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About the cover: An Imint satellite. Illustration by Erik Simonsen. See "Crowded, Congested Space," p. 24.

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Editorial

By Robert S. Dudney, Editor in Chief

The China Gap

Adm. Michael G. Mullen recently called worried attention to China's "heavy investments" in advanced "expeditionary, maritime, and air capabilities." This, he noted, is "oddly out of step" with Beijing's "stated goal of territorial defense."

The Chairman of the Joint Chiefs of Staff implied China had a more ominous aim. The "gap" between its words and deeds is large, Mullen told the Asia Society June 9. It is so large, in fact, that he has "moved from being curious [about the buildup's purpose] to being genuinely concerned."

Mullen's words were unusual; frank talk about the threat of growing Chinese power is rare. Even as China has pressed to build up its military forces, Washington has reacted tepidly. This stems from the existence of a second and more significant "China gap."

Rebecca Grant, director of the Mitchell Institute for Airpower Studies, defines it as "the gap between China's steady pursuit of military capabilities under an artful strategy [and] US defense strategy, which has apparently chosen to downgrade and minimize the need for conventional deterrence in the Pacific."

Grant was referring to Secretary of Defense Robert M. Gates' reorientation of US military capabilities away from deterrence of China's conventional forces to lower-tech, irregular combat in Iraq and Afghanistan.

The SECDEF's assumption seems to be US air and naval forces still maintain a comfortable lead in the Pacific.

This concept took heavy fire in recent hearings of the US-China Economic and Security Review Commission, chartered by Congress. Experts noted that China's air force, in particular, has advanced from being a regional power with limited capabilities to a force with growing potential to imperil US interests.

Wayne A. Ulman, the China issues manager at the National Air and Space Intelligence Center at Wright-Patterson AFB, Ohio, asserted that the capabilities of the People's Liberation Army Air Force (PLAAF) have grown "dramatically" over the past decade.

He said the PLAAF has gone from being a technologically inferior force to a well-equipped, fairly well-trained one. On its current course, he added, "China will have one of the world's foremost air forces by 2020."

Nearly 500 of China's approximately 1,600 fighters now are of the fourth generation type. They can be seen as at technical parity with US fighters such as the F-15 and F-16, he noted. If Ulman is correct, China will have a stealthy "fifth generation" fighter, rivaling USAF's F-22 Raptor, operational by 2018, years earlier than Gates himself has estimated.

Roger Cliff, a RAND Corp. analyst, noted that China now produces a beyond-visual-range radar-guided air-to-air missile comparable to the US AMRAAM or Russian AA-12, and a variety of laser, TV, and satellite guided precision munitions. Cliff noted that modern hardware alone does not necessarily bring more strength, without advances in doctrine, training, and logistics. "However," he said, "China has been making progress in many of these dimensions as well."

The US may be in a military airpower race with China, but only one side is racing.

The panel heard warnings that the PLAAF has made a tremendous investment in ground-based air defenses, needed to blunt any USAF operations against Chinese targets. Since 2000, the PLAAF has purchased many more Russian SA-20 SAMs. China also has begun to deploy the domestically produced HQ-9, comparable to the SA-20.

In a future war, Ulman reports, US airpower would face "one of the world's most advanced and robust air defense networks."

Jeff Hagen, an engineer-analyst from the RAND Corp., told the panel that China's burgeoning ballistic missile force threatens USAF's major regional air bases. He estimated that, today, China could throw 480 ballistic missiles and 350 cruise missiles at Osan and Kunsan in South Korea, and 80 ballistic missiles and 350 cruise missiles at Kadena, Misawa, and Yokota in Japan. At present, Chinese missiles do not have the range to hit Anderson AFB, Guam, though it is working on such weapons.

"Clearly," said Hagen, "the US could face extended periods of time where few, if any, of our bases near China are operating."

The interlocking power of modern fighters, dense air defenses, and devastating attacks on air bases, combined with capabilities to strike at US cyber and space systems, threatens US land- and sea-based airpower with "lockout" from the western Pacific.

In fact, said Richard D. Fisher Jr., a China airpower expert of the International Strategy and Assessment Center, China's effort "has the potential to end the assurance of US air superiority in Asia, absent a vigorous US response."

The US may be in a military airpower race with China, but only one side is racing.

The record of US neglect in recent years is long, in Grant's assessment. She notes that the Obama Administration has halted the key F-22 program at only 187 fighters; blocked Japan's bid to acquire its own F-22s; failed to launch a new long-range bomber program; delayed acquisition of a tanker; limited deployment of missile defense systems; and fumbled an effort to streamline its cyberwar operations.

Gates constantly reminds allies that US air and naval assets outnumber those of China.

"This pointless bean counting does little to account for the fact that US air and naval forces must reach far across the globe to project power," Grant said.

DOD has not been totally inert in the face of Beijing's challenge. It has begun the task of expanding its network of Pacific bases. USAF and the Navy are developing "AirSea Battle," an employment concept aimed at maximizing their joint-force power in the Pacific.

The situation is neither desperate nor beyond repair. The $15 trillion US economy exceeds China's by a factor of two, and could easily support modest force improvements.

Administration leaders might ponder that fact as they make budget and force-planning decisions in months ahead.

"Anti-access and area denial are not simply buzzwords we use to argue for more money in the budget," Mullen warned. "These are real capabilities being pursued by real people, and we would do well to bear them in mind as we build the force for the future." ■


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Superpower No More?

Kudos to Robert Dudney for this concise, cogent summation of America's current national security outlook *["Editorial: Superpower No More?" July, p . 4]*. Of particular note is his recognition that President Obama has been consistent in his views "since before his election campaign." This recognition by Mr. Dudney is a refreshing break from current trends in political commentary. Not mentioned, however, was the significance of that statement: The majority of the people who voted in the 2008 Presidential election understood the thrust of those policies and were willing to give them a try.

Also missing from this thought-provoking piece was any discussion of the requirements and consequences of superpower status. After World War II, the United States and the Soviet Union were the only superpowers—countries able to project power significantly beyond their borders to influence events in support of their national interests. But two decades ago, the Soviet Union collapsed, primarily because its economy could not support the burden of maintaining a huge military capability, its sole claim to superpower status. There is a lesson here for us.

Is pre-eminent military capability the only way we can define ourselves as a great power? More important, are we as a nation willing to keep spending beyond our means to maintain that military power in the same form as we have in the past? Mr. Dudney perhaps unintentionally captured the nation's sentiments when he summarized the new National Security Strategy as a recognition that "we will have to learn to live within our limits." Oh, that this would be true! As individuals and as a nation, we have lived well beyond our means for decades, and that lifestyle finally came back to bite us hard in the past few years. Are we learning anything from this experience?

Tom Pilsch
Atlanta

The recent editorial by Robert Dudney unfortunately substitutes right wing bias for recent memory of facts. While deriding "soft power," he easily forgets that President Bush's "hard power" created this mess we are in. The irrational and unforgiveable incursion into Iraq, while soothing us with half-truths and non-truths, has led to an unnecessary expenditure for DOD of well over a trillion dollars, decimated our (mine and yours) troops, used up our armaments and munitions, alienated our allies, and revealed so very clearly to our enemies most of our weaknesses.

The President has yet to show he will be a great military commander in chief; yet, the strategic possibilities that Mr. Bush left him were pretty sorry, indeed. What all would we have him do? Although I'm only a physician, I certainly participated in battle staff planning and held command with over 26 years in the US Army and USAF. I would only ask that rational, objective thinking be used in this stressful time, though it is clear that prejudice and emotions are more valued in this unfortunate era in the history of the US.

Col. Kenneth F. Wainner,
USAF (Ret.)
Oklahoma City

Take It Down!

John Correll's article mentions the rules of engagement (ROEs) in the period January 1970 onward and states

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Letters

that the Wild Weasels were not able to detect surveillance radars such as Bar Lock *["Take It Down! The Wild Weasels in Vietnam," July, p. 66].* Not true. In December 1971, the 17th Wild Weasel Squadron, at Korat AB, Thailand, received permission to attack specific Bar Lock sites. Several days after permission was given, a friend attacked and destroyed a networked Bar Lock site near the Gorilla's Head border area between Laos and North Vietnam. In February, 1972, USS *Oklahoma City,* a light guided-missile cruiser, attacked a networked Bar Lock in the central region of North Vietnam with a Talos missile; the site was destroyed. I am told that USS *Chicago* and USS *Long Beach,* also guided-missile cruisers, attacked Bar Lock sites later in 1972.

The attacks on Bar Lock sites apparently were a change in policy because of the threat posed by the NVN networked air defense system. In December 1971, USAF lost something like four F-4s in one afternoon due to an ambush set up between SA-2 sites and MiGs. About a week later I happened to be the one to pick up the secure voice telephone at Korat Air Base. The voice on the other end identified himself as Brig. Gen Alton Slay, and he gave verbal permission to strike a particular Bar Lock site. It took some time and a hard copy message to work out the details and constraints of what General Slay authorized, but the pattern was clear: US forces began attacking the NVN air defense system whenever and wherever the opportunity arose.

I believe the policy change came about because the NVN leadership was planning another invasion of South Vietnam. In 1972, Tet fell on 15 February; General [John D.] Lavelle's strikes on the NVN military buildup in Route Pack One came in January 1972, and I have little doubt that the civilian leadership authorized those strikes. Hitting that buildup in January forced the NVA to delay its invasion until Easter. When the whole operation became political, General Lavelle was sacrificed. I agree with Lt. Gen. Aloysius Casey and his son on those points.

Lt. Col. Gerald P. Hanner,
USAF (Ret.)
Papillion, Neb.

■ *You say it is "not true" that Wild Weasels could not detect emissions from the Bar Lock. This is contrary to what Lavelle and others said in the Congressional hearings and elsewhere. In his oral history, for example, Lavelle said: "The enemy no longer had to track us with his Fan Song tracking radar. Fan Song was picked up readily on the RHAW gear, but apparently we were being tracked by their GCI Bar Lock, Whiff, or Spoon Rest radars, and only the fire control, Fan Song, was turned on at launch, so there was no way to know whether they were activated against us or not, because the RHAW didn't respond to them."—John T. Correll*

I enjoyed your article on the Wild Weasels in Vietnam. However, you missed including my next door neighbor and squadron mate—[Gen. Richard B.] Myers. Dick deployed to Korat, Thailand, with the 67th Tactical Fighter Squadron out of Kadena, Okinawa, flying the F-4C Wild Weasel in the fall of 1972 and participated in the Linebacker II operations. Dick went on to have a fairly successful career, reaching, in Dick's words, "the ultimate dead end job": Chairman of the Joint Chiefs of Staff. I nominate Gen. Richard B. Myers as a Weasel of Note.

Don Barnett
Potomac Falls, Va.

Strike Command

I read your article "Strike Command Steps Up" *[June, p. 26]* with great interest—especially the part regarding the no-notice inspection and how it kept everybody on their toes. I agree, having spent much of my 20-plus years in communication either in SAC or in direct support of SAC. The threat of the no-notice ORI was an ever-present reminder to be the best. Or as somebody once said, "When the IG arrives, we stop what we normally do to show what we would do if we really had to do it."

MSgt. David R. Caron,
USAF (Ret.)
Las Vegas

Pay Gap

Excellent article on the "pay gap" in the July issue *["Issue Brief: The Pay Debate Lives On," p. 26].* I firmly believe that the pay comparison should pit total military pay against the civilian pay. This should include all the allowances such as health benefits, housing, subsistence, tax exempt benefits, 20-year retirement option, and great retired medical benefits, as well as basic pay. The military is a great career option today! We must be reasonable and consider our total national and defense budget and runaway deficit situation when enacting annual pay raises.

CMSgt. Cliff Wagner,
USAF (Ret.)
Peoria, Ariz.

Washington Watch

By John A. Tirpak, Executive Editor

The high cost of targets; Nothing exquisite, please; Hypersonic helpers ....

Cost of Long-Range Strike

Anticipated "flatline" Pentagon budgets are causing heated claims that some targets are too expensive to hit. It is a charge that affects requirements for USAF's new long-range strike aircraft.

As a result, requirements for the airplane are coming down from on high, rather than rising up through normal channels.

These were among the insights offered by Lt. Gen. Philip M. Breedlove, USAF's deputy chief of staff for operations, plans, and requirements, at an Air Force Association seminar in June. Breedlove said, "Our enemy learns well. He buries himself deeper, in more hardened areas. He knows not to build air shafts that go straight into mission space."

These targets, he went on, are buried far away from coastlines and require massive bunker-buster bombs, with power to sense the voids they pass through. That, in turn, requires big airplanes with lots of fuel, something Breedlove said isn't affordable.

"The real debate going on ... right now," Breedlove said, concerns the question of "how much of our nation's wealth are we willing to put against those targets, which our opponent is making very, very expensive to strike."

On the other hand, he asked, "Do ... the type and number of weapons that we buy telegraph to our opponents that, if you bury to this depth or put it this far inland, then it's off-limits and we cede that to you?"

Breedlove said, "We still believe ... that it is a core requirement of our nation to be able to hold targets around the globe at risk. We cannot allow an enemy to feel like he has sanctuary because of policy decisions or equipment decisions that our nation has made."

The long-range strike discussion has meant that requirements for the new airplane are increasingly being handed down from the highest levels, Breedlove said.

"I'll just say—and make no judgment about whether it's good or bad—but there is a lot more, and a lot earlier, senior civilian involvement in this process," the general observed. In addition, he said, "this is not happening in the normal progression of things, where A8 at [Air Combat Command] builds a requirement" and it gets passed up the chain of command. "This is going the other way."

The new aircraft is dubbed the Long-Range Strike Platform, and Breedlove said it will be smaller than previous concepts for a new bomber, the most recent iteration of which called for an aircraft with a payload of up to 27,000 pounds. By comparison, an F-15E fighter can carry more than 23,000 pounds of ordnance.

Illustration by Erik Simonsen

Next generation bomber: The requirements are coming down from on high.

The new airplane will have to travel far and persist undetected in enemy airspace for long periods, he added. Breedlove encouraged industry to get busy on "small weapons, and the ability to bring small, very precise, and very discrete effects to the battlefield." He also asked for rapid development of bunker-busters far smaller than today's gargantuan types.

Lockheed Martin photo

The new long-range strike system will "enable" the F-22.

All in the Family

The new Long-Range Strike Platform will be the "utility infielder" of a family of long-range strike options, said Breedlove.

In his view, it must be equally capable of striking a "near peer" nation with a state-of-the-art integrated air defense system as well as targets in a place with no significant air defenses.

It will also have to be a behind-the-lines, persisting "enabler" of other systems, from stealthy F-22 and F-35 fighters to older fighters and bombers. That means the aircraft will also perform electronic attack, intelligence-surveillance-reconnaissance, and suppression or destruction of enemy air defenses.

What it must not be, he said, is an "exquisite" single-purpose aircraft. The Air Force cannot

afford to buy airplanes useful for only one mission, he said.

