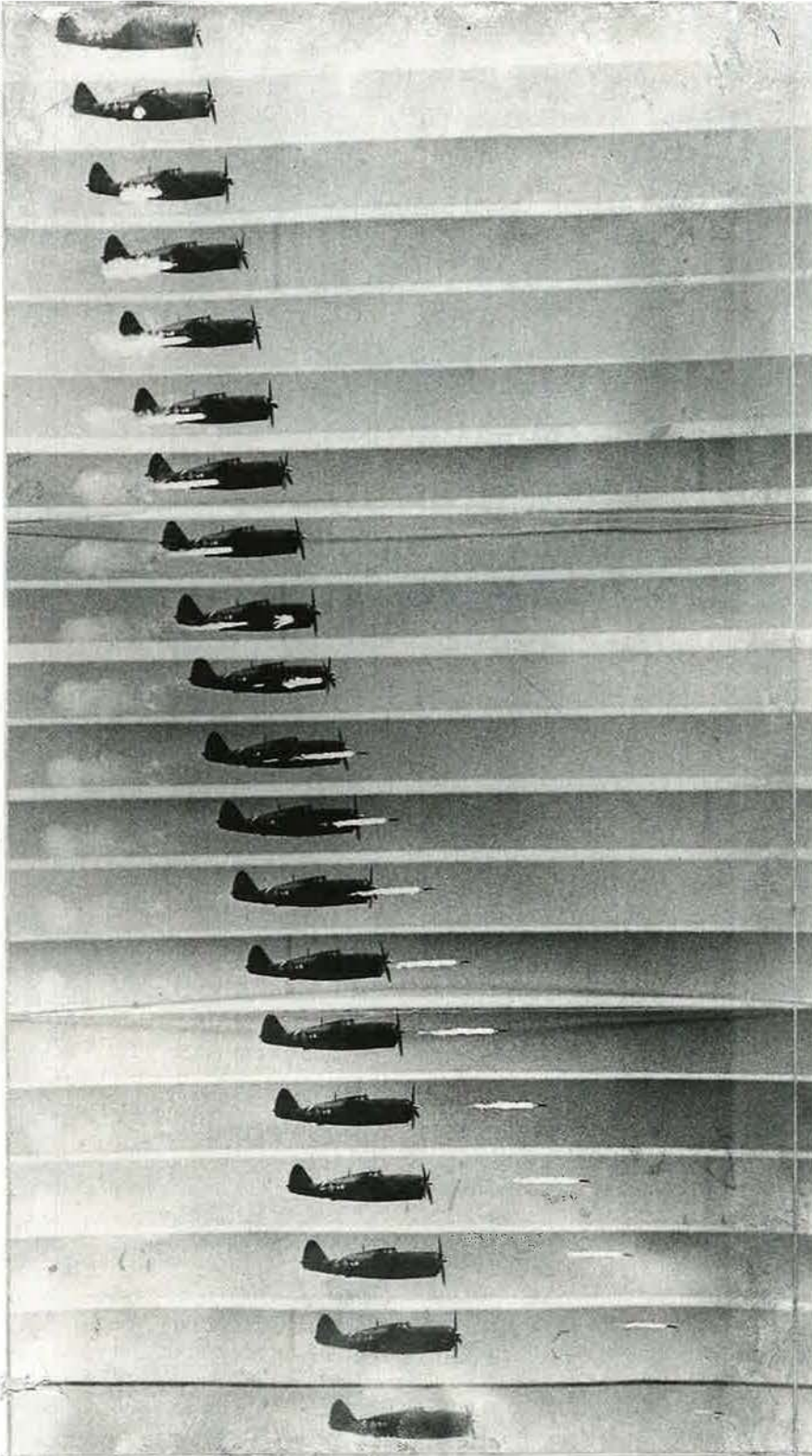
The President did not live to see the war’s end. FDR died on April 12, 1945, just weeks before Germany’s surrender and four months before Japan’s capitulation. Arnold was devastated: “Franklin Roosevelt was not only a personal friend, but one of the best friends the Air Force ever had. He had supported me in the development of the Air Force and in its global operations to an extent that I little dreamed of. ... Many times he seemed more like a fellow airman than he did the Commander in Chief.” ■

Herman S. Wolk retired as senior historian, US Air Force History Support Office. He is the author of Reflections on Air Force Independence (2007) and Fulcrum of Airpower (2003). His most recent article for Air Force Magazine, “Making the H-Bomb,” appeared in the March issue.

Flashback

Frame by Frame

USAAF photo. Text by Andrea K. Dudney



This World War II-era time-lapse photograph, taken by a high-speed camera, shows a P-47 Thunderbolt fighter-bomber test-firing its relatively new rocket guns. Late in the war, the "Jug" became what many believe was USAAF's best fighter-bomber. The Thunderbolt could carry about 2,500 pounds of bombs or M8 4.5-inch or 5-inch rockets, not to mention eight machine guns. All of this ordnance allowed P-47 pilots to destroy 86,000 rail cars, 9,000 locomotives, 6,000 armored fighting vehicles, and some 68,000 trucks, among other targets. ■

Imperial Japan committed a startling number of airpower stupidities.

Silver Bullet Blunder

By Walter J. Boyne



In World War II, Japan committed serial blunders in its use of airpower. These may aptly be compared to layers of an onion, with one blunder encasing another. Japan's incompetence greatly aided the US in its drive for victory in the Pacific, and even today, Japan's misuse of its so-called "silver bullet" air force serves as a cautionary tale to airmen.

Two decisions, easily understandable given Japan's war aims prior to Pearl Harbor, proved to be grave strategic errors.

The first of these errors was the conclusion Tokyo drew from its initial successes in aerial warfare. Japanese rulers became convinced that Japan would conquer China, because its fighters ruled the skies and its land-based bombers could fly long distances to wreak havoc on helpless cities.

The second major mistake was to gamble, in late 1941, that Japanese naval airpower could carry out a surprise attack on US naval and air forces so devastating that it would knock the American colossus permanently out of the war. Ironically, Japan's leaders were erroneously led to this conclusion by the fielding of several outstanding new aircraft. Introduction of these airplanes helped convince Japanese

leaders that the Imperial Japanese Navy Air Force was at its peak.

The seeds of the Japanese disaster in World War II lay in its 1889 Meiji Constitution which placed the Army, and later the Navy, on a level equal to that of the civil government—with all three reporting to the emperor. The 20th century saw an ascendant military culture coerce civilian government into approving its adventurism. The pride in Japan's military prowess prevented its leaders from understanding just how strong its potential opponents were, because of both population and industrial capacity.