"This is an airplane that is not built to be a bomber at range. It is built to be an enabler at range."

The other members of the new "family" of long-range strike assets will be:

■ Long-Range Standoff Missile. A new system with range greater than the Joint Air-to-Surface Standoff Missile or its derivative, JASSM-ER (for Extended Range).

■ Conventional Prompt Global Strike. The PGS system could be a non-nuclear ICBM adapted from either the Air Force Minuteman or Navy Trident submarine-based weapon.

Breedlove said that while PGS poses tough problems—other countries tracking the missile might assume it is nuclear—it has attractive attributes.

"The pure kinematics of a re-entry vehicle, with zero explosive, ... is a pretty interesting set of physics" with which to attack deeply buried targets, he noted. It also offers the ability to strike a target "inside of 40 minutes" from launch.

USAF photo by Rob Densmore

Hypersonic speed? "Not that hard."

Regarding the new aircraft itself, another heavy debate concerns whether it will be manned or unmanned. Breedlove said it is his "personal view" that, if the new airplane will carry a nuclear weapon, it "[should] have a man in the cockpit."

He noted it would take a vast communications infrastructure to support an unmanned aircraft carrying nuclear weapons, "making sure that link is never broken and is always secure." In short, he said, "I don't think our nation can afford that number of satellites." He added, "That view is not shared widely."

Breedlove said he believes that the Office of the Secretary of Defense has a "timeline" for introducing the new airplane, but the Air Force is hoping to be "a part of that discussion," because it has to keep existing bombers relevant until the new airplane is available.

The Air Force would like to see a start for the program "inside the FYDP," or before 2016. However, the new airplane "may not deliver for 12 or 15 years. Should we build the aircraft for the weapons we'll have in 12 or 15 years, or the weapons we have now?"

The new aircraft will have to be austere, Breedlove said, because the Air Force has marching orders to focus first on "today's fight"—Afghanistan. That war is consuming much of the Air Force's money. "We are now growing an ISR fleet in the Air Force that is stressing every other fleet inside our Air Force for money. ... It will stress everything else in the budget."

Old Dogs, Hypersonic Tricks

Hypersonic weapons, possibly available within a decade, could go a long way toward breathing new life into USAF systems that are already old and that the service can't afford to modernize, according to two experts in the field.

However, they warned, the US had better invest in the technology, or it may be beaten to the punch.

"I think we're less than 10 years away" from initial operational capability of a hypersonic system, said Richard P. Hallion, former chief Air Force historian and an expert on the history and technology of hypersonics, which describes objects traveling between Mach 4 and Mach 12.

"If not us, then somebody else" will make the breakthrough, Hallion said. He spoke at a symposium of the Mitchell Institute for Airpower Studies in late June, where he released a new Mitchell paper, "Hypersonic Power Projection."

Moreover, he said, achieving a hypersonic aircraft breakthrough "doesn't require a break-the-bank investment."

Hallion noted that the Air Force's bombers together average more than 30 years of age, and the fighter force is more than 20 years old, on average. The Air Force can't afford to replace all those aircraft quickly, but must still confront increasingly lethal air defenses among near-peer nations and client states alike. Hypersonics could be the answer, he said.

"We talk a lot about closing the sensor-to-shooter loop," he said, "but we need to close the shooter-to-target loop." As high-value targets become increasingly mobile, "by the time today's weapons get to the target area, things have changed." Hypersonic missiles could catch mobile targets shortly after they are found, and before they can scurry away.

Also, hypersonics could give older platforms without stealth the ability to loiter far outside air defenses and still hit targets in a reasonable amount of time, Hallion said.

"This is not a technology beyond ... small players," he pointed out, noting that Russia, China, Iran, Australia, France, Germany, India, and Japan all have the interest and industrial capability to pursue hypersonics successfully.

Mark J. Lewis, former Air Force chief scientist, said the recent success of the X-51 missile—which ran at hypersonic speed for more than 200 seconds—showed that a near-term practical capability is not far off.

Quoting an X-51 program official, Lewis said that one of the lessons learned from the test is that "going at hypersonic speed is not that hard."

Lewis noted that, at a recent aerospace symposium, "more than half" of the papers submitted on hypersonics were from Chinese researchers. They have "intimate knowledge" of Western literature on the subject, he said, as do Iranians.

Lewis said that hypersonics offers excellent potential for theater weapons, at ranges of 700 miles or less, where speed would be of high value to targeteers.

It also offers a good alternative to ballistic missiles for the prompt global strike mission, for which intercontinental ballistic missiles without nuclear warheads are being considered.

The hypersonic missile is nearly as fast as a re-entry vehicle, and can be launched much faster, since it doesn't have to be erected, fueled, and otherwise readied in a time-consuming process.

"The good thing is ... because it stays in the atmosphere and it can maneuver, no one can mistake it for an incoming nuclear missile," which could lead to a grave miscalculation, Lewis said. ■

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Air Force World

By Marc V. Schanz, Senior Editor

Airmen Die in War Zone Crash

Four airmen were killed and three wounded when their HH-60 Pave Hawk helicopter crashed near FOB Jackson in Afghanistan's restive Helmand province June 9. The crash occurred while the helicopter was performing casualty evacuation missions for Operation Enduring Freedom. One of the injured airmen died three weeks later from the injuries he sustained in the crash.

Killed were 1st Lt. Joel C. Gentz, 25, of Grass Lake, Mich., assigned to the 58th Rescue Squadron, Nellis AFB, Nev.; TSgt. Michael P. Flores, 31, of San Antonio, assigned to the 48th Rescue Squadron, Davis-Monthan AFB, Ariz.; SSgt. David C. Smith, 26, of Eight Mile, Ala., assigned to the 66th Rescue Squadron, Nellis; and SrA. Benjamin D. White, 24, of Erwin, Tenn., assigned to the 48th Rescue Squadron, Davis-Monthan. The wounded airmen were assigned to the 66th RQS from Nellis. The fifth airman to perish, Capt. David A. Wisniewski, 31, of Moville, Iowa, died July 2 after being evacuated to the National Naval Medical Center, Bethesda, Md.

Initial reports indicated the helicopter was brought down by hostile fire, but a subsequent Air Force statement said the crash's cause is under investigation.

The airmen and aircraft involved were assigned to the 563rd Rescue Group, a geographically separated unit of the 23rd Wing at Moody AFB, Ga.

F-35 STOVL Goes Supersonic

Lockheed Martin announced June 14 that its F-35B short takeoff/vertical landing variant of the Lightning II strike fighter reached supersonic speed for the first time during a June 10 test flight at NAS Patuxent River, Md.

The test aircraft BF-2 performed the flight, marking the first time in military aviation history that a supersonic radar-evading stealth fighter is capable of short takeoff/vertical landing, Lockheed Martin officials announced. It was BF-2's 30th flight. Marine Corps pilot Lt. Col. Matt Kelly flew the aircraft to 30,000 feet and accelerated to Mach 1.07 in the offshore test. Future testing will expand the flight envelope of the aircraft out to a top speed of Mach 1.6, which is the fighter's top speed with a full internal weapons load of 3,000 pounds.

BF-2 is the third F-35 to achieve supersonic flight. Two F-35A conventional Air Force variants have also broken the sound barrier.

F-35C Makes First Flight

CF-1, the first Navy F-35C test aircraft, performed its inaugural flight June 6 from NAS JRB Fort Worth, Tex., Lockheed Martin announced June 7. The 57-minute flight was performed by Lockheed test pilot Jeff Knowles, a retired naval aviator.

The F-35C is a carrier-optimized variant of the Lightning II, and features a larger wing and control surfaces and structural strength greater than the Air Force F-35A and Marine Corps F-35B variants. AF-1, the first weight-optimized USAF F-35A, first flew in November 2009. BF-1—the first short takeoff and landing F-35B aircraft—first flew in June 2008.

Air Guardsman Commands OTS

For the first time, a member of the Air National Guard now commands the Air Force's Officer Training School at Maxwell AFB, Ala. The milestone occurred June 8 when Col. Timothy O'Brien took over the school, after having been the deputy commander since September 2009.

Just last year, the Air Guard moved its officer training from McGhee-Tyson ANGB, Tenn., to Maxwell to consolidate with the active duty and Air Force Reserve. "Colonel O'Brien is a natural leader who inspires both the students and the faculty," said Brig. Gen. Teresa A. H. Djuric, commander of the Jeanne M. Holm Center for Officer Accessions and Citizen Development, the organization that oversees OTS.

Djuric said in June that OTS is continuing to evolve with the changes, and the school is hoping for a more natural integration of the Air Guard, active duty, and Reservists in the future.

Malmstrom Hosts Nuke Exercise

Air Force Global Strike Command held its first-ever response task force exercise at Malmstrom AFB, Mont., from June 1 to 4, where first responders,

USAF photo by SSgt. DeNoris Mickle

public affairs representatives, and other officials collaborate on a response to a simulated nuclear weapons incident at one of USAF's nuclear facilities.

Malmstrom is home to the 341st Missile Wing and its Minuteman III intercontinental ballistic missiles. In the past, multiple commands were responsible for providing and training their own RTFs, which have now been consolidated under AFGSC. The scenario involved the simulated collision of a commercial gas tanker and a vehicle carrying hazardous cargo near the base, and provided an opportunity for experts from the command, wing, and other organizations to go over checklists and procedures in response to an accident.

According to Brig. Gen. Everett H. Thomas, the Air Force Nuclear Weapons Center commander and RTF boss, the 341st Missile Wing's performance was superb, from initial response to management of the entire scenario.

McGuire CRG Furls Colors

The 816th Contingency Response Group at JB McGuire, N.J., inactivated on June 11, as part of a restructuring that consolidated the 621st Contingency Response Wing's capabilities.

The 816th was the first operational group established in the wing. First activated in March 2005, it was responsible for tasks such as opening expeditionary air bases and responding to events such as natural disasters where urgent

07.04.2010

Azure waters of the Atlantic are imprinted with the shadow of a huge C-17 airlifter from the 14th Airlift Squadron, JB Charleston, S.C. As part of Independence Day celebrations, USAF airmen flew the C-17 at low level—from 500 to 1,000 feet—along the South Carolina coast from Myrtle Beach to Hilton Head Island. Thousands of South Carolinians gathered on the beaches to salute the airmen as they passed. This first "Salute from the Shore" was held to honor US military men and women.

Remains of Vietnam War MIA Airmen Identified

The remains of four airmen missing in action since the Vietnam War were identified and returned to their families for burial with full military honors, according to a June 14 Department of Defense report.

The missing airmen are Capt. Peter H. Chapman II of Centerburg, Ohio; TSgt. Allen J. Avery of Auburn, Mass.; TSgt. Roy D. Prater of Tiffin, Ohio; and Sgt. James H. Alley of Plantation, Fla.

All four airmen were among the six aboard an HH-53C helicopter on a combat search and rescue mission over Quang Tri province, South Vietnam, on April 6, 1972. The helicopter was struck by enemy fire and crashed.

Field investigations by Vietnam and the US at the site in the late 1980s and early 1990s led to an excavation where remains of the crew were found. Three of the six crew members were identified in 1997, with recent technical advances helping the Pentagon to identify additional remains.

Prater was buried in Columbia City, Ind., on June 19, while other burials were scheduled individually by the families of the airmen.

On June 10, DOD's Prisoner of War/Missing Personnel Office announced the identification and accounting-for of nine US airmen missing in action since the Vietnam War.

Air Force Col. William H. Mason of Camden, Ark.; Lt. Col. Jerry L. Chambers of Muskogee, Okla.; Maj. William T. McPhail of Chattanooga, Tenn.; Maj. Thomas B. Mitchell of Littleton, Colo.; CMSgt. John Q. Adam of Bethel, Kan.; CMSgt. Calvin C. Glover of Steubenville, Ohio; CMSgt. Thomas E. Knebel of Midway, Ark.; CMSgt. Melvin D. Rash of Yorktown, Va.; and MSgt. Gary Pate of Brooks, Ga., were buried as a group June 10 in Arlington National Cemetery. The individually identified remains of each airman were previously returned to the families for burial.

On May 22, 1968, the men were aboard a C-130A on an evening flare mission over Salavan province, Laos. Fifteen minutes after the aircraft made a radio call, the crew of another US aircraft observed a large ground fire near the last known location of Mason's C-130. Due to anti-aircraft fire, a search and rescue attempt was not initiated.

Over the course of 40 years, investigators conducted a series of investigations and excavations to recover wreckage, human remains, and personal effects.

The POW/Missing Personnel Office announced June 2 the identification of remains belonging to an Air Force F-4 Phantom pilot missing since the Vietnam War.

Air Force Col. Elton L. Perrine of Pittsford, N.Y., was buried in late May at Arlington National Cemetery. On May 22, 1967, Perrine and Capt. Kenneth F. Backus completed a nighttime strike against the Cao Nung Railroad Yard near the town of Kep in North Vietnam. After the run, another aircrew reported an isolated explosion east of the target, thought to be Perrine's F-4C Phantom. Rescue attempts were not initiated due to anti-aircraft fire.

Analysts developed leads over 28 years, and searched four locations in Lang Son province as potential crash sites, eventually conducting four excavations with Vietnamese teams. While Perrine's remains were identified, no remains connected to Backus have been recovered at the locations yet.

humanitarian aid and air mobility ports were required.

The wing's CRG assets are now consolidated in the 817th CRG and the 818th CRG. The restructuring also transfers some of the mission to the New Jersey ANG's 108th Air Refueling Wing at McGuire, creating an Air Guard CRG.

NORAD, Russia Plan Air Drill

North American Aerospace Defense Command and the Russian Air Force will conduct a cooperative air defense exercise this month, focusing on combating terrorism.

NORAD announced the event in a June 15 release, stating the exercise will take place in both Russian and US airspace to include Western Alaska and Eastern Russia. The scenario will involve both Russian and US aircraft monitoring an international flight seized by terrorists.

Gulf Spill Hits USAF Training

Air Education and Training Command suspended parachute water survival instruction off Pensacola, Fla., June 4 due to effects of the ongoing Deepwater Horizon oil spill, the result of an explosion—which killed 11 platform workers—and subsequent destruction of the offshore oil rig in the Gulf of Mexico.

AETC officials told *Air Force* Magazine that some tar and oil residue were discovered in the bay where the training occurs under direction of the Air Force detachment at NAS Pensacola. The discovery prompted local government health and safety officials to declare it inappropriate to conduct training in the area.

Student pilots are being sent in the interim to Fairchild AFB, Wash., to receive some of the instruction. AETC said 55 new USAF students normally come through Pensacola each week for training, which takes place 48 weeks a year.

Whiteman, Ellsworth Win RPA Mission

The Air Force announced June 21 that Whiteman AFB, Mo., and Ellsworth AFB, S.D., will host ground control stations for MQ-1 Predator and MQ-9 Reaper remotely piloted aircraft. Each base will add around 280 personnel, civilians and military, for the new mission.