Technological Infusion

The confidence stemmed in great part from Japan's decisive defeat of Russia in the Russo-Japanese War of 1904-05. The victory accelerated Japan's transformation from an isolated nation beset by internal strife to a major player in the international arena. This advance was aided by infusions of technology and military doctrine from Europe, which provided modern arms and an overlay of modern methods for Japan's Army, Navy, and eventually its air forces.

The Japanese were adept at learning—able to absorb information from foreign

sources, tailor it to their own needs, and produce their own indigenous designs. Their capable engineers did so well that it took only from 1911 to 1936 for Japan's aircraft industry to go from building basic biplanes to creating first-class aircraft.

Despite Japan's growing military might, its leaders felt threatened by the traditional Anglo-American dominance of commerce and natural resources. They resented Japan's dependence on foreign oil, the lifeblood of their Navy. To strengthen their nation's industrial base, Japan invaded Manchuria in 1931 and created the puppet state of Manchukuo.

The need for more resources induced the Japanese leaders to embark on one of their greater strategic errors—the 1937 invasion of China. From this initially successful venture, Japan's leaders drew conclusions that eventually proved fatal.

The early successes of the Japanese in Asia also prevented recognition of just how harmful the rivalry between the Imperial Japanese Army Air Force and the Imperial Japanese Navy Air Force was. It ranged from the absurdity of not sharing technical information on aircraft being developed for both services to the travesty of Japanese Army radar stations not informing their Navy counterparts about incoming US air

raids. The competition began at Imperial General Headquarters and existed at every level until the final day of the war.

This bitter interservice contentiousness was abetted by the effect their respective tutors had on the service cultures. The

Eventually, some of those leaders, influenced by the more flexible Adm. Isoroku Yamamoto, saw how well airpower had worked in China and began to demand that long-range aircraft become the tip of Japan's sword. The IJNAF believed

to be short, sharp, and victorious, with the Japanese doing all the shooting and bombing. To achieve this, the Japanese air forces wanted aircraft with great speed and range. Bombers were to have large bomb loads, while fighters were to be supremely maneuverable. The engineers achieved these goals, but the trade-off was that they were designing aircraft without armor, self-sealing tanks, or redundant structural integrity.

Through 1938, the military experience in China seemed to validate this design philosophy. Despite instances of determined opposition by the Chinese Air Force, the Japanese established near air superiority that permitted them to bomb key targets almost at will. The introduction of excellent aircraft such as the Mitsubishi G3M twin-engine, land-based bomber and the Mitsubishi A5M fighter (later code-named Nell and Claude, respectively) reinforced this thinking. The IJNAF made world headlines with its ruthless bombing of Chinese cities, in operations conducted by as many as 90 aircraft over hundreds of miles of territory.

Japanese aircraft performed well in great part because they were flown by highly trained crews, many seasoned by combat experience. The combat missions were supported by equally well-trained ground crews. This combination of top-notch aircraft and crews shaped Japanese thinking about the type and size of the air forces it would need to attack the United States. Discounting the fact that their Chinese opponents were ill-trained and ill-equipped, the Japanese leaders now believed that a major war could be won by a small number of superior aircraft flown by superb crews. From this, followed the requirements for aircraft selection, production quantities, and pilot training standards—which paved



Left: A Mitsubishi A6M2 Zero takes off from the carrier Akagi on its way to attack Pearl Harbor. Above: US military personnel inspect a downed Zero on Akutan island in Alaska in 1942.

that with long-range airpower, it was conceivable that Japan could acquire its most needed natural resource—oil—by conquests in Southeast Asia.

A New Tenet of War Philosophy

Japanese aeronautical engineers strove to meet the IJNAF challenge, trying to balance large bomb loads, armament, armor, fuel, and structural strength against speed, altitude, and range requirements. The engineers were called on to design aircraft that would meet a new tenet of Japanese military philosophy: All future wars were

IJAAF, taught by the French and later influenced by the Luftwaffe, concentrated on the indirect support of ground troops.

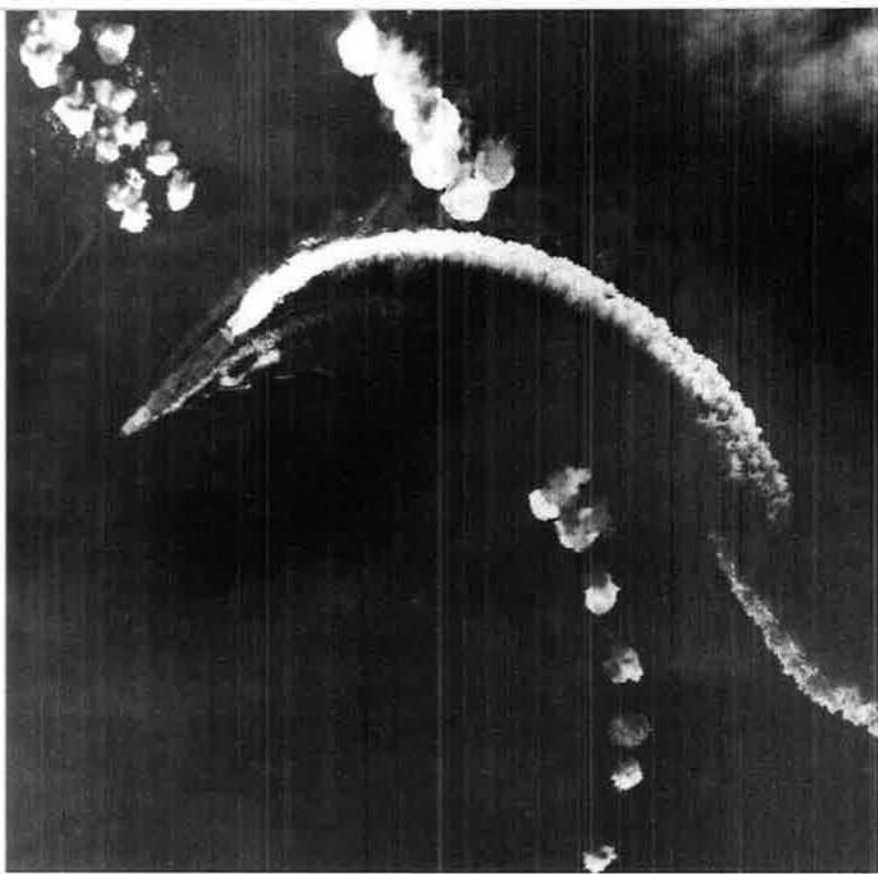
Taught by the British, the IJNAF adopted a more strategic outlook, influenced by the naval tradition that the fleet with the longest-range guns and torpedoes had the advantage. It departed from normal custom by developing a strong land-based air force to complement their aircraft carriers.