Initial operational capability with the new Predator squadron at Whiteman is planned for February 2011, while the Reaper squadron plans to reach IOC at Ellsworth by May 2012.

These bases are the right locations for the next set of Predator and Reaper ground control stations, said Kathleen I. Ferguson, deputy assistant Air Force secretary for installations. "They will provide the Air Force with the right kind of synergy for training purposes," she said in the announcement.

B-1 Upgrade Advances

Boeing announced in June the start of flight testing for a B-1B bomber upgraded with new digital avionics for the bomber's aft cockpit.

The B-1's fully integrated data link (FIDL) performed in its first flight test on June 4 at Edwards AFB, Calif. The crew successfully tested the Link 16 link by sending and receiving text messages and receiving virtual mission assignment data such as target coordinates.

The program conducted three flight tests in June, and additional flights will take place through January 2011. The entire fleet of 66 B-1Bs is expected to receive the FIDL upgrade. Boeing anticipates receiving a production contract for the FIDL kits for the fleet this coming November.

Lockheed Claims F-35 Savings

Lockheed Martin will likely quote a price for the fourth production lot of F-35s that is about 20 percent below the estimate developed by DOD's cost assessment and program evaluation

USAF photo by TSgt. Michelle Larche

Heavy Bomber Milestone: *This B-1B Lancer—#087—deployed to Southwest Asia from Ellsworth AFB, S.D., in June became the first such bomber to reach 10,000 flying hours. The multimission B-1Bs carry the largest payload of both guided and unguided weapons in the Air Force inventory.*

group, the company's chief executive officer, Robert Stevens, told reporters June 17. The company has managed to cut unit costs of the F-35 by 50 percent over the first several production lots, he claimed, and is so confident it can meet the target the company will likely take a fixed-price incentive-type contract for the fourth lot—which would be two years earlier than previously planned.

The company's confidence stems from cost "actuals" from building the first production airframes, and success in hitting this year's flight test targets so far (in contrast to 2009's lackluster flight test schedule). As of June, a handshake deal with the government for Lot 4 was only a few weeks away, said Daniel J. Crowley, aeronautics division chief operating officer and former F-35 manager.

In addition, Lockheed officials believe that the F-35 will ultimately match the prices of the Navy's F/A-18 Super Hornet or the most advanced version of the F-16, Stevens noted.

Global Hawk Costs Facing Air Force Scrutiny

The Air Force has asked the Pentagon's independent cost estimation team to determine what the costs of the RQ-4 Global Hawk remotely piloted aircraft should be, the service's senior acquisition executive told reporters June 18.

David M. Van Buren said he expects the "should-cost" analysis to be completed this month or September at the latest. The review was prompted by the Air Force's dissatisfaction with the state of the Global Hawk program, with Van Buren telling reporters the service is not pleased with the "learning curve" on the high-altitude intelligence-surveillance-reconnaissance aircraft. On both the government and the contractor side of the effort, he added, things need to get better (the prime contractor is Northrop Grumman). In most programs, the cost of each successive lot goes down, but the Global Hawk is "going in the wrong direction," he said, noting the process of negotiating new contracts for the RPA takes an "excruciating" amount of time.

For Northrop Grumman's part, the company stated in June that several initiatives have been implemented to improve turnaround. Among them, Northrop's sensor supplier, Raytheon, has increased work shifts to expedite repairs. Raytheon will also host a dedicated interim repair line at its El Segundo, Calif., facility to quicken the pace of repairs. Government and contractor personnel are making repairs in theater when appropriate, a Northrop spokesperson said, in order to return Global Hawks to full operational use as quickly as possible.

On the positive side, Van Buren told reporters in June that the Block 20 Battlefield Airborne Communications Node version is doing "quite well." The technology, known as BACN, acts as a voice communications relay over long distances and helps bridge disparate frequencies, allowing ground troops on frequency-limited radios to talk with close air support aircraft. The Air Force is pushing for Global Hawks to deploy with BACN in Fiscal 2011.

First Response Forces Announced

The National Guard Bureau selected Ohio and Washington state to host the first of the Pentagon's homeland response force (HRF) units, to be established no later than the end of Fiscal 2011.

The new HRFs will provide a self-deployable capability to respond across the country to chemical, biological, radiological, nuclear, and high-yield explosive incidents, according to the Pentagon's June 3 announcement. Eventually, DOD plans to have one HRF unit in each of the Federal Emergency Management Agency's 10 regions. Each HRF will feature around 570 Air Force and Army National Guard personnel, ranging from CBRNE experts to security forces, command and control personnel, and others. The Ohio and Washington state HRFs will evolve

Shadow Cast: ***SSgt. Andrew Gibson, perched in the doorway of an HH-60 Pave Hawk, trains his fully loaded .50-caliber machine gun over the desert during a fixed forward training mission at the Nevada Test and Training Range. Gibson, an Air National Guardsman, is a flight engineer with the 129th Rescue Squadron based at Moffett Field, Calif.***

USAF photo by MSgt. Kevin Gruenwald

The War on Terrorism

Operation Enduring Freedom—Afghanistan

Casualties

By July 16, a total of 1,166 Americans had died in Operation Enduring Freedom. The total includes 1,164 troops and two Department of Defense civilians. Of these deaths, 874 were killed in action with the enemy, while 292 died in noncombat incidents.

There have been 6,876 troops wounded in action during OEF. This number includes 3,118 who were wounded and returned to duty within 72 hours and 3,758 who were unable to return to duty quickly.

Bagram Bird Radar Now Running

Air traffic controllers at Bagram Airfield, Afghanistan, are now using a system known as Merlin to help aircraft flying to and from the base avoid bird strikes during takeoff and landing. Merlin, an all-weather portable S-band radar system, is able to scan skies for miles around the base to give pilots and ground crews more atmospheric awareness.

Bagram is the first air hub in a combat zone to use Merlin. The radar data is fed into a computer system that calculates the height and distance of any birds in the area, allowing controllers to notify aircrews of potential hazards.

Afghan C-27s Performing Well

The introduction of the C-27A transport aircraft into the Afghan National Army Air Corps (now officially an Air Force) is helping the air service rebuild and get rid of inefficient Soviet-style operations, Air Force Brig. Gen. Michael R. Boera, commander of the Combined Airpower Transition Force in Afghanistan, told reporters via teleconference from Kabul June 10. "That is how we are making the paradigm shift with the Afghans to the Western way of thinking, of flying, of training, of operating airplanes," he said.

As of June, the Afghans had five of their 20 planned C-27s in place. While they are refurbished 20-year-old aircraft, they bring a whole new level of capability to the Afghan air service, Boera said. Mission capable rates were around 60 percent in June, but the trend is up after addressing issues such as the lack of spare parts, he added.

Operation Iraqi Freedom—Iraq

Casualties

By July 16, a total of 4,416 Americans had died in Operation Iraqi Freedom. The total includes 4,403 troops and 13 Department of Defense civilians. Of these deaths, 3,488 were killed in action with the enemy, while 928 died in noncombat incidents.

There have been 31,883 troops wounded in action during Operation Iraqi Freedom. This number includes 17,910 who were wounded and returned to duty within 72 hours and 13,973 who were unable to return to duty quickly.

Air Force Unit Withdraws From Kirkuk

Members of the 506th Expeditionary Security Forces Squadron at Kirkuk Regional Air Base transferred authority for base security to soldiers from the 1st Special Troops Battalion of the US Army.

The squadron was then officially inactivated, becoming the first Air Force unit to fully withdraw from Kirkuk since the buildup of US forces there beginning in April 2003. The inactivation is part of the overall drawdown of US forces in Iraq.

Balad C-130 Crew Manually Lands Ailing Flight

A C-130H Hercules crew from the 777th Expeditionary Airlift Squadron safely landed its aircraft at JB Balad, Iraq, after overcoming multiple in-flight mechanical problems on June 9.

There were 34 passengers aboard the airlifter, which was tasked to deliver the personnel from Baghdad Airport to Erbil, Iraq. After the aircraft climbed to 12,000 feet, loadmasters on the flight reported a severe leak in the primary hydraulic system. Several gallons of hydraulic fluid sprayed into the cabin before the co-pilot could shut off the pumps. Crew members helped passengers don emergency oxygen hoods.

The flight engineer was forced to use manual procedures to lower the landing gear and flaps to prepare for the landing at Balad. The pilot, Capt. Matt Mansell, landed the aircraft successfully, with only partial power in the flight controls and no anti-skid braking.

Passengers were evaluated by medical care providers and released.

out of those states' existing CBRNE enhanced response force packages. The National Guard Bureau said it is currently completing work on the location of the remaining eight HRFs.

Montana Guard Reaches F-15 IOC

Col. Peter Hronek, commander of the Montana Air National Guard's 120th Fighter Wing in Great Falls, declared the unit had reached the initial operational capability milestone on June 6, completing its BRAC-mandated conversion from F-16s to F-15s a full year ahead of schedule.

The IOC declaration came the day after the unit successfully completed its Phase Two operational readiness exercise, a major precursor to being considered combat ready. Wing officials said the wing's accomplishment not only saved money but gets the unit's F-15s back in the fighter force sooner.

The 120th FW's future remains unresolved, as news reports from the *Great Falls Tribune* indicate the unit might lose its F-15s to a California ANG unit as early as October 2011.

Clapper Tapped for Top Intel Post

President Obama on June 5 nominated retired Air Force Lt. Gen. James R. Clapper to be the director of national intelligence, the office responsible for coordinating the activities of military and nonmilitary organization across the US intelligence community.

Clapper, currently the undersecretary of defense for intelligence, was described by Obama as one of the nation's "most experienced and most respected intelligence professionals." If the Senate confirms Clapper, he would fill the post left by retired Adm. Dennis C. Blair, who resigned in May.

Secretary of Defense Robert M. Gates supported Clapper's nomination, saying the President could not have found a "more experienced person or [one] with a better temperament to do this job and actually make it work, than Jim Clapper." Sen. Christopher S. Bond (R-Mo.), vice chairman of the Senate Select Committee on Intelligence, commenting after the nomination's announcement, said Clapper, has blocked Congressional efforts to empower the DNI. Bond was not inclined to support his confirmation.

B-52s, Raptors Arrive on Guam

Six B-52s from the 5th Bomb Wing at Minot AFB, N.D., and 12 F-22 Raptors from the 1st Fighter Wing at Langley AFB, Va., started arriving at Andersen AFB, Guam, on June 3, in support of the 36th Wing's continuous bomber presence and theater security package missions.

The deployment of more than 300 airmen from both wings will last approximately six months as part of a

Senior Staff Changes

PROMOTIONS: To Major General: Craig A. **Franklin,** David L. **Goldfein. To Brigadier General:** James J. **Carroll.**

NOMINATIONS: To be Lieutenant General: Michael R. **Moeller,** Douglas H. **Owens.**

CHANGES: Brig. Gen. (sel.) Balan R. **Ayyar,** from Mil. Asst. to the SECDEF, OSD, Pentagon, to Cmdr., AF Recruiting Service, AETC, Randolph AFB, Tex. ... Brig. Gen. Michael J. **Carey,** from Dep. Cmdr., Space Spt. & Integration, STRATCOM, Offutt AFB, Neb., to Dep. Dir., Command & Control & Nuclear Ops., Jt. Staff, Washington, D.C. ... Lt. Gen. (sel.) Michael R. **Moeller,** from Dir., Strategy, Plans & Policy, CENTCOM, MacDill AFB, Fla., to US Security Coordinator, Israel-Palestinian Authority, Dep. of State ... Lt. Gen. (sel.) Douglas H. **Owens,** from Vice Cmdr., PACAF, Hickam AFB, Hawaii, to Vice Cmdr., AETC, Randolph AFB, Tex. ... Brig. Gen. Alfred J. **Stewart,** from Cmdr., AF Recruiting Service, AETC, Randolph AFB, Tex., to Cmdr., AFPC, Randolph AFB, Tex. ... Brig. Gen. Timothy M. **Zadalis,** from Cmdr., 21st Expeditionary Mobility Task Force, AMC, JB McGuire, N.J., to Dir., Air Plans, Intl. Security Assistance Force Jt. Command, US Forces-Afghanistan, Kabul, Afghanistan.

SENIOR EXECUTIVE SERVICE RETIREMENT: Gary E. **Payton.**

SES CHANGES: Heidi H. **Grant,** to Dep. Undersecretary, Intl. Affairs, OSAF, Pentagon ... John J. **Over III,** to Dir., Iraqi Security Forces, Strat. Log. Office, US Forces-Iraq, Dep. Commanding General (Advising & Tng.), CENTCOM, Baghdad, Iraq. ■

USAF photo by Amn. Leah Young

Indomitable Spirit: *SSgt. Shaun Meadows, a combat controller who lost both legs in July 2008 when his convoy hit an improvised explosive device in Afghanistan, shares a laugh with his son after making history in June as the first active duty double amputee to successfully participate in a personnel drop. On June 14, Meadows was part of a group conducting a practice jump from a C-17 in preparation for a change of command ceremony at JB Lewis-McChord, Wash. "It felt good to get up there and jump again after two years," Meadows said afterward. It was his last jump prior to separation from the Air Force. "Shaun's spirit and desire to [make another jump] made us believe we could get it done," said Lt. Col. Bryan Cannady, the 22nd Special Tactics Squadron commander.*

normal rotation of US combat forces in the Pacific. Col. Charles Patanaude, commander of Minot's 5th Operations Group, said Andersen affords his crews "fantastic" training opportunities. The B-52s replace a contingent of B-2 bombers from Whiteman AFB, Mo.

USAF Suspends L-3 Unit

The Air Force temporarily suspended L-3 Communications' Special Support Programs Division from receiving new federal contracts on June 3, after finding that it improperly monitored e-mail traffic on the government's computer network for its own private corporate intelligence gathering purposes, according to a memo from USAF's deputy general counsel.

The decision is pending the completion of a criminal investigation into the matter.

According to the June 3 memo, the L-3 division "purposefully and intentionally" monitored the e-mails of its employees, other government contractors, and US government employees using US Special Operations Command's computer network. The memo states the company has admitted to conducting the surveillance and that none of the actions were appropriate or adhered to standards of ethical business conduct.

Transfers Could Impact Military

New legislation proposed by the

Obama Administration to sell off up to 500 megahertz of electromagnetic spectrum over the next 10 years was criticized as careless and shortsighted by a leading electronic warfare advocacy group in June.

Due to the impact the handover would have on the US military, the Association of Old Crows, in a June 30 statement, said it is opposing expeditious passage of the Radio Spectrum Inventory Act and other auction legislation by Congress, which would sell off up to 500 megahertz of electromagnetic spectrum for commercial purposes. The military relies heavily on the spectrum, the AOC said. It would be hasty to auction any part of the spectrum until measures are taken to ensure the relocation does not disproportionately affect military electronic warfare and communications activities that use the spectrum to train and fight, wrote AOC President Christopher Glaze to the Federal Communications Commission. The Department of Defense has a long way to go toward making changes in doctrine, organization, and development of a plan to ensure the changes don't affect operations, he added.