The IJNAF thus assumed the greater share of offensive duties in China where suitable targets were often many miles deep in Chinese territory. It established bases in China from which its long-range bombers could operate against the interior. Flying a majority of the missions, especially those which garnered useful publicity for propaganda, strengthened the IJNAF's position in budgetary battles.

Like other navies at the time, the Japanese Navy was largely controlled by big gun battleship admirals. They believed that Japan, in the spirit of the decisive Battle of Tsushima of the Russo-Japanese War, would achieve its destiny with a victorious fleet action in Japanese waters against the United States Navy.



The twisted wreckage of US airplanes smolders at Wheeler Field, Hawaii, on Dec. 7, 1941. Japanese leaders assumed a knockout blow would lead to a swift victory.



Above: A Japanese aircraft carrier tries to escape US attackers as it burns during the Battle of Midway in June 1942. **Right:** A Japanese airplane decked out in camouflage moments before it is destroyed by low-level bombing in the East Indies.

the way for the failure of Japanese airpower in World War II.

The Japanese leadership decided that an annual production of about 5,000 aircraft designed for offensive operations was sufficient. Perhaps still blinded by the concept of a victorious fleet action in local waters against the United States, the leaders did not realize that airplanes alone were not enough, and that air bases, aircrews, and maintenance personnel were equally essential. In samurai style, the crews were to be obtained by training methods that bordered on sadistic.

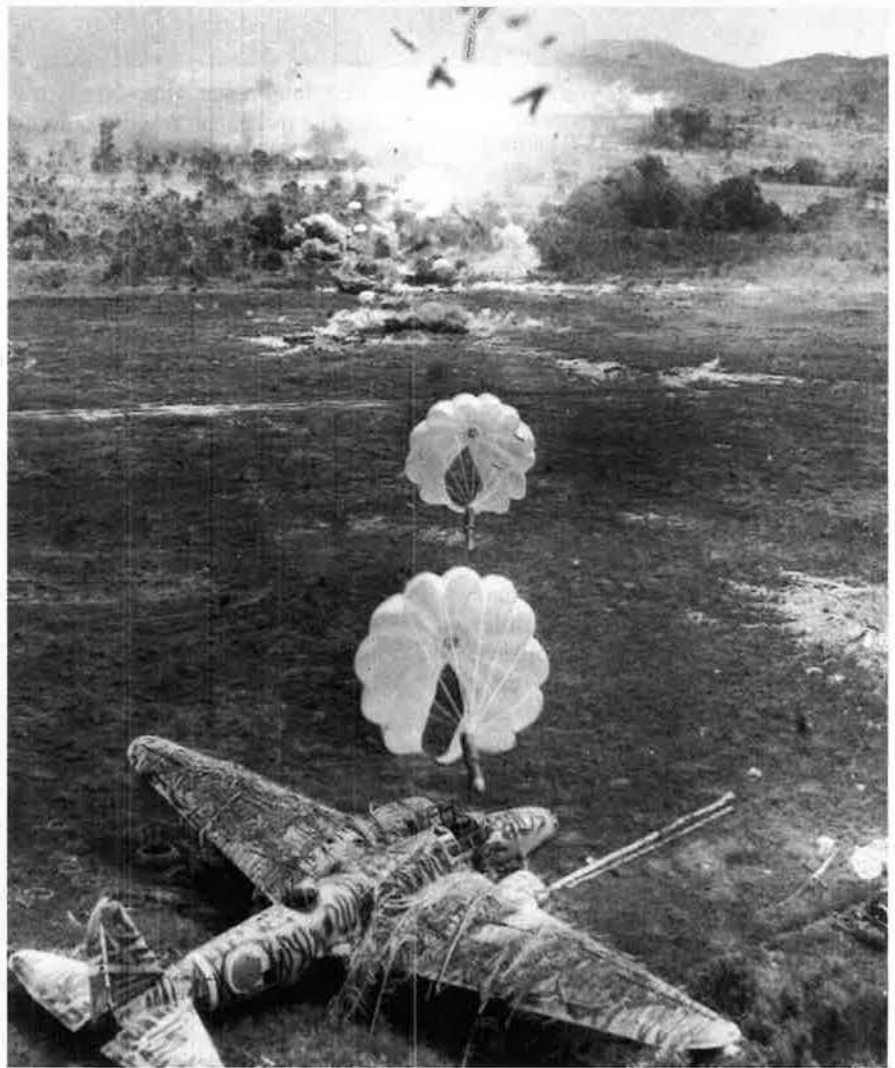
The Mighty Zero

In his memoirs, the great Japanese ace Saburo Sakai wrote about the excessive discipline of pilot training in the IJNAF. He noted that more than 1,500 applied for a slot in his pilot training class, only 70 were selected, and 25 graduated.

By 1940, Japan produced several aircraft equal or superior to their foreign counterparts in many performance parameters. These included the Mitsubishi A6M Zero fighter, Mitsubishi G4M bomber, Aichi D3A dive bomber, and Nakajima B5N torpedo airplane (later respectively nicknamed the Zeke, Betty, Val, and Kate).

The Zero was for several years the premier carrier fighter in the world. Possessed of reasonable speed (345 mph) and armament (two 20 mm cannon and two machine guns), it was extremely maneuverable, and its operational range exceeded 1,000 miles without external tanks. After its operational debut in 1940, the stellar performance of the Zero caused a critical conceptual shift. Instead of Navy fighters being primarily concerned with fleet air defense, they were now seen as far-reaching offensive weapons. Their mission was expanded to include destroying enemy air defenses and strafing ships to suppress anti-aircraft fire. The Zero was the “silver bullet” of Japanese airpower—its superior performance and superior pilots would assure that only a relative few would be necessary to defeat any enemy air force.

Germany’s victories in 1940 had weakened the European hold on their colonies in Southeast Asia. By the autumn of 1941, the Japanese, pressed by their lack of natural resources and American sanctions on imports, decided to seize the oil-rich





B-29s bent on taking out Japan's industrial base take off from Guam. Unlike Japan, the US arsenal was able to churn out aircraft with both quality and quantity.

territories they had coveted for so long. The geopolitical factors grew in importance. With Great Britain savaged by German aircraft and submarines, the Japanese discounted British ability to react in the Pacific. Even more important, Germany seemed to be on the point of disposing of the Soviet Union, relieving the Japanese Army of its greatest fear—a Russian invasion of its puppet state Manchukuo.