Obituary

Retired Lt. Col. William H. Holloman III, a Tuskegee Airman and the Air Force's first African-American helicopter pilot, died June 11 in Kent, Wash. He was 85.

Holloman, a St. Louis native, volunteered for the all-black aviation training

Gates Reasserts Veto Threat on C-17, F-35 Engine

Testifying before Senate appropriators June 16, Secretary of Defense Robert M. Gates warned lawmakers not to underestimate the Obama Administration's resolve in stopping development of the F136 alternate engine for the F-35 strike fighter in the Fiscal 2011 budget. Gates additionally expressed his disapproval about Congress adding money for any more C-17 airlifters.

Gates also stated he would "strongly recommend" the President veto any legislation that continues the C-17 or the alternate engine. Earlier in June, Rep. Ike Skelton (D-Mo.), chairman of the House Armed Services Committee, indicated the White House might not follow through on a threatened veto since the bill contains language enabling repeal of the Pentagon's "don't ask, don't tell" policy on homosexuals serving in the military, which Obama favors. "It would be a serious mistake to believe the President would accept these unneeded programs simply because the authorization and appropriations legislation includes other provisions important to him," Gates said. The Pentagon has long sought to cut the F136 in favor of Pratt & Whitney's F135 as the sole engine for the fighter, but the alternate engine enjoys deep support on Capitol Hill.

Indeed, Sen. Carl Levin (D-Mich.), chairman of the Senate Armed Services Committee, said in late June that he "can't imagine" Obama would veto the defense bill over the alternate engine.

Asked by Sen. Christopher S. Bond (R-Mo.) and Sen. Patty Murray (D-Wash.) about a potential production gap in US military widebody aircraft once the C-17 line closes, Gates said there is "significant" commercial widebody aircraft production capability in the United States, and there is time to adjust it to a military application if needed.

Singling out the F136 engine, Gates added a new criticism aimed at the General Electric-Rolls Royce effort: its performance. Gates told Senate appropriators he believes the engine currently offered by the team "probably does not meet the performance standards that are required," and the taxpayer would be on the hook to bring it up to standard. Following the June 16 hearing, GE-Rolls Royce issued a statement taking issue with Gates' comments, noting the assessment is at odds with the Pentagon's own review, which has "consistently awarded very good and excellent ratings to the F136."

USAF photo by SSgt. Kamaile O. Long

***On the Rim:** A B-52 crosses a stretch of the Pacific Ocean while performing a mission during the latest Rim of the Pacific exercise. RIMPAC is biennial, multinational training with the aim of improving military interoperability and strengthening partnerships.*

Air Force To Stick With Four BUFF Squadrons

Under the new nuclear force posture announced in May, the Air Force will retain its four operational squadrons of dual-role B-52H bombers and modify a portion of the fleet for conventional-only operations, according to Maj. Gen. C. Donald Alston.

Alston, the commander of 20th Air Force, was the Air Staff point man on nuclear matters when he briefed reporters on the changes June 2. He said the B-52s will move forward with responsibility for both nuclear and conventional roles under the new posture.

Air Force Global Strike Command will retain responsibility for B-52H bombers that lose their nuclear mission, he added. While the conversion is part of the changes associated with the New START Treaty with Russia, the bombers will not return to Air Combat Command—which oversaw them up until this past February. The conventional B-1 fleet will remain with ACC.

Global Strike Command "will have to manage the mini conventional-only B-52 fleet plus the dual-role B-52 fleet, and there will be challenges associated with that," Alston said.

The US intends to maintain up to 60 nuclear-capable bombers, and while the B-2 force of 20 bombers will not be altered from its current dual-role mission, a good portion of USAF's remaining 76 B-52s will be converted to a conventional-only role to meet the 60-aircraft cap, he added. Having fewer nuclear B-52s is not regarded as a challenge for maintaining the current deployment tempo of the four B-52 squadrons in nuclear rotations.

Index to Advertisers

Dedication: ***An F-22 Raptor to be stationed at JB Pearl Harbor-Hickam, Hawaii was dedicated on July 9 to the Hawaii ANG's 199th Fighter Squadron and the 19th FS, an active duty unit, during a ceremony at the Pacific base. Eventually, Hickam will have 20 of the fighter aircraft operated by associated Guard and active duty units.***

program at Tuskegee Army Air Field in Tuskegee, Ala., later flying a P-51 Mustang with the 99th Fighter Squadron, 332nd Fighter Group. Based in Italy, he and his fellow airmen struck targets in Germany, Austria, and Eastern Europe from 1944 to 1945. Holloman flew 19 combat missions, including bomber escort and strikes on Axis targets.

After the war, Holloman worked in South America and flew small commercial airplanes in Canada. As an Air Force reservist, he was called back to active duty for tours during the Korean War and Vietnam, when he switched services and joined the Army. He retired from the Army in 1972. ■

Photo by Jonathan Chuck

News Notes

■ More than 55 airmen visited Bangladesh June 10-16 as part of the third Operation Pacific Angel, a US-Bangladesh humanitarian operation. A Hawaii ANG KC-135 arrived at Dhaka with civil engineers and medical officials, including doctors, dentists, and other specialists.

■ Air Force Chief of Staff Gen. Norton A. Schwartz served as president of CONJEFAMER 2010 in Washington, D.C., June 13-17, an event that brought air chiefs from 17 countries and two observer air forces to the nation's capital to discuss cooperation and security in the Americas.

■ A B-1B bomber of the 34th Expeditionary Bomb Squadron flying June 12 in Southwest Asia eclipsed 10,000 flight hours—becoming the first B-1B to pass that mark. The bomber did so during a 14-hour mission in Afghanistan.

■ Lockheed Martin announced June 21 it had completed the system requirements review for the Air Force's Global Positioning System Block IIIB satellite. The company is under contract to build up to 12 GPS Block IIIA satellites.

■ More than 250 airmen, soldiers, and marines are taking part in New Horizons Panama 2010, a US Southern Command-sponsored exercise that kicked off in June and runs through mid-September, with 12th Air Force serving as lead planner for the event.

■ On June 16, the Air Force conducted a Minuteman III ICBM flight test from Vandenberg AFB, Calif. According to the 30th Space Wing, the missile's single unarmed re-entry test vehicle traveled 4,190 miles before hitting its planned impact point in the Pacific Ocean's Marshall Islands.

■ The 71st Fighter Squadron completed its final deployment in late May, when members of the unit and their F-15s returned home to Langley AFB, Va., after two weeks of temporary duty at Tyndall AFB, Fla. The unit will be inactivated in the fall as part of a drawdown of legacy fighters.

■ The 455th Air Expeditionary Wing at Bagram Airfield, Afghanistan, opened a new aircraft parking ramp on June 5, greatly enhancing the base's capacity to support coalition operations in the country. It features an 18-acre parking area with five in-ground fueling points. ■

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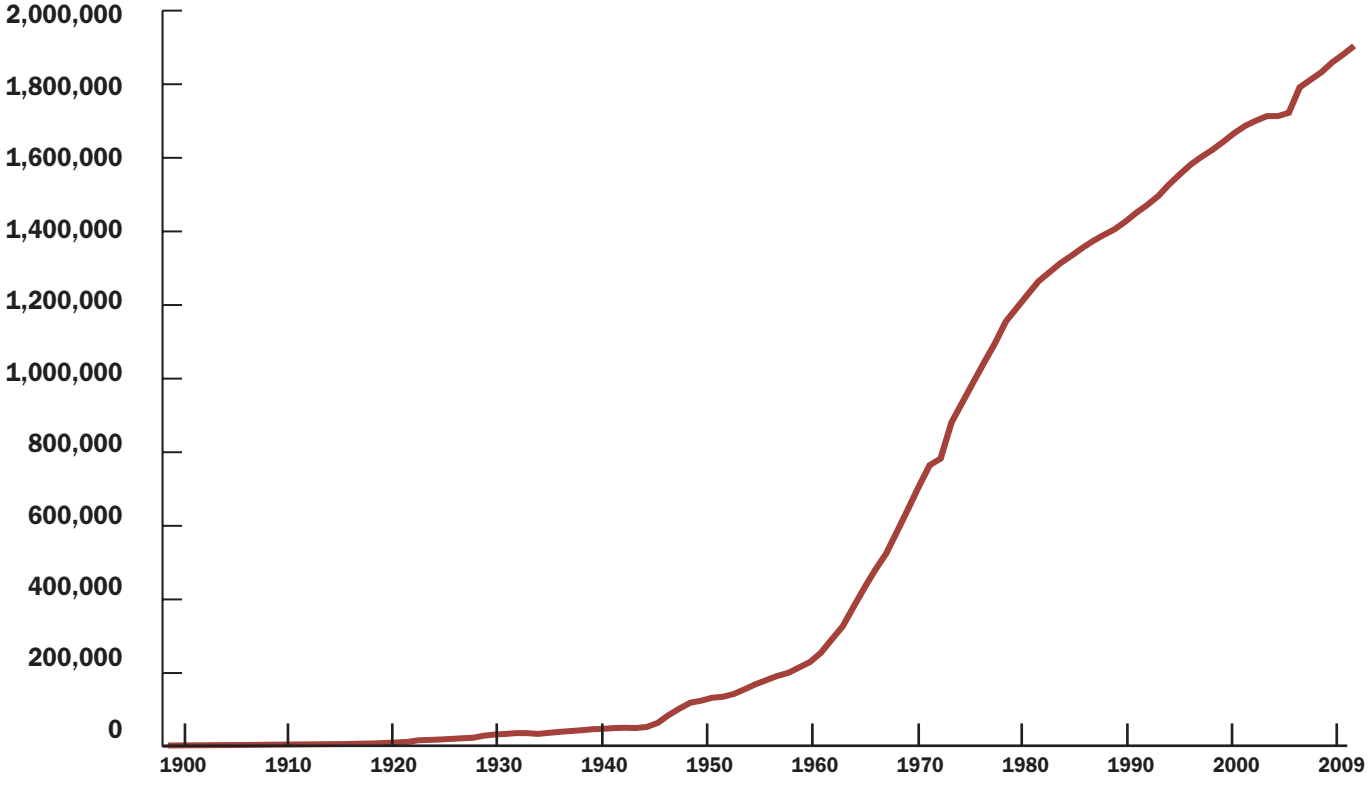
Two Million Retirees

At the dawn of the 20th century, US military retirees were few—about 3,000. They now number nearly two million, a population larger than that of Phoenix, the nation's fifth largest city. The line on this page shows explosive growth. It took 75 years for the US to reach a level of one million retirees, and 35 years later reached the current—and still climbing—total of 1.9 million. The high growth rate stems from commencement of a large standing Cold War force and shift to a professional force in the early 1970s. Of today's retirees, some 28 percent were officers, and 72 percent came from enlisted ranks. The largest contingent comes from the Army (672,902). Other service totals: Air Force, 653,209; Navy, 475,769; and Marine Corps, 102,350. The Army has the largest group of officer retirees (207,638), while the Air Force has produced the most enlisted retirees (484,754). The cost of retired pay each year now tops $49 billion.

Military Retirees Receiving Retired Pay, 1900-2009



Source: *"Statistical Report on the Military Retirement System,"* Department of Defense, Office of the Actuary, May 2010.

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Issue Brief

By Adam J. Hebert, Executive Editor

The Pentagon's War on Overhead

Overhead: "business expenses ([such as] rent, insurance, or heating) not chargeable to a particular part of the work or product."—Webster's

Robert M. Gates has Pentagon overhead expenses in his sights. The Secretary of Defense believes 10 years of rising defense budgets have spawned vast inefficiencies. He wants to wring out the waste, to the tune of $102 billion over five years.

DOD leaders emphasize that, in their opinion, these are not "cuts," because agencies and departments that slash overhead will be allowed to keep the money, and will be expected to plow it back into combat-related accounts. In other words, they will be permitted to convert "tail" to "tooth."

Gates claimed fiscal reality forced his hand. In making a case for his efficiency push, he asserted, "Given America's difficult economic circumstances and parlous fiscal condition, military spending ... can and should expect closer, harsher scrutiny." According to the Pentagon chief, DOD budgets must grow by two to three percent per year, in real noninflated terms, simply to maintain a constant capability. Yet future budgets probably won't grow by more than one percent, he added.

The difference, Gates explained, will be made up with new efficiencies. DOD documents say found money will be redirected to fighting units, readiness programs, combat force structure, and investment in future capabilities.

The question, of course, is whether this push will yield substantive savings. DOD has sought "acquisition reform" for as long as it has had acquisition, and calls to eliminate "waste, fraud, and abuse" are as old as the department itself.

Moreover, it is debatable whether any freed-up money actually will find its way into service coffers. The Air Force in the past has made good-faith reductions (to F-22 force structure and end strength, to cite two prominent examples) only to see "savings" diverted to other services or to pay unexpected bills such as those stemming from higher fuel costs.

Gates is talking about significant amounts of money, and the Pentagon has laid out detailed plans for who must save what. USAF is required to identify $2 billion in efficiencies in 2012 and $3 billion more in 2013. This includes cuts to both overhead and other expenses. The get-slim effort continues to ramp up each year until, in 2016, the Air Force supposedly will be $10 billion more efficient.

USAF must identify a total of $28.3 billion in efficiencies in the next five budget years. So must the Army Department and Navy Department (which includes both the Navy and Marine Corps). The nonservice defense agencies must come up with $17 billion.

Two-thirds of this $102 billion is supposed to come from slashed overhead—noncombat tasks that can be streamlined, consolidated, or eliminated. In a May 8 speech in Abilene, Kan., Gates claimed that 40 percent of all DOD spending can be considered overhead.

He focused on manpower inefficiencies. In the 1990s, he noted, the size of the overall force shrank—the Army by 40 percent—but that the number of generals and admirals was cut only by about half of that amount. Meanwhile, new layers of management continued to spring up. According to a DOD fact sheet, savings must "focus on headquarters and administrative functions, support activities, and other overhead." It said that the cuts must be specific and measurable, and that "percentage and across-the-board reductions are not acceptable."

USAF photo by MSgt. Jerry Morrison

Gates walks a well-worn path.

Deputy Defense Secretary William J. Lynn III explained in June that "we're talking about a flatter organization, fewer headquarters, smaller staffs"—to include a smaller Office of the Secretary of Defense. This focus on manpower efficiencies does not mean a smaller military end strength, however. "The combat force structure we have right now is what we need," Lynn added.

For all the talk of overhead, however, USAF also has the option of finding the "savings" by canceling lower priority programs and shifting the money to higher priority systems. In fact, Gates explicitly said, "Some of these savings can be found by eliminating unneeded programs and activities."