These misapprehensions stemmed from failures within the Imperial General Headquarters that included bad intelligence, provincial thinking of military leaders, and their inability to learn from their experiences in the field. While they had overcome Chinese opposition, they had nonetheless suffered heavy losses from fighters, flak, and the inevitable mishaps inherent in the conduct of high-tempo, long-range operations.

Japanese leadership, strangely uninhibited by the stalemate in China, decided to add the United States, Great Britain, Netherlands, and Australia to their enemy list. They were willing to go to war with a total of 2,625 first-line aircraft and a pilot pool of about 6,000, of whom some 900 were experts. This force, tiny by later war standards, was to inflict the decisive defeat that would force a demoralized United States to negotiate peace. Japan

would then control the resources of the “Greater East Asia Co-Prosperity Sphere.”

The Japanese attack on Pearl Harbor was executed with great skill and daring on the part of its aircrews, and for the next six months, one Japanese victory followed another until what was called the “victory disease” inflamed Japanese thinking.

Quality and Quantity

The American people did not react as planned, however, and slowly but inexorably, the industrial might of the United States responded in a way undreamed of by all but a few of the Japanese leaders. Over the next four years, Japan slowly increased the number of aircraft it produced from about 5,000 in 1941 to just more than 28,000 in 1944. Japan's total aircraft production from 1941 through 1945 was about 66,000, compared to more than 300,000 by the United States in the same period.

Also, while the US developed new and more advanced aircraft in great quantities,

Japan was forced to rely on improved versions of the airframes with which it had begun the war.

Japan's relatively limited increase in aircraft production was never matched by an increase in the numbers of pilots trained, nor in the quality of their instruction. As a result, the skill level of Japanese pilots declined markedly after 1942.

Ultimately, Japan trained about 61,000 pilots, nearly half of them in 1944. Japanese pilot losses totaled 40,000 with many due to accidents.

Equally important, the Japanese kept their experienced pilots in combat continuously, instead of using them to train a large reserve of competent pilots. Expert pilots inevitably killed in combat were never replenished because of the inadequate training program also impaired by fuel shortages.

In contrast, the US World War II pilot training program was continually upgraded by the rotation of combat pilots into instructor positions. Beginning in 1943, American pilots, taught by veterans, entered combat with hundreds of hours of flying time, many of them in operational aircraft.

Japanese pilot training time fell off drastically until, at the end of the war, their pilots might enter combat with less than 100 hours' flying time and only a few in their combat type.

A similar trend developed in the construction of air bases, supplies, and logistics. The United States devoted the time and material to create new bases quickly, then amply supplied them with both parts and personnel. This was entirely beyond the scope of Japanese planning, with the result that Japanese bases were almost universally badly constructed, ill-equipped, and devoid of even critical elements such as a good water supply, medicine, and adequate food.

The lesson that Japan's military leadership learned the hard way against the United States in World War II was that while quality was important in establishing air dominance, it was a mistake to discount quantity—particularly when facing extended periods of conflict.

Similarly, while a “silver bullet” air force of superb fighters and bombers, manned by superb crews, might be adequate in warfare, there is no way to accurately predict the strength of future enemies. ■

*Walter J. Boyne, former director of the National Air and Space Museum in Washington, D.C., is a retired Air Force colonel and author. He has written more than 600 articles about aviation topics and 40 books, the most recent of which is *Hyper-sonic Thunder*. His most recent article for *Air Force Magazine*, “How the Predator Grew Teeth,” appeared in the July issue.*

Keeper File

The Conversion of John Keegan

Operation Allied Force—NATO's American-led, airpower-only war against Serbia—opened March 24, 1999. Within days, claims of the failure of airpower gushed forth from many critics—among them, eminent British military historian John Keegan ("Airpower simply does not seem to be working.") Then came June 3; Serbia, reeling from attacks, went belly-up and came to terms. Airpower critics, though temporarily flummoxed, tried to explain away what had happened, but Keegan himself had undergone a dramatic conversion. Writing in The Daily Telegraph on June 4, the longtime airpower doubter called OAF "a victory for airpower and airpower alone." Two days later, he amplified on that statement, saying the war was a real "turning point" in history, "when the capitulation of President Milosevic proved that a war can be won by airpower alone."

There are certain dates in the history of warfare that mark real turning points. Nov. 20, 1917 is one, when, at Cambrai, the tank showed that the traditional dominance of infantry, cavalry, and artillery on the battlefield had been overthrown. Nov. 11, 1940 is another, when the sinking of the Italian fleet at Taranto demonstrated that the aircraft carrier and its aircraft had abolished the age-old supremacy of the battleship. Now there is a new turning point to fix on the calendar: June 3, 1999, when the capitulation of President Milosevic proved that a war can be won by airpower alone.

This revolutionary event has been a long time in the making. It is just a few weeks over 81 years since Britain formed the world's first independent air force, on the expectation that aircraft had ceased to be mere auxiliaries to armies and navies and could achieve henceforth decisive results on their own. That became the creed of the new Royal Air Force, as it was to become that of the eventually much more powerful United States Army Air Forces. The idea of "victory through airpower" was to be held by both as an article of faith, a true doctrine in that believers clung to it in the face of all contrary material evidence.

The countervailing evidence ultimately came to appear overwhelming. After 1945, both air forces conducted detailed "strategic bombing surveys," dedicated to proving that airpower underlay the defeat of Germany in the Second World War. The facts simply did not support the thesis. The "bomber barons," who had bestridden the strategic world in 1943-45, were first marginalized and then derided. "Bomber" Harris was the only British commander of his prominence not to receive a peerage. Curtis LeMay, the most passionate postwar exponent of airpower in the US, eventually came to be known contemptuously as "Old Iron Pants." By the time of the Gulf War, the air forces had ended up where they started, as the junior partners of armies and navies. Their claims to have an independent role were treated with barely concealed disdain by admirals and generals.

Not any longer. The new bomber barons will be heard with the greatest attention when future peacemaking operations are discussed. There is still a great deal to do before airpower theory can be fully integrated into the diplomacy and strategy of preserving world order. We cannot yet say how the air campaign worked, how it forced Milosevic to accept the terms he had rejected 10 weeks earlier. There will have to be a new strategic bombing survey, and it will perhaps take years to compile before air forces

"A Real Turning Point"

John D. P. Keegan
The Sunday Telegraph
London
June 6, 1999

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and governments can understand what was achieved and why the effects of bombing yielded the results it did. Nevertheless, the air forces have won a triumph, are entitled to every plaudit they will receive, and can look forward to enjoying a transformed status in the strategic community, one they have earned by their single-handed efforts.