Lynn said the plan is as follows: Two-thirds of the changes should be "direct transfer" from overhead accounts to force structure and modernization accounts. One-third will come through "developing efficiencies within the force structure and modernization accounts."

For the Air Force, the goal is therefore to wring roughly $1.34 billion from overhead in 2012, while also finding about $670 million in force structure or program efficiencies. "Canceling unneeded programs complements the effort I'm talking about," Pentagon acquisition chief Ashton B. Carter explained June 28. "We will continue to look for and eliminate unneeded capabilities."

It is for that reason that USAF began to ponder some drastic moves. Among them: Retire the entire fleet of 66 conventional B-1B long-range bombers, or eliminate another two wings' worth of legacy fighters—F-15s, F-16s, and A-10s—to make ends meet.

Plans called for the Air Force to submit its specific efficiency proposals by the last day of July. It will therefore soon be known whether they are actually efficiencies or pure and simple cuts. ■

More information: http://www.defense.gov/speeches/speech.aspx?speechid=1467

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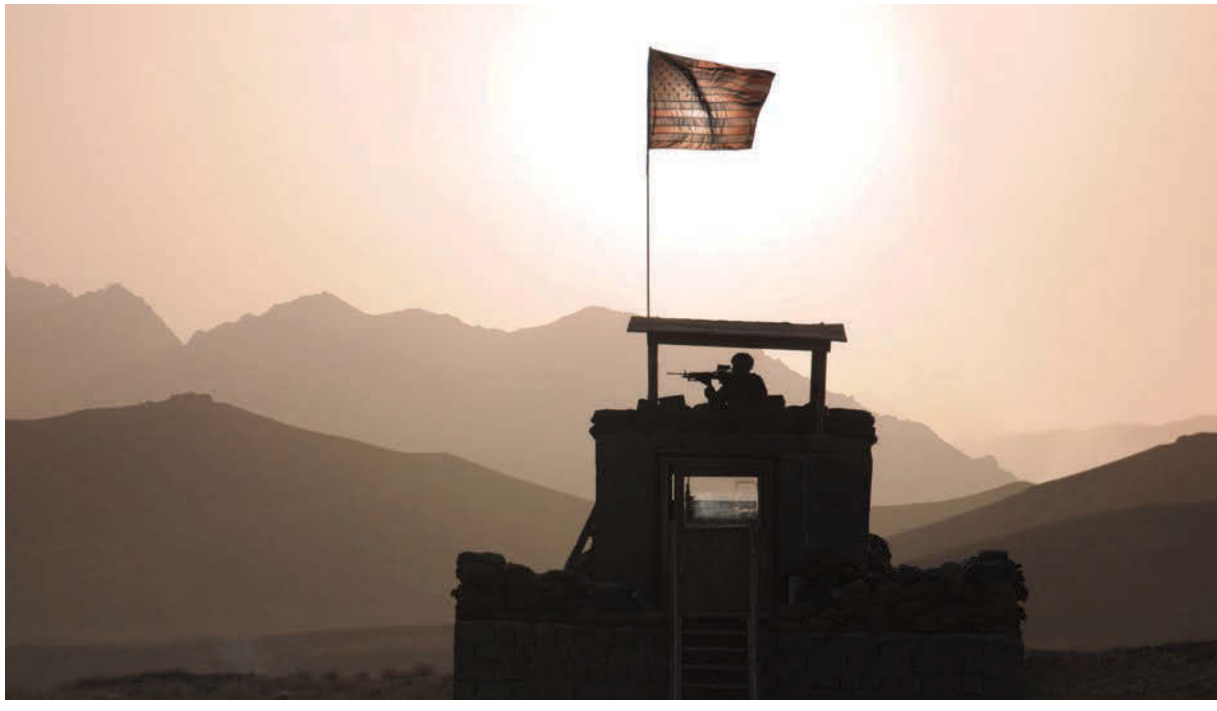

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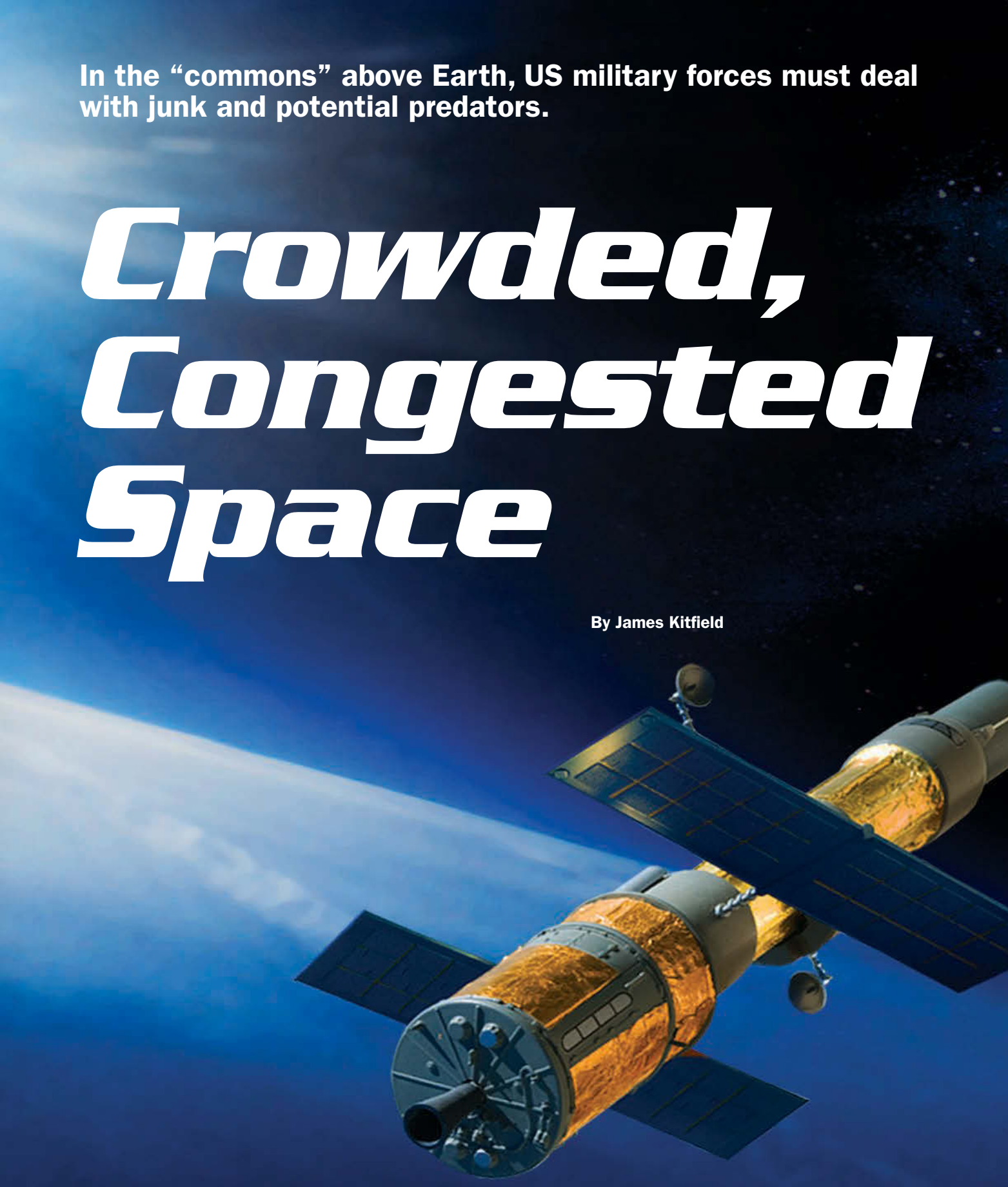
In the "commons" above Earth, US military forces must deal with junk and potential predators.

Crowded, Congested Space

By James Kitfield



In this artist's conception, a laser from a satellite attacks a communications satellite.

Illustration by Erik Simonsen

Last year, an Iridium communications satellite unexpectedly went dead. US military space analysts soon discovered it had smashed into a defunct Russian Cosmos satellite, a collision that destroyed both spacecraft and created a large and dangerous debris field in space.

That incident followed another worrisome event. In January 2007, China successfully tested an anti-satellite missile against one of its own defunct satellites. That attack, a direct hit, created 150,000 pieces of space clutter—not all of it even visible to US space operators.

Both events reveal that the global commons of space—which the United States has long dominated and has increasingly used as leverage to achieve a decisive military edge—is increasingly crowded and contested. There have been years of warnings that US space dominance is in peril. It is now safe to assume that, in a future war, the military will not have unhindered access to the space-based capabilities that create numerous US combat advantages. Potential adversaries aren't just aware of how heavily the US relies on space. They already have the means to compete and to challenge US operations there.

Today, many commanders view space dominance as vital to warfare in the Information Age.

"Certainly in the air world, in the ISR [intelligence-surveillance-reconnaissance] world, and most especially in the space world, [there is] competition out there, [and the] competition is getting better," said Lt. Gen. Larry D. James, commander of 14th Air Force at Vandenberg AFB, Calif. "Multiple nation-states now have space launch capability, have ISR capability, [and] have intelligence capability from space, so we've got to continue to raise our game to make sure we are still the best."

As a recent report by the Center for a New American Security (CNAS) noted, it is increasingly clear that a military able to effectively use space has tremendous advantages through rapid globe-spanning communications, broad and sophisticated surveillance and intelligence-gathering capability, and accurate force positioning, operations timing, and precision targeting abilities.

"Put in military terms, the space commons offers distinct and significant advantages in command, control, communications, intelligence, surveillance, and reconnaissance (C3ISR), maneuverability, and firepower," noted report author Eric Sterner. "As the United States has been the world's leading innovator in the use of space for military purposes, this development is largely a story of American innovation."

Given the game-changing advantages that the United States reaps from its dominance of space, it was inevitable that other countries would also seek to exploit space for their own uses, both military and commercial. Today, nine countries, plus the European Space Agency member states, have the ability to independently place satellites into orbit, and virtually any country or nonstate actor can access satellite technology by buying time on commercial satellites.

As the US military's dependence on space systems has grown exponentially in recent years, however, so has a growing sense of unease among military commanders concerned about the vulnerability of those assets. In 2001, the Commission to Assess United States National Security Space Management and Organization released a report that predicted that future warfare in space was a "virtual certainty," and it proposed that the United States begin

Illustration by Erik Simonsen

China's successful 2007 anti-satellite missile test was a wake-up call for the space community. This artist's conception shows the missile during staging.

to develop the means both to deter and defend against attacks on its space assets, and to mount offensive operations to deny the use of space to potential adversaries. To do otherwise, the commission warned, would invite a "space Pearl Harbor."

US officials confirmed in 2006 that China had successfully "painted" a US satellite with a laser. China's January 2007 test of the direct-ascent, anti-satellite SC-19 missile greatly heightened those concerns. And a recent Pentagon report on China's military modernization revealed that China is developing other anti-satellite systems, to include ground-based lasers designed to blind sensitive satellite optics.

China is also reportedly developing microsatellites crafted to act as "space mines," which could loiter in space until given the signal to destroy other satellites. At present, US officials say they are uncertain whether China has already launched such "parasite" satellites.

"In today's world, ... there are a lot of folks launching a lot of satellites, some of them very small," and we have a lot of work to do in terms of knowing "what their mission is, ... what the intent of the owner is," and whether they represent a threat, said James. That really gets into the intelligence world more than the tracking world, but, "frankly, we have a long way to go" in achieving that space situational awareness.

According to the CNAS report, China has identified American dependence on space as an asymmetric vulnerability to exploit. "China is developing robust capabilities to operate in space and deny its adversaries the use of space during a time of crisis or conflict," the report concluded.

A Stalemate

In devising a strategy to maintain space superiority, the Pentagon has been constrained by space governing structures and policies dating back 40 years in some cases. The United States led the way in promoting the principles at the heart of the 1967 Outer Space Treaty, for instance, whose signatories pledged not to station nuclear weapons or other weapons of mass destruction in space or on celestial bodies, and accepted the principle that space was a global commons that all countries are free to explore and utilize equally.

More recently, however, attempts to update policies governing the space commons have stalemated over American resistance to proposals to ban all weapons in space. In 2002, Russia and China proposed a treaty, for instance, that would ban signatories from placing "in orbit around the Earth any objects carrying any kinds of weapons ... or ... to station such weapons in outer space in any other manner."

As the CNAS report noted, such a treaty could negate a clear US advantage—space-based systems—while allowing Russia and China to continue to develop ground-based anti-satellite systems such as kinetic missiles, lasers, particle beams, and radio-frequency weapons. A number of nations have already displayed an ability to jam satellite transmissions, including Iran and Cuba, which in 2003 colluded to jam the satellite broadcast of Voice of America.

A ban on weapons in space is also viewed by some experts as unverifiable.

After withdrawing from the Anti-ballistic Missile Treaty with Russia in 2001 in order to pursue a more robust national missile defense system, the Bush Administration was determined not to commit itself to a new treaty that precluded space-based interceptors.

In 2006, the Bush Administration also released a new National Space Policy,

USAF photo by TSgt. Lee A. Osberry Jr.

Air Force Gen. Kevin Chilton (l), commander of US Strategic Command, visits with security forces personnel at Ellsworth AFB, S.D.

reaffirming a US commitment to the free exploration and peaceful uses of space by all nations—but put a marker down in terms of the US commitment to protect its edge in space.

Space Junk

"The United States considers space capabilities—including the ground and space segments and supporting links—vital to its national interests," the space policy declared, adding that the US will preserve freedom of action in space, "dissuade or deter others from either impeding those rights or developing capabilities intended to do so; take ... actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to US national interests."

While continuing a de facto policy of not deploying weapons in space, US Strategic Command and its Joint Functional Component Command for Space have pursued a multipronged strategy for fulfilling the National Space Policy. The first pillar of that strategy is to significantly improve the United States' space situational awareness, the better to understand vulnerabilities and potential threats in space.

Illustration by Erik Simonsen

Space junk ruptures a satellite's solar panel in this artist's conception. Several such incidents have highlighted the hazard posed by space debris.

Commanders concede there are major gaps in their ability to even identify everything flying in space, and to what purpose.

"I've talked a lot about space situational awareness, [because] frankly, we are still challenged in that arena," said James, noting that operators can only track objects of 10 centimeters (four inches) or more. "And yet there are a lot of things out there two centimeters, three centimeters, or four centimeters that, when they're traveling at 17,000 miles an hour, can still cause a lot of damage. We don't even see those."

STRATCOM's joint space component also lacks adequate coverage of the skies over the Southern Hemisphere. "So as objects go through the Southern Hemisphere, we often don't see them until they come back around and they're coming up over the Northern Hemisphere," said James, who also commands JFCC-Space.

Besides better intelligence on space launches and satellite characteristics,

A Case Study in Minimizing Disasters in Space

In February 2009, a seemingly routine message arrived via secure link to the Joint Space Operations Center (JSPOC) at Vandenberg Air Force Base in California. The Global Satellite Communications Support Center received information that Iridium had lost contact with one of its communications satellites.

Satellites operating in the unforgiving expanses of space fail for many reasons, but this particular message set off a warning light for the crew commander at JSPOC. The young Air Force officer was trained to treat any anomaly or unexplained failure as a potential offensive operation against US space systems.

The officer and his team immediately ran a "conjunction analysis" of the satellite's orbit in relation to other man-made objects in space, whether other satellites or debris from past launches or space collisions.

The roughly 1,300 known satellites tracked by JSPOC appeared on a video screen, a computer model showing their orbits crisscrossing in a complex halo around the Earth. The trajectories of roughly 21,100 bits of known "space junk" were also calculated, representing a debris field that has grown rapidly in recent years along with increases in satellite launches. As a result, on any given day, JSPOC operators now track 40 to 50 possible space collisions, a dramatic increase in potential space mayhem.

The conjunction analysis of the Iridium satellite revealed the problem. The computer tracked it on a collision course with a Russian Cosmos satellite, each of them traveling at thousands of miles an hour.

As a result of their violent impact, US space operators suddenly had roughly 1,500 more pieces of space junk to monitor.

Because of the quick actions of this young captain and his crew on the JSPOC floor to determine exactly what was going on, "we were able to ascertain very quickly that we had a problem and that we had a potential debris field that we had to start worrying about," said Lt. Gen. Larry D. James, head of US Strategic Command's Joint Functional Component Command for Space (JFCC-Space) at Vandenberg, speaking at a symposium last November.

Officials said the JSPOC crew's quick reactions likely averted other potentially devastating collisions.

USA photo by Spec. Eric Cabral

SSgt. Drake Iverson, a joint terminal attack controller attached to the Army's 4th Infantry Regiment in Afghanistan, hoists a satellite antenna while calling in air support.

and more extensive multilateral space partnerships and cooperation to improve transparency of the space commons, the Pentagon has launched a number of programs to improve its ability to monitor space activities. These include a Space-Based Surveillance System that when completed will give the US military round-the-clock coverage of the geosynchronous belt (20,000 to 22,000 miles from Earth) and beefed-up ground radars that can track spacecraft in low-Earth orbit (from 60 to 300 miles).

Another focus in US space strategy is developing "defensive counterspace measures," or steps the military can take to better protect space assets. These include improved satellite sensors that could detect an adversary's attempt to interfere with them; increased hardening of satellites against threats such as electromagnetic-pulse weapons or radiation from a potential nuclear detonation in space; and an improved ability to maneuver satellites out of harm's way.

Also part of this effort is the Air Force's Evolved Expendable Launch Vehicle program, which produced the Delta and Atlas families of heavy-lift rockets.

The EELV program was designed specifically to quickly and inexpensively launch satellites into orbit on short notice, a key capability if the nation needed to replace spacecraft that had been damaged or disabled in an attack.

Currently the United States has only two space launch facilities designed for large vehicles, however, at Vandenberg AFB, Calif., and Cape Canaveral, Fla. Nor does the nation stockpile excess launch vehicles or significant numbers of spare satellites that it could "surge" into use in a crisis.

Radio Frequency Jamming

"Consequently, once degraded, American space capabilities would likely undergo a long and torturous reconstitution process that could prove impossible in the midst of an ongoing conflict in space with an adversary that had successfully seized the 'high ground,'" concluded Sterner in the CNAS report. "Taken together, these vulnerabilities make space an Achilles' heel for the United States and the international community."

Air Force Gen. Kevin P. Chilton is the commander of STRATCOM. "There was a day when we had robust architectures and we had robust development programs, with satellites in the barn ready to go up should a problem develop on orbit," he said at an Air Force Association symposium last November.

Partly because of some well-publicized acquisition problems with space-based systems, Chilton noted, none of that is true today. "We've gotten to the point in some cases where this combatant commander has to count on 100 percent launch success. Now, we're good, ... [but] we're not there yet." The US shouldn't be counting on 100 percent launch success when it comes to national security.

The most controversial component of US space strategy falls under the rubric of attack. This includes offensive counterspace operations and programs designed to deny space to enemies in times of conflict.

Even without launching actual weapons into space, the United States possesses a range of such tools, to include satellite jammers and lasers designed to temporarily blind satellites. Other nations also have access to a broad range of counterspace tactics.

"I would argue that the threat that's the biggest, because it's probably the simplest, is [radio frequency] jamming," said James. "Most of our data from space systems comes down on RF links, so it's very easy to build an RF jammer and go after those links."

Illustration by Erik Simonsen

Global Positioning System satellites have changed warfare by making possible extremely precise targeting. Civilians also depend on GPS for navigation and timing.

Erik Simonsen photo

A Delta IV rocket streaks skyward from Vandenberg AFB, Calif. USAF has had a long streak of launch successes, but leaders warn against counting on perfection.

Looking at space systems in their entirety, commanders could likewise target an adversary's ground-based stations and communication nodes with conventional precision strikes. "Soft kill" options include cyber operations to penetrate a satellite's command and control link in order to issue false commands.

Though the United States has not deployed a dedicated anti-satellite missile, during the 1980s, it successfully tested a direct-ascent anti-satellite weapon from an F-15 fighter. The importance of space to military operations has grown exponentially since then.

With the end of the Cold War and dissolution of the Soviet Union, US space forces were freed to focus assets and energy on transforming conventional military operations. Before the invasion of Iraq in March 2003, for instance, US Space Command sent space warriors to all major in-theater units. In the field, they studied the paths of orbiting satellites to determine how ground troops could maintain satellite communications linkages while moving quickly across hundreds of miles of desert—a range that far outstripped the reach of tactical military radios.

During the opening aerial bombing campaign of Operation Iraqi Freedom, the Joint Direct Attack Munition became the workhorse of the air arsenal. The bombs were guided precisely to their targets, day or night, and in all weather, by the constellation of Global Positioning System satellites.

During the massive dust storm that temporarily halted the Iraqi offensive, Global Hawk high-altitude reconnaissance drones used secure satellite links to beam reconnaissance data to California and Nevada, where analysts developed target coordinates that were then beamed back by satellite to Middle East command centers. These targeting coordinates were then in some instances relayed directly into the cockpits of warplanes loitering over the battlefield.

Increased Competition

That globe-spanning cycle of surveillance, analysis, and retargeting of aircraft already in the air represented a revolution in modern warfare. Air Force air controllers could only have dreamed about these capabilities, even during the 1991 Persian Gulf War with Iraq, considered by many as the "first space war."

In fact, the amount of satellite bandwidth used in the opening days of Iraqi Freedom was 42 times that used in Desert Storm in 1991.

As former Secretary of the Air Force Michael W. Wynne explained, "In World War II, it took 1,500 B-17s dropping 9,000 bombs to destroy a given target. Today, one B-2 Spirit bomber can strike 80 different targets on a single mission" using weapons guided by GPS.

A major Pentagon reorganization greatly expanded the missions of US Strategic Command in 2006, and put the Army, Navy, and Air Force space commands under its operational authority. The Pentagon also ordered STRATCOM to expand its role beyond maintaining the nuclear deterrent by assuming a "global strike" mission, being ready to destroy targets anywhere in the world at a moment's notice using conventional as well as nuclear weapons. That placed US space operations directly in the chain of command of a military commander oriented toward offense as well as defense.

In 2008, the US returned to the anti-satellite realm, when it reconfigured an anti-ballistic missile system aboard an Aegis warship in order to successfully destroy a malfunctioning spy satellite that was about to re-enter Earth's atmosphere.

As noted in the Center for a New American Security report, "US officials were quite clear that the intercept was undertaken as a special circumstance, though there is no reason to believe that the United States could not repeat the feat with greater margin for success as ballistic missile defense capabilities improve."

Though officials rarely talk about them publicly, the Air Force continues to study concepts for anti-satellite weapons in space. Though they reportedly have no intention of deploying them now, planners want to at least study how such systems might work if they ever got the go-ahead. Some arms control experts suspect that the XSS-11 micro-satellite the Air Force launched in 2005 might have the capability to interfere with other nations' satellites.

"When we look to the future of our joint operating environment, we see that increased competition in the global space commons is likely," said Gen. C. Robert Kehler, commander of Air Force Space Command at Peterson AFB, Colo., last year. "As I've said before publicly, it's our job to point out that fact, and it's our job to try and be prepared for that."

Space is no longer a sanctuary, but the Air Force is clearly not taking that fact lightly. ■

James Kitfield is the defense correspondent for National Journal *in Washington, D.C. His most recent article for* Air Force *Magazine, "The Front Lines Down South," appeared in the July issue.*

The big fighter program has been revamped for success. That's good, because the US is running out of alternatives.

F-35 at Endgame

By Marc V. Schanz, Senior Editor

The next year shapes up as a critical period for the F-35 Lightning II. The fighter forces of the Air Force, Navy, Marine Corps, and some allied services hinge on its success. After a rash of problems, the US has imposed serious reforms, and the months just ahead will tell whether the get-well program is working.

For their part, USAF officials, Lockheed Martin, and the Pentagon's top leadership all believe a recent F-35 program restructuring will smooth the way for the fighter to replace hundreds of F-16, F/A-18, A-10, and AV-8 fighters with a more advanced, stealthy successor.

In February, after much deliberation at the Pentagon, Defense Secretary Robert M. Gates unveiled the revisions. Then, taking into account various Pentagon reviews, the DOD 2011 budget sought an extra $2.8 billion for the program, but for 122 fewer production aircraft through 2015. More aircraft would be bought later, and the additional money would be used to increase testing and development.

The new F-35 plan adds 13 months to development. It should reduce the oft-criticized concurrency in development and operational testing of the aircraft.

"They won't have any overlap," Stephen O'Bryan, vice president of F-35 business development for Lockheed Martin, said in June.

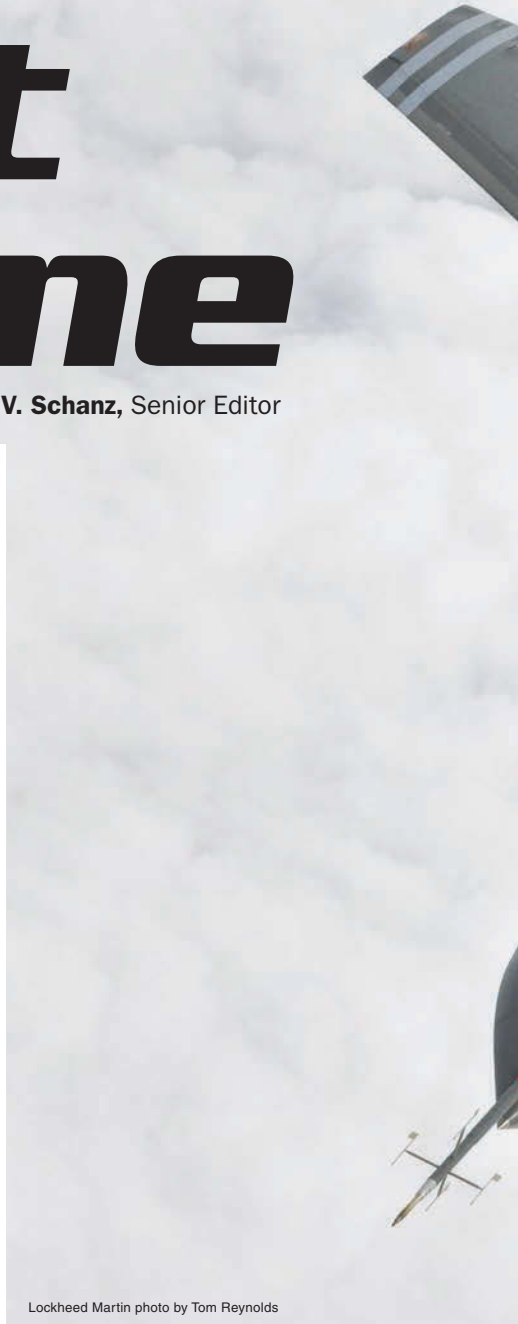
Through May, the Joint Strike Fighter was ahead of schedule for flight tests in 2010, said O'Bryan. The flight-test program had 93 test flights complete (versus the 90 planned through May), and a total of 394 planned by the end of the year.

Pentagon officials in June certified to Congress the F-35 is critical to national security, and that there are no viable options to the next generation stealth fighter.

Backers point to a series of recent events as evidence the program has returned to level flight. These include

Lockheed Martin photo by Tom Harvey

Secretary of Defense Robert Gates (center, in the group of three at right) tours Lockheed Martin's F-35 production facility at Fort Worth, Tex., in August 2009.



Lockheed Martin photo by Tom Reynolds

The first two Air Force-variant F-35 Lightning II aircraft on a test flight.

first flight of the Navy's F-35C variant, the arrival of two Air Force F-35As at Edwards AFB, Calif., and an expansion of flight-testing activities at Edwards and NAS Patuxent River, Md.

Lockheed also points to specific accomplishments in the flight-test program this year.

On May 17, two F-35A test aircraft flew from Lockheed's Fort Worth, Tex., facility to Edwards—which was the first multiship, long-range flight in the fighter's development. The arrival of AF-1 and AF-2 marked the expansion of flight-test operations at Edwards, which is building up to a fleet of at least eight test aircraft.

While at Edwards, the AF-1 and AF-2 Air Force test vehicles will complete both ground and flight testing. Their propulsion systems, aerial refueling capabilities, logistics, weapons integration, and flight envelopes will all be put through their paces.

On March 17, a short takeoff/vertical landing (STOVL) F-35B successfully completed a hover test flight at NAS Patuxent River. The first successful vertical landing for the Marine Corps variant came the next day.

Lockheed Martin photos

The Air Force remains committed to the fighter. The difficulties the F-35 is experiencing at this stage of its development are not unusual for such an effort, Air Force Chief of Staff Gen. Norton A. Schwartz and Secretary Michael B. Donley said in the service's Fiscal 2011 posture statement. "The F-35 is our largest and most important program, and we are dedicated to successfully delivering these aircraft," they added.

Lt. Gen. Mark D. Shackelford, the Air Force's military acquisition deputy, told lawmakers in April the service has

Left: Wilbert Pearson Jr., chief of F-35 test and verification at Lockheed Martin, greets test pilot Lt. Col. Hank Griffiths at Edwards AFB, Calif., as Maj. Gen. David Eichhorn (l) and Col. William Thornton look on. Below: BF-1, the Marine Corps variant, makes its first vertical landing March 18.

The Navy's carrier variant, the F-35C, performed its first test flight on June 6 in Fort Worth, completing a 57-minute hop.

Fixed Pricing

As of May, the F-35 program had completed more than 200 test flights with activities at Fort Worth, Edwards, and NAS Patuxent River—where both the Navy and Marine Corps variants are undergoing tests.

According to O'Bryan, the partners and services are feeling more assured about the F-35's future. A year from now, he anticipates all of the US systems development aircraft will be delivered to the test sites.