All this can be said without reservation, and should be conceded by the doubters, of whom I was one, with generosity. Already some of the critics of the war are indulging in ungracious revisionism, suggesting that we have not witnessed a strategic revolution and that Milosevic was humbled by the threat to deploy ground troops or by the processes of traditional diplomacy, in this case exercised—we should be grateful for their skills—by the Russians and the Finns. All to be said to that is that diplomacy had not worked before March 24, when the bombing started, while the deployment of a large ground force, though clearly a growing threat, would still have taken weeks to accomplish at the moment Milosevic caved in. The revisionists are wrong. This was a victory through airpower. ...

There have really been two air wars, the first lasting a month, the second six weeks. In the first war, NATO—and let it be remembered that "NATO" really means the United States Air Force and the United States Navy's carrier groups, which flew 90 percent of the missions and launched all the Tomahawk missiles—conducted only about 80 missions a day, not enough to dent Serb bravado and certainly not enough to make Belgrade reconsider its policy of expulsion. ... In the second war, NATO sharply increased the strike rate, until, at the end, it was flying 600 missions a day, thereby visiting a true blitz on the Serb homeland. It was the systematic destruction of Serbia's electricity supplies and fuel resources that sent the message. If a high tempo had been sustained from the start, the war might have been over in the first month. There is a lesson for the future management of airpower—half measures don't work. ■

By Frances McKenney, Assistant Managing Editor

The ICBM's 50th

In October, Air Force Association Chairman of the Board Joseph E. Sutter took part in anniversary events at F. E. Warren Air Force Base in Cheyenne, Wyo., to mark the passage of 50 years since ICBMs went on full combat alert.

As a former commander of the 351st Strategic Missile Wing, Sutter—who spent most of his 28 years on active duty with ICBM units—joined a symposium panel highlighting “Fifty Years of Extraordinary People in ICBMs.” Three other panels covered the history of ICBMs, their role in the Cold War, and their future.

Secretary of the Air Force Michael B. Donley delivered the keynote address at the evening banquet that was a highlight of the three days of anniversary events. Other symposium speakers included Gen. Kevin P. Chilton, head of US Strategic Command; Gen. C. Robert Kehler, commander of Air Force Space Command; Lt. Gen. Frank G. Klotz, commander of Air Force Global Strike Command; and retired Gen. Larry D. Welch, former USAF Chief of Staff and also a commander of Strategic Air Command.

“It was,” Sutter noted, “a ‘who’s who’ of the missile business.”

ICBMs first went on full combat alert Oct. 31, 1959 at Vandenberg AFB, Calif.

Cowboy Contributions

The **Cheyenne Cowboy Chapter**, led by Chapter President Irene G. Johnigan had a hand in several of the F. E. Warren ICBM anniversary events, with Chapter Government Relations Vice President Peter S. Iloway as overall project manager.

On opening day, the chapter sponsored a golf outing at F. E. Warren, with some 50 players. The chapter’s assistant treasurer, Leslie D. Swidecki, and Gaylene Hasert, chapter co-secretary, took the lead in organizing this tournament.

Volunteers headed by chapter officers and members Mary Ann Marek, Richard P. Ames, Mary Carroll, and Stephan A. Pappas operated in four shifts to man an AFA information booth at the symposium’s Technology Exposition. The volunteers loaded down visitors with copies of *Air Force Magazine*,



AFA Board Chairman Joe Sutter and his wife, Geri Sutter (both at right), joined Cheyenne Cowboy Chapter members in Wyoming for F. E. Warren Air Force Base activities noting the ICBM's 50th anniversary. L-r: Mary Ann Marek, Stephan Pappas, Chapter President Irene Johnigan, and Richard Ames.

AFA pens, and AFA pins, as well as membership applications.

In addition, chapter members helped solicit funds to carry out a barbecue lunch for symposium attendees.

A Model Donation

When the newly renovated planetarium at Pensacola Junior College in Florida reopened in October, a gift from the **Hurlburt Chapter** was hanging from the lobby ceiling: a scale model of the International Space Station. Also in the lobby was a collection of models of space objects, courtesy of the chapter.

The rockets, space probes, space telescopes, lunar orbiters, planets—more than 40 models built on a one-to-200 or one-to-48 scale—fill seven shelves in two glass display cases and are the work of the chapter’s aerospace education VP, John Jogerst.

Chapter President Dann D. Mattiza said that Jogerst started off building straw rocket launchers, then began constructing paper model airplanes for them. Soon, Jogerst branched out into space vehicles. Designs come from various Web sites, are printed on a color copier, and are constructed

from the paper pieces, wooden dowels, “and the occasional wire,” as Mattiza put it. He called the results “literal works of art.”

Jogerst had been donating models to local teachers, for classroom use, but learned from chapter member and fellow model-builder John Whalen that the college was seeking space-related items for display in the planetarium building’s lobby. Rather than giving away his work “piecemeal,” Jogerst said he “just cleared the shelves” of his home collection. He said that he figured he could reach a wider audience at a planetarium that can host 100 visitors at a time.

The display case contains a placard crediting the Hurlburt Chapter with the donation.

Another Three-in-One Success

In July, AFA Ohio and partner groups hosted a trade expo, combined with a tech summit and an air show.

Two months later, the **Wright Memorial Chapter** applied the same one-two-three formula, again dovetailing a trio of events: On Sept. 3, the chapter hosted the AFA Technology Symposium

at Wright-Patterson Air Force Base. It brought together some 275 defense industry leaders and USAF officials from Air Force Materiel Command and Aeronautical Systems Center.

The symposium, first held and also hosted by the chapter last year, followed the semi-annual Air Force Materiel Command Senior Leaders Conference that took place on Sept. 1 and 2.

Symposium topics ranged from "green" technologies to strategies small businesses can use to land government contracts.

Gen. Donald J. Hoffman, AFMC commander, called the presentations and breakout sessions "a good nexus of events" for the government-industry partnership.

Other speakers included Lt. Gen. Thomas J. Owen, Aeronautical Systems Center's new commander. He told the audience that the Air Force needs better definitions of realistic requirements up front, simplified source selections, more robust systems engineering, increased efforts at technology risk reduction, and competitive prototyping.

The third event combined with the conference and symposium was the 62nd Air Force Anniversary Ball, held at the National Museum of the US Air Force, at Wright-Patterson.

Jeff A. Liffick, then Wright Memorial Chapter VP and now its president, headed up the chapter's contributions to symposium activities. He reported that the chapter organized a silent auction and a reception in conjunction with the ball. The auction offered more than 100 items that, together with proceeds from the technology symposium, raised \$21,000 for the Air Force Aid Society.