The low rate initial production Lot One aircraft will be delivered by June 2011; Air Force pilots will be training at Eglin AFB, Fla.; and the F-35B short takeoff and landing testing will be under way at Eglin as well.

As for the Air Force's wish to get closer to a 110 aircraft annual buy to replace older fighters, O'Bryan expressed guarded optimism, and said the third low rate production lot of 17 F-35As came in 20 percent lower than previous cost estimates.

O'Bryan said Lockheed Martin anticipates signing the fourth LRIP contract with DOD, encompassing some 32 aircraft, for at least 20 percent less than estimated.

With a transition to fixed pricing, the hope is that by coming in under budget, the Air Force will get greater flexibility with its procurement accounts—and can potentially get greater numbers of F-35s into the force sooner.

Lockheed Martin photo

An F-35 undergoes an engine test run.

put its bet down on the F-35. "We are putting the proper pressure in terms of bringing that program along in as successful a manner as we can ... to get the production ramp rate up to something that will flow those aircraft into the inventory as quickly as we're able to," he said.

The F-22 Raptor force was capped at 187 airframes, and legacy fighters will receive some upgrades until the F-35 fleet is fully operational, but the long-term tactical-air solution is nothing short of a fifth generation fighter force.

Between 2010 and 2013, 60 operational aircraft are slated for delivery to Eglin, home of the fighter's training schoolhouse for all services.

Officially, the Marine Corps anticipates initial operational capability with the F-35B in 2012 (although they do not intend to deploy the jet aircraft until 2014), and the Air Force is working toward a 2015 operational date.

In spite of the restructuring, Gates has assured Congress the IOC dates stand pat. In a February hearing at the House Appropriations Committee's defense panel, Rear Adm. David L. Philman acknowledged that the Navy is anticipating a slip of its IOC declaration to 2015 and maybe later, but the Marines are firm in holding onto their 2012 date pending the successful completion of F-35B testing.

A Level of Transparency

The Air Force leadership, however, has adjusted expectations slightly.

On Feb. 24, Schwartz told Congress the Air Force would likely not have its first combat-ready F-35A unit available until the end of calendar 2015—a full two years later than the 2013 target date prior to the program restructuring.

Air Combat Command chief Gen. William M. Fraser III said in February at AFA's Air Warfare Symposium that ACC was actively re-examining the target date to field USAF's initial combat-ready unit of F-35As, in light of restructuring and extension of development by 13 months. "It has got to be about combat capability—and that is crews trained, spares, supportability, all of that together," Fraser said.

Pentagon acquisition chief Ashton B. Carter, meanwhile, estimated that the Navy and Air Force would actually have their aircraft operational in 2016.

Much is riding on the restructured program, said Donley during a Capitol Hill speech in May to the Senate Aerospace Caucus.

The service's topline budget is not keeping pace with the new missions the Air Force is being asked to take on, he noted, and 63 percent of the service's spending over the future years defense program is tied up in operations. That leaves just 37 percent for investment—of which a quarter goes to the combat air forces.

While large portions of modernization funding will go toward "joint enablers" such as airlifters, tankers, unmanned aircraft, and intelligence-surveillance-reconnaissance platforms, the F-35 alone consumes 60 percent of CAF investment funding over this time.

For his part, Schwartz is convinced the program will survive.

"We've had program management issues, we've had cost-control issues, we've had some manufacturing issues, but what I'm seeing is, at the technical level, pretty promising," Schwartz told *Defense News* in May.

If the cost curve comes down, he added, "I'm nowhere near to thinking of abandoning this effort."

The F-35 suffered through a steady diet of schedule problems and cost growth over the past year. Critics have seized on missteps to caricature the JSF as the poster child for Pentagon acquisition woes, but much of the cost growth stretches back years.

The F-35 had already reached 38 percent cost growth by 2006, Rebecca Grant, head of the Mitchell Institute for Airpower Studies, noted in April 2010. "Is it something we wanted to happen? Certainly not. But the good part of this is that it signals a relatively strong level of transparency about what has caused the cost growth," she said.

What specifically pushed the F-35 over the Nunn-McCurdy threshold was the DOD decision in late 2009 to better fund the program, Grant said.

"The prudent decision has been made to put money in, take jets out, and achieve a program that has less risk," she added.

That said, the past year has certainly not been easy for the F-35 program. Since June 2009, it experienced a Nunn-McCurdy cost-growth breach, its military program director was fired, and its contractor management at Lockheed Martin was reshuffled.

Things looked much better last August, when Pentagon leadership trumpeted the program. Gates traveled to Lockheed's Fort Worth JSF production line to personally inspect progress.

Lockheed Martin photo

The Navy's F-35 variant is put through structural integrity testing during a drop test at Lockheed's test facility.

"The importance of this program can hardly be overstated," Gates said after his visit, noting that it is at the heart of the Air Force, Navy, and Marine Corps fighter plans—with a total buy of around 2,443 fighters though the 2030s.

After the endorsement, the F-35 limped into 2010 with a faltering flight-test program and multiple reports indicating cost growth troubles. Earlier this year, DOD confirmed to Congress unit costs on the fighter were up to $92.4 million. This was a cradle-to-grave cost, including development, construction, and a lifetime of upgrades, but it was still up from 2001 estimates of $50 million a copy. The cost growth triggered the Nunn-McCurdy breach.

Pentagon leadership continues to dole out tough love for the program. The cost of the program is now projected to go as high as $382 billion.

The largest reason for cost growth remains significantly higher-than-expected contract labor and overhead expenses, DOD and Lockheed officials said. Military construction, as well as the Navy's cut of 409 aircraft from its plan several years ago, and a stretched development cycle also served to raise costs. The OSD recertification in June called the F-35 "fundamentally sound," but recommended a new risk review and management process. The Pentagon stated Lockheed processes were not compliant with DOD standards for value management—and challenged the company to improve with the recertified JSF effort.

A major criticism in several recent reviews (such as the much-reported Joint Estimate Team review) looked at risk in relation to proven flight testing to demonstrate combat capability. Last year was less than stellar for the F-35's flight testing, and this forced analysts to assume the worst going forward. The program only flew about 10 percent of its planned test flights in 2009, due to delays in aircraft delivery, according to O'Bryan.

No More Wishful Thinking

In his revamped plan, Gates said progress toward key goals was lacking. This led him to withhold $614 million in performance fees from Lockheed Martin in February, arguing that taxpayers "should not have to bear the entire burden of getting the JSF program on track." The revamp was not a surprise. Air Force and DOD leadership indicated a program scrub was coming, and acted as if the program was in breach of Nunn-McCurdy even before it became official.

Gates said senior OSD officials had burrowed into program details beginning in late 2009—and didn't like what turned up.

"It was clear that there were more problems than we were aware of when I visited Fort Worth," Gates said in February.

On March 2, Donley told reporters in Washington that the restructuring reflected the "mitigating and corrective action" to be taken if a breach was confirmed, adding such a breach was "likely."

Nine days later, Carter confirmed to the Senate Armed Services Committee the F-35 had busted the Nunn-McCurdy thresholds and needed recertification. Accompanying Carter, Christine H. Fox, DOD's chief for cost assessments, told the panel that costs for the program had grown more than 50 percent since 2001.

Lockheed officials emphasized the program's steep cost growth in development was in large part due to materials scarcity, fixing weight and software problems, and parts shortages.

"We've been pretty candid about what happened ... at the strategic level," said O'Bryan. The problems uncovered by several reviews of the program were related to test aircraft delivery delays that averaged six months, he added. "We underestimated the amount of change we'd have to make as they rolled down the assembly line," O'Bryan said. In addition to management improvement, he said development of the F-35's software is 84 percent complete as of the end of May, but—like flight testing—the company is behind on the delivery of the software.

As part of his F-35 scrub, Gates eviscerated the program's management, announcing a change in the leadership of the program office. Gates in February fired the director, Marine Corps Maj. Gen. David R. Heinz, and raised the JSF program manager to a three-star general officer slot. The program is now led by Vice Adm. David J. Venlet, who was brought over to lead the F-35 program from his previous assignment as commander of Naval Air Systems Command.

In March, Lockheed Martin CEO Robert J. Stevens publicly defended his corporate program director, Daniel J. Crowley. Crowley kept his job, and Stevens said he had "absolute confidence" in his role. In early May, Crowley was promoted to chief operating officer of Lockheed Martin's aeronautics unit, where he would oversee the F-35, F-22, F-16, C-130, and C-5M programs, effective June 7. Succeeding Crowley was Larry A. Lawson, who had led the company's F-22 effort since December 2004.

The program tumult has resulted in some tension between DOD and Air Force leadership, on one hand, and the F-35 contractor, Lockheed Martin, on the other. The tension was especially high after Gates sacked Heinz.

"This is no longer a time for wishful thinking," said Schwartz in February, when asked at AFA's Air Warfare Symposium what his message was to industry.

"Tell me what you can do. I expect you to deliver what you promise," Schwartz said, adding, "If they don't, what occurred recently with the F-35 program is only the start." ■

Verbatim

By John T. Correll, Contributing Editor

From Out of the Past

"What has happened, in fact, is not so much a revolution in warfare as a revolution in the US Air Force. Far from fulfilling the dream of wars waged far above the crude skirmish of terrestrial battle, the age of the drones has brought back the days when the chief mission of the Air Force was to support troops on the ground."***—Fred Kaplan, Slate, May 19.***

Keep Them Covered

"We remain committed to the ability of the Air Force and our nation to hold virtually any target around the world at risk."***—Gen. Norton A. Schwartz, Air Force Chief of Staff, Combat Air Forces Symposium, May 19.***

About Military Pay Raises

"As a civilian in the business world who once had nearly 200,000 people reporting to me, I am unable to recall any job where one is on-call 24 hours a day, 365 days a year; where one may be expected at any moment to move anywhere in the world and often to leave one's family behind; where one's children must change schools every two or three years; where one often must live in substandard housing; where one can't simply quit and find another job; and where, during one's career, there is almost a certainty that someone will try to kill you. Now, let's see, what civilian job is the equivalent of that?"***—Norman R. Augustine, retired chairman and CEO, Lockheed Martin, May 12.***

Too Dependent on Communications

"What are we creating today with our command and control systems? I don't think we have turned off our radios in the last eight years. What kind of systems are we creating where we depend on this connection to headquarters? While we want the most robust communications, we also want to make sure we can operate with none of it. ... Mission-type orders rather than bandwidth are the key to the future. We need officers who can operate off a commander's intent, understand what the boss several levels above wants, and carry them out to suffocate the enemy's hopes."***—Marine Corps Gen. James N. Mattis, commander of Joint Forces Command,*** **Navy Times,** ***May 13.***

Out in Front

"You're joining an Air Force well-heeled in combat, an Air Force that has literally been on the tip of the spear since the beginning of the Gulf War."***—Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, Air Force Academy commencement, May 26.***

The Enemy

"Our enemy is not terrorism, because terrorism is but a tactic. Our enemy is not terror, because terror is a state of mind and, as Americans, we refuse to live in fear. Nor do we describe our enemy as jihadists or Islamists. ... We are at war against al Qaeda and its terrorist affiliates."***—John O. Brennan, White House counterterrorism advisor, Center for Strategic and International Studies, May 26.***

Demographics and Cyberspace

"We must recognize that the long-term trend in human capital is against us. Over the next 20 years, there is little doubt that China or India will train more computer scientists than we will. ... If our cyber advantage is predicated solely upon amassing trained cyber professionals, we will lose. So we need to confront cyber in the same way we confront other quantitatively dominant competitors. We do not always compete on numbers. We compete on technology and information dominance. The same will be true in cyber."***—Deputy Secretary of Defense William J. Lynn III, STRATCOM Cyber Symposium, May 26.***

Powell on the Powell Doctrine

"It's not in any military magazine or military field manual. But what it reflects is classical military thought. And what's called the Powell Doctrine is essentially the principle of 'objective and mass'—you decide what it is you're trying to achieve and then you apply the mass needed to achieve that objective in a decisive way."***—Gen. Colin L. Powell, former Chairman of the Joint Chiefs of Staff, "This Week on ABC," May 30.***

We Americans

"The threat will not go away soon, but let's be clear. Al Qaeda and its affiliates are small men on the wrong side of history. They lead no nation. They lead no religion. We need not give in to fear every time a terrorist tries to scare us. We should not discard our freedoms because extremists try to exploit them. We cannot succumb to division because others try to drive us apart. We are the United States of America."***—President Obama, West Point commencement, May 22.***

NATO 2020

"From a security standpoint, the most salient aspect of our era is that events in one part of the world are far more likely than in the past to have repercussions elsewhere. Anarchy in one country can create an opportunity for terrorists to find a safe haven from which to operate across any border. A nation that evades global norms and gets away with it creates a precedent that others might follow. A cyber attack that leads to chaos in one city may inspire copycat criminals in another. Due to the reach of modern media, even terrorist groups and pirate bands now have public relations specialists."***—Analysis from "the Group of Experts" for new NATO strategic concept, May 17.***

311 Nukes Plenty

"We have calculated that the country could address its conceivable national defense and military concerns with only 311 strategic nuclear weapons. (While we are civilian Air Force employees, we speak only for ourselves and not the Pentagon.) This may seem a trifling number compared with the arsenals built up in the Cold War, but 311 warheads would provide the equivalent of 1,900 megatons of explosive power, of nine-and-a-half times the amount that Secretary of Defense Robert McNamara argued in 1965 could incapacitate the Soviet Union by destroying 'one-quarter to one-third of its population and about two-thirds of its industrial capacity.'"***—Gary Schaub Jr., Air War College assistant professor, and James Forsyth Jr., School of Advanced Air and Space Studies professor,*** **New York Times,** ***May 24.***

Osama Activity Report

"He has considerable iconic value. He doesn't direct operations anymore, we don't think. We're not sure how much he even does, again, in terms of consultation on major decisions because he's such a remote figure. ... He doesn't go anywhere, near anything, that could enable intelligence to find him."***—Gen. David H. Petraeus, then US CENTCOM commander,*** **Chicago Tribune,** ***May 20.***

The RPA

Remotely piloted aircraft will not only be more numerous but also used in virtually every mission area.

By John A. Tirpak, Executive Editor

The Air Force has in service some 200 combat-oriented remotely piloted aircraft—150 MQ-1 Predators and 46 MQ-9 Reapers. By the coming decade, USAF will have expanded that fleet to 180 Predators and 329 Reapers, for a combined 509 aircraft. What's more, these and other RPAs will be playing a key role in virtually all of the Air Force's core mission areas.

The service sees almost no limits for the use of these aircraft. It plans the "application of remote technology to the entire panoply" of missions, asserts Lt. Gen. David A. Deptula, Air Force deputy chief of staff for intelligence-surveillance-reconnaissance (ISR).

Their use will encompass ISR, strike, mobility—and even combat search and rescue.