MiG Alley's Air Force Birthday

In Seoul, South Korea, the **MiG Alley Chapter** helped USAF celebrate its 62nd anniversary, too.

US Ambassador to South Korea Kathleen Stephens was guest speaker for the Sept. 26 black-tie birthday ball, held at a Seoul hotel and hosted by the chapter.

Lt. Gen. Jeffrey A. Remington, 7th Air Force commander at Osan Air Base, introduced Stephens to the audience of more than 900 guests, some of whom traveled in from remote sites and from Kunsan Air Base, about 100 miles away.

Col. Lee A. Flint III, chapter president, wrote in an e-mail that Stephens described to the audience the "three pillars of American foreign policy in northeast Asia: defense, development, and diplomacy."

Stephens also made personal observations on progress on the Korean Peninsula, reported Flint. Stephens

became the ambassador 15 months ago but was a Peace Corps volunteer in South Korea from 1975 to 1977.

Flint, who is chief of the 607th Air and Space Operations Center's strategy division at Osan, headed the group of chapter officers at the ball: Raymond F. Allen III, the VP; Capt. Dustin C. Richards, secretary; and Lt. Col. Michael L. Furey, treasurer.

This was the fifth Air Force Ball hosted by the MiG Alley Chapter, supported by more than two dozen of its Community Partners.

Eternal Flame: Going Green

The eternal flame had gone out in Bakersfield, Calif., but an AFJROTC cadet came up with a solar-powered solution to keeping it lit. In August, the **Charles Hudson Chapter** recognized the ingenuity and leadership of Jonathan R. Black with a Distinguished Achievement Award.

Ken Nishiyama, chapter president, explained that the eternal flame dated to 1967 and honored military veterans laid to rest at Union Cemetery in Bakersfield, but the large bowl-like vessel atop a three-legged tower had been lit for only nine years because of the cost of natural gas.

Cadets at Bakersfield High School had raised funds to decorate the same cemetery with thousands of American flags on Memorial Day 2008. This impressed cemetery officials so much that

they asked Black and his family to take on the neglected eternal flame.

Black, then a 17-year-old junior at Bakersfield High School, sat down with his parents, Jan and William Black, and came up with the idea of using a solar-powered LED system that would send light through a piece of industrial-quality plastic shaped like a flame.

Through the fall and winter of 2008-09, numerous companies pitched in, providing everything from the solar and "flame" components to welding, sandblasting, and powder-coating services. In addition, Jonathan led fund-raising activities such as a chili dinner, for the \$10,000 needed for the effort. The flame was turned on again on Memorial Day 2009.

Nishiyama said that the chapter works closely with local cadets, and the flame project shows what a tremendous resource they are.

More Chapter News

■ Backed by \$1,000 from the **Hurlburt Chapter (Fla.)**, teacher Amy Davis spent a week in "space"—five days in July at the US Space and Rocket Center in Huntsville, Ala., in a program formally called Space Academy for Educators. A third- and fourth-grade teacher at Eglin Elementary School, Eglin AFB, Fla., Davis built model rockets at space camp, carried out simulated space shuttle missions, whirled around on a multi-axis trainer, parachuted from a

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



At the Air Force Ball, hosted by the MiG Alley Chapter in Seoul, South Korea, SMSgt. Scott Myers of the 607th Air Support Operations Group at Osan Air Base, prepares to present a leather flight jacket to US Ambassador Kathleen Stephens. Lt. Gen. Jeffrey Remington, 7th Air Force commander, is at the podium.

tower on a zip line, "flew" an F-15 simulator, and evacuated a helicopter that had "crashed" in water. Davis told the chapter that she gained self-confidence in teaching aerospace topics, a network of aerospace-oriented teachers, and "a plethora of ideas for my classroom." She now teaches at Kenwood Elementary School in Fort Walton Beach, Fla.

■ The **Chuck Yeager Chapter** in West Virginia helped AFJROTC cadets mark the end of a successful week of leadership training, this past June. The annual Mountaineer Cadet Officer Leadership School took place at Concord University in Athens, W.Va., directed by retired Maj. Phillip A. Suydam, the senior aerospace science instructor at Dobyens-Bennett High School in Kingsport, Tenn. Ira S. Latimer Jr., chapter president, and Herman N. Nicely II, secretary, attended the cadet graduation ceremony. The chapter provides all the plaques and trophies for the event. David F. Slaughter organized the first MCOLS in West Virginia in 2001. He was a Chuck Yeager Chapter member back then and now belongs to the **Gen. Bruce K. Holloway Chapter** in Tennessee.

■ At its recent chapter meeting, the **Tidewater Chapter** in Virginia Beach, Va., heard US Rep. Glenn C. Nye's viewpoints on hot topics on Capitol Hill. Nye, a Virginia Democrat and member of the Armed Services and Veterans' Affairs Committees, commented on

F-22 production, C-17 procurement, and the KC-135 tanker replacement controversies, reported Chapter President William M. Cuthriell. The Congressman addressed local Navy issues, as well: the proposal for an auxiliary landing field to ease the F/A-18 training traffic at NAS Oceana and the possibility of Mayport, Fla., becoming a second port, rivaling Newport News, Va., for East Coast-based aircraft carriers. Although the chapter gave Nye a Boeing KC-767 model as a memento, "we were not taking sides in the tanker debate," Cuthriell was quick to note.

■ US Rep. John C. Fleming (R-La.) was guest speaker for the September meeting of the **Ark-La-Tex Chapter** at Barksdale AFB, La. A first-termer and member of the House Armed Services Committee, Fleming's district includes Barksdale and the Army's Ft. Polk. However, what the audience of 64 really quizzed the former family physician about were health care proposals under consideration on Capitol Hill, said Chapter President Jack M. Skaggs. Lt. Gen. Frank G. Klotz, commander of Air Force Global Strike Command at Barksdale, was among the VIP guests that evening.

■ The **Red Tail Memorial Chapter** hosted a ceremony in September in Ocala, Fla., where US Rep. Cliff Stearns (R-Fla.) received the AFA Florida Legislator of the Year Award. More than 100

guests attended the event at Ocala/Marion Veterans Park. AFA leaders on hand included Tommy G. Harrison from the **Central Florida Chapter**, then-Region President John T. Brock, and Red Tail Memorial Chapter President Michael H. Emig. Emig took home an award from the ceremony, too: an AFA national-level Florida Region Exceptional Service Award.

■ The **Hawaii Chapter's** awards chairman, Jack Murphy, attended the NCO Academy graduation at Hickam Air Force Base's Professional Military Education Center in September to present the AFA Hawaii Academic Achievement Award to TSgt. Gabriel F. Perez. A graduate of NSOA Class 09-3, Perez is assigned to the 56th Air and Space Communications Squadron.

■ **Iron Gate Chapter (N.Y.)** member John T. Gwynne stepped up to the challenge of filling in at the last minute as guest speaker for the October meeting. He described his Air Force career, including 135 F-4C combat missions in the Vietnam War, and his later work as chief of flight test at Grumman's Calverton, N.Y., facility. During the meeting, the chapter named three Jimmy Doolittle Fellows: guest speaker Gwynne, chapter member Irwin Gorman, and Chapter President Frank T. Hayes. Also at the meeting, Chapter VP W. Glenn Mackey and special guests Pamela Freytag and

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Elayne Kitchen were presented with books: Bruce Whitman, Medal of Honor Society director, presented copies of *If Not Now, When?*, by MOH recipient

and retired Army Col. Jack Jacobs. Chapter member Philip H. Van Deusen gave them the book *We Served With Honor*.

Reunions

reunions@afa.org

100th BW, Pease AFB, NH. April 22-26, 2010 in Tucson, AZ. **Contact:** Pat Dwyer, 210 Cutler St., Watertown, CT 06975 (860-274-6501 or 203-578-5364) (ron@100thbombwingreunion.org).

815th TCS, Tachikawa, Japan. March 25-28, 2010 at the Wyndham Hotel in North Little Rock, AK. **Contact:** Jim Elmer (501-771-4106) (jimelmer@swbell.com).

3389th Pilot Tng Sq., including instructor pilots and students. April 15-18, 2010 at the Quality Inn Hotel in Biloxi, MS. **Contact:** Chuck Davies (210-653-1475) (cpmfd@sbcglobal.net).

Battle of the Bulge Veterans. Sept. 1-6, 2010 in Columbia, SC. **Contact:** Ralph Bozorth, 608 Treaty Rd., Plymouth Meeting, PA 19462 (610-825-9409) (ralph608@comcast.net).

Pilot Tng Class 56-F. May 5-8, 2010 at the Holiday Inn in Cocoa Beach, Fla. **Contact:** Jim Bower, (321-480-8721) (jnbower@msn.com) (www.class56f.com).

Pilot Tng Class 65-F. March 2-4, 2010 in Cocoa Beach, Fla. **Contact:** John McNamara (904-373-0583) (msvickie56@yahoo.com).

E-mail unit reunion notices four months ahead of the event to reunions@afa.org, or mail notices to "Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

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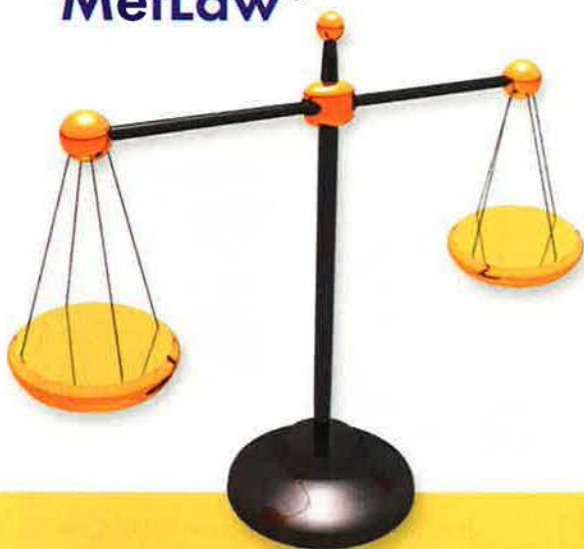
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Airpower Classics

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Hurricane



The Hurricane, developed in the Depression 1930s, proved to be one fine example of the virtues of capitalism. The Hawker fighter was undertaken as a private venture; chief designer Sydney Camm was the key to the effort. The Royal Air Force saw its utility and, in the late 1930s, bought some 600 of them. Soon enough—in summer 1940—the RAF would be vindicated, as the Hurricane became Britain's most important fighter of the Battle of Britain.

Essentially a monoplane version of the Hawker Fury fighter, the Hurricane employed the magnificent Rolls Royce Merlin V-12 engine in a traditional wood, steel, and fabric structure. At a stroke, the Hurricane's enclosed canopy, retractable landing gear, and eight-gun armament rendered obsolete all of the traditional RAF biplane

fighters. Its performance was generally inferior to that of later German fighters, and lagged the Spitfire in public popularity. Still, introduction of the constant-speed propeller in May 1940 vastly improved its performance.

The Hurricane deployed to Europe immediately after Germany's September 1939 invasion of Poland. When the blitzkrieg went west, the Hurricane did well in the Battle of France. The German air assault on England found the Hurricane bearing the brunt of the battle, scoring the most kills and suffering the highest losses. Later in the war, the Hurricane served admirably in North Africa, Southeast Asia, the Mediterranean, and just about every other theater. A great gun platform, it did well in the close air support role, and served until war's end.

—Walter J. Boyne

This aircraft: Hurricane Mk I—#P2923—as it looked in August 1940 when assigned to No. 85 Squadron, RAF Debden, Britain. Last flown by Flight Officer Richard H. A. Lee, who was last seen Aug. 18, 1940, chasing three German fighters some 30 miles off Britain's east coast.



The Hurricane was a hero.

In Brief

Designed by Hawker ★ built by Hawker, Gloster, Canadian Car and Foundry, Fairey ★ first flight Nov. 6, 1935 ★ crew of one ★ single Rolls Royce Merlin engine ★ armament four 20 mm or eight .50 cal guns ★ number built 14,553 ★ **Specific to Hurricane Mk IIC:** max speed 340 mph ★ cruise speed 296 mph ★ max range 460 miles (loaded) ★ weight (max) 7,800 lb ★ span 40 ft ★ length 32 ft ★ height 13 ft 1 in.

Famous Fliers

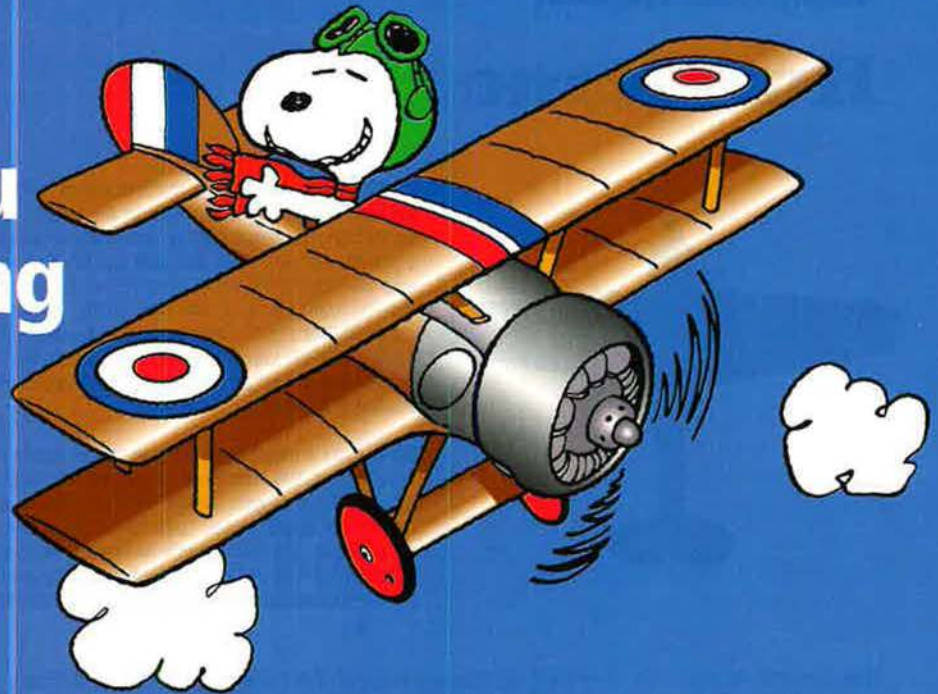
Victoria Cross: James Eric Nicolson. **Aces:** M. T. S. "Pat" Pattle (35 victories in Hurricanes), William Vale (20), Karel Kuttelwascher (18), Richard Stevens (14.5), Vernon C. Woodward (14), J. "Hamish" Dodds (13), Ted Hewett (13), James MacLachlan (13). **Notables:** E. J. "Cobber" Kain (first Hurricane victory, first Hurricane ace), William Dunn (first US ace of WW II), Victor Beamish.

Interesting Facts

Accounted for 1,593 of 2,739 Battle of Britain victories ★ appeared in 1969 film "Battle of Britain," ★ nicknamed Hurry, Hurribomber, Hurricat ★ featured steel tube fuselage with mechanical joints, not welds ★ operated as Sea Hurricane off merchantmen and escort carriers ★ led to development of Typhoon, Tempest, Sea Fury ★ acted in roles of fighter, ground attack, night fighter, night intruder, and reconnaissance aircraft.

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*MetLife data as of December, 2008 **Savings from enrolling in a dental benefits plan will depend on various factors, including how often participants visit the dentist and the cost of services covered. Like most group health insurance policies, MetLife group policies contain certain exclusions, limitations, waiting periods and terms for keeping them in force. Please contact MetLife for complete details. L1109070677[exp1110][All States] © UFS 0911-3394

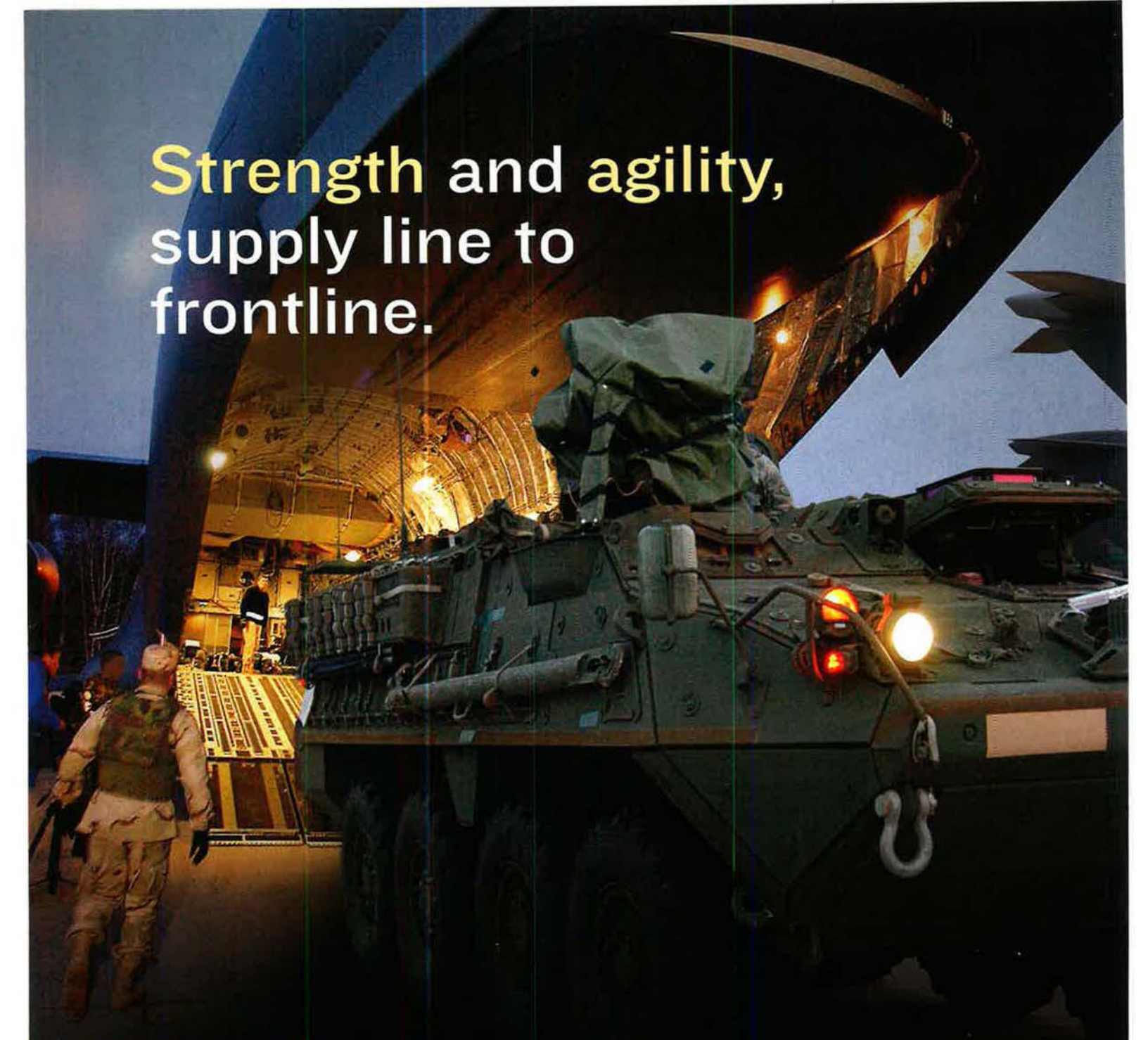


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