"We'll take a look at RPA technology as it applies to every one of our 12 core function areas," Deptula said. "We're discussing some of those options today as we assimilate more and more of these aircraft."

Deptula's office is the keeper of the Air Force's Unmanned Aircraft Systems Flight Plan, which seeks to map the acquisition of RPAs through 2047. USAF will seek constant industry input on the state of the possible technology and field commander comments on how RPAs can provide the best operational value.

Since the Flight Plan was published in mid-2009, the Air Force has dropped the

Boom

term "unmanned aircraft systems" because "there's nothing unmanned about them," Deptula said. It can take as many as 170 persons to launch, fly, and maintain such an aircraft as well as to process and disseminate its ISR products.

The UAS term gave the false impression that they required little manpower investment, Deptula noted.

Col. Dale Fridley, director of USAF's RPA Task Force, says today's Predators and Reapers can collect ISR and attack targets with missiles and (in the case of the Reaper) bombs. He says the Air Force's planned fleet of RPAs will be substantial, in light of its goal of maintaining no more than 2,000 fighters. In addition, the service will eventually deploy 77 RQ-4 Global Hawk high-altitude RPAs, which are ISR-only platforms.

Early in the next decade, the Air Force will deploy a new, stealthy RPA—currently called the MQ-X—capable of surviving in heavily defended airspace and performing a wide variety of ISR and strike missions. It will complement a new long-range ISR-strike platform—previously known as a bomber—which may be "optionally manned."

Beyond that, the use of RPAs will depend on how autonomous the technology of the time can make them and how willingly humans will allow the machines to make lethal decisions on their own.

The Reaper, with a 66-foot wingspan and a weapons load that rivals that of the F-16 fighter, evolved from the Predator, but won't displace it from the force in the near future.

Fridley said the original plan was to phase out the Predator as the Reaper came into the inventory, but at the direction of Defense Secretary Robert M. Gates, the Air Force is building RPA capability as

Photos by Jim Haseltine

A Reaper (large picture) and a Predator (smaller picture) perform training missions in New Mexico.

USAF photo by SSgt. Tabitha Kuykendall

MSgt. Bryon Griffin launches an RQ-11B Raven at Kirkuk AB, Iraq. The RPA can look over hills and other obstructions.

fast as possible to provide ISR support to forces fighting in Iraq and Afghanistan. Predators are being retained even as the more powerful Reapers are delivered and fielded.

The Reaper more than doubles the Predator's range and speed, while carrying almost 10 times the payload, and USAF has decided to focus on the Reaper because of its greater capability. Although the Air Force and Army were working on a common RPA a few years ago, the Air Force asked to be excused from the program because the smaller aircraft had too many limitations, Deptula said.

The Reaper, for example, can be fitted with a pod set called Gorgon Stare, which multiplies by 10—and in the future, by 30—the number of discrete video feeds one Reaper can broadcast to coalition forces.

The Air Force is also working on Vortex, a pod set that will give the Reaper a broadly expanded capability to detect and track moving targets on the ground. Other pods will collect signals and other forms of intelligence. The Predator cannot carry such payloads.

While the Air Force worked "very, very hard" to partner with the Army on what became the MQ-1C Warrior, a variant of Predator, "if I can provide a tenfold increase in what the warfighter wants, ... why would I want to buy a lesser platform? That's why the Air Force is moving to the MQ-9," Deptula asserted.

The Army uses its Warriors differently from the way the Air Force uses Predators and Reapers. While the Air Force provides RPA coverage for all the services, the Army's RPAs belong to specific Army divisions, and work directly for them when they are deployed. When not deployed, they are idled or are used for training. USAF's Predators and Reapers remain forward-based nearly all the time.

Developing the Nomenclature

For several years, the Air Force sought to become the executive agent among the services for RPA technology, asserting that it could best coordinate their use in busy combat airspace and deconflict them from other RPAs as well as manned aircraft. Former Deputy Defense Secretary Gordon R. England opted not to grant USAF that authority.

"It became an emotional issue," Deptula said, which clouded the Air Force's intent: "to come up [with] a forum in which a variety of issues that faced all our services could be discussed. ... Right now, that's not going anywhere."

However, there are four main interservice RPA issues yet to be resolved, he said. Those are: joint concepts of operation, airspace control, air defense, and streamlined acquisition. In the absence of an executive agent, the services are working to address those issues "with one another and on their own."

The Air Force measures its RPA presence in-theater with the term "CAP," which equals a 24-hour presence over a given geographical area. A single combat air patrol translates to about four aircraft: three in-theater and one at home base for training.

By the end of Fiscal 2011, USAF plans to have 50 CAPs orbiting over Iraq and Afghanistan; by 2013, it will maintain 65 CAPs.

However, Deptula said he's unhappy with the terminology. A Reaper fitted with Gorgon Stare pods can scan a much larger area—a whole city versus one block—and can pass 10 discrete video feeds to separate users, versus a Reaper without the pods. Yet both count as one CAP.

Deptula said USAF is exploring new nomenclature that would more accurately describe the output without linking it to a particular platform—say, a Predator CAP or Reaper CAP.

"We're looking at a terminology along the lines of: remote air mission, remote ground mission, remote sea mission," to encompass not only remotely flown aircraft, but also remotely operated ground vehicles and naval vessels.

In the case of a remote air mission—RAM—the number of video feeds could be specified with a V.

With a Gorgon Stare-equipped Reaper, "the V is 10 video images, so you might have a RAM V-10," Deptula explained. "Obviously, there's a big difference between a RAM V-10 and a RAM V-1." Then, he said, "you could get even more discriminating by adding prefixes and suffixes" to describe other capabilities

USAF photo by Greg L. Davis

The RQ-4A Global Hawk Battlefield Airborne Communications Node (BACN) made its first flight on July 14. The aircraft flew from Palmdale, Calif., to Edwards AFB, Calif.

onboard, such as electronic attack or Sigint.

Whatever nomenclature is adopted, he said, it should be platform-agnostic and "generic ... so it's not limited to just one service or component." The new lexicon would make it easier for theater commanders to understand just what options they have, Deptula observed. Changing the terminology will add precision to requests for imagery, which today usually come in the form of a call for simply "a Predator."

The Air Force plans to field one MQ-9 CAP with Gorgon Stare this fall. It will be able to produce and transmit up to 10 separate full-motion video feeds—called "chip-outs"—from several wide-area cameras via a line-of-sight data link. For users who are not within line of sight, the data can be recorded onboard and downloaded later. That approach will save on bandwidth, the chief limitation on RPAs.

The Gorgon Stare Increment Two will add improved electro-optical and imaging infrared, greater area coverage, improved resolution, and greater storage capacity. It will be available by the middle of Fiscal 2012, and there will be enough two-pod sets for another two Reaper CAPs. Expected advances in data compression will make possible 30 or more real-time video feeds from each Increment Two pod set. All told, 10 sets of Gorgon Stare pods are planned.

The Reaper can carry Hellfire missiles and laser guided bombs, and will be fitted with both the Small Diameter Bomb and the Joint Direct Attack Munition, or JDAM. It's also likely that a new low-collateral damage bomb now starting development will be certified for the Reaper.

However, USAF is not planning to try to adapt the MQ-9 for air-to-air combat—although it can carry AIM-9 Sidewinder air-to-air missiles—or fit it with chaff or flares to evade surface-to-air missiles.

The self-defense mechanism for RPAs, Fridley said, will be "for the Air Force to ... own the airspace that the MQ-9 and MQ-1 are going to operate in." The service has never claimed that the Reaper can fly in bad weather or in contested airspace. Those are two limitations that USAF hopes to overcome with the MQ-X.

The MQ-X, Deptula said, "is not a follow-on [for] the MQ-9" in the way that the Reaper was a larger, faster evolution of the Predator.

Rather, "we're looking ... to apply remote piloted technology to the spectrum of Air Force core functions, and come up with an aircraft that can fulfill ... or can assist in [as] many of those core functions as we possibly can."

In April, the Air Force abandoned a previous set of studies and analyses related to MQ-X, having decided that the scope of the project was too narrow and failed to give enough weight to modularity and flexibility for other missions. More "stakeholders" will be involved in setting new requirements for the system.

Photo by Jim Haseltine

SSgt. Stephanie Hagans inspects the "eye" of a Reaper, the MTS-B Multispectral Targeting System. Plans call for Reaper to supply 10, and then 30, video feeds.

No "Son of MQ-9"

The first main attribute for MQ-X will be modularity, Deptula said, such that the aircraft can be rapidly reconfigured to fulfill any of a number of widely divergent missions; "much, much different than anything we've seen before."

Industry sources said such aircraft might have reconfigurable wings and bodies for high-speed dashes or fuel-sipping loiter missions, while being nearly invisible over enemy terrain.

Survivability—which is not synonymous with stealth—is the second major attribute the MQ-X will have, Deptula noted.

"We have plenty of MQ-[1]s and MQ-9s right now" that can operate in permissive airspace, he said, but in contested airspace, "those aircraft are extremely vulnerable."

The third major attribute of the MQ-X will be autonomy, since it is likely that an enemy will seek to cut the links between the operator and the aircraft. Today, RPAs know when they are out of touch with their operators, and if that happens, some can return safely to base. With the MQ-X, the Air Force wants an aircraft that can continue the mission on its own, if control links are cut.

Fridley said the "earliest" MQ-9s will need to be replaced is in the 2020-22 time frame, and that's the target period for introducing the MQ-X. Air Combat Command will have the lead in setting the requirements, but the ISR community will have the opportunity to "shape" that requirement, he said.

Deptula said the Reaper still represents the infancy of RPAs, akin to the sophistication of aircraft in World War I. With the MQ-X, the Air Force will seek a quantum jump in capability like the advance from biplanes to the jet age, he said.

The Navy is developing a carrier-based, stealthy, fighter-sized RPA that will have about the same payload capacity as the F-35 fighter. It may be derived from the X-47, under the Navy's Unmanned Combat Air System, or UCAS. The program descends from a joint Air Force-Navy effort, but USAF withdrew several years ago, as it focused on the next generation ISR-strike program.

Deptula said the UCAS is *not* what the Air Force is after with MQ-X.

"What we're talking about ... is a very different design. Something that we haven't really conceived yet." He added, "This is not just 'Son of MQ-9.'"

Deptula said one of the "modular" capabilities of the MQ-X might be as an electronic attack-electronic warfare platform. Conceivably, it might also escort the F-22 and F-35, although "right now we're not envisioning MQ-X to have supercruise capability."

How it will differ from what used to be called the next generation bomber is that the long-range ISR-strike platform will "have a lot more range and payload capability than the MQ-X."

He said he expected the long-range ISR-strike aircraft to need more stealth than MQ-X, but that there are other ways to obtain survivability.

Continued on p. 42


GET REAL
What's real? Our KC-45 tanker. It's the only tanker in the Air Force competition that is in production, flying and ready now. By contrast, our competitor's concept aircraft exists only on paper—an unproven design that's never been built or flown. Our warfighters deserve a real tanker—one that will be built here in the U.S., by tens of thousands of Americans. So let's get real: KC-45.
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F-16 refueling operation, Nov. 3, 2009
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USAF photo by A1C Jason Epley

An MQ-9 Reaper takes shelter during a sandstorm at JB Balad, Iraq. A Reaper fitted with Gorgon Stare can pass 10 discrete video feeds to separate users.

With large numbers of systems, for example, "you can afford to lose some, but the mission can still succeed."

While the Reaper will typically operate in the 15,000 to 30,000-foot regime, the Global Hawk can fly up to 65,000 feet, and remain on station for 35 hours.

The Global Hawk is being adapted to missions beyond ISR. The Block 20 version, for example, will be used as a communications relay platform, to provide better communications for troops in Afghanistan surrounded by high mountains, which hamper line-of-sight transmissions.

The Air Force plans to acquire 77 Global Hawks, of four different blocks with increasing levels of capability. While the Block 10s are used mostly for optical and radar imagery, the Block 20s are earmarked as Battlefield Airborne Communications Node, or BACN, platforms, Fridley explained. The Block 30s, now being delivered, have more sensitive ISR sensors, and the Block 40s will add more signals, imaging, and measurement intelligence capability, "and even some GMTI," or ground moving target indicator intelligence, Fridley said.

"Obviously, with each block we get more capability," he observed.

The Navy is pursuing a highly similar aircraft and plans to buy about 60 RQ-4s under the Broad Area Maritime Surveillance program. The Air Force and Navy recently signed an agreement to seek common training and support functions for the Global Hawk and BAMS, toward reducing manpower and lowering costs.

Although it experimented with using its own version of the Reaper, the Navy decided the type didn't mesh well with its concept of operations and was too difficult to support. It transferred its unwanted Reapers to the Air Force, which, after some modifications, will use them as training airplanes.

As the Air Force employs them, RPAs deployed forward have a skeleton crew to set them up, calibrate their systems, and get them ready for takeoff and landing. This is called a launch and recovery element, or LRE. However, after the aircraft get airborne, and up to just before they land, they are "flown" by operators back in the US, at what is called the mission control element, typically a two-man team of pilot and sensor operator. This arrangement is called "remote split operations."

Key Is Modularity

Because the forward footprint is so small, Deptula said he doesn't foresee a time when Pacific Air Forces or US Air Forces in Europe, for example, will need their own organic RPA capabilities.

"There are huge advantages that outweigh any disadvantages by operating the systems in a remote split-ops CONOPS," Deptula asserted. "They are under the control of whomever they are assigned to. Don't get ... the method of operation confused with the allocation of the asset."

Even after the wars in Iraq and Afghanistan wind down, the need to keep operations costs low will still weigh in favor of basing RPAs in the continental US and redeploying them as needed to theater commanders, he said.

The "beauty" of RPAs is that they can be used "wherever they're needed, around the world, all the time. ... Under an organic concept, the only systems that are used are with the units that are deployed."

The real manpower requirement for RPAs is in the analysis of their video products, Deptula said. Since the numbers of RPAs are increasing—but the number of USAF personnel available to process, exploit, and disseminate their products are fixed—the service is seeking ways to automate the way the data are analyzed.

"The things that we're working very hard on is automating a lot of what analysts do individually. And so, instead of having a person [watch] a video screen looking for a person to come out of a building, I can come up with the technology that does that automatically ... [and] tracks that person and provides notification" to an analyst that the person of interest has moved.

"You can imagine how much time that saves," Deptula said, adding that such technologies are near-term.

Beyond the Global Hawk, Deptula said, the Air Force sees promise in lighter-than-air aircraft, "where you can make some enormous apertures that will allow us to greatly increase our take" in the GMTI and airborne moving target intelligence arenas. Those prospects have to be better explored "before we make any decisions about what we buy in the future."

The UAS Flight Plan does not limit itself to items in the Predator-Reaper or Global Hawk classes. At the low end of the spectrum, the Air Force is busy developing "nano-micro" systems, of the size of a small bird or insect, that will be able to penetrate rooms to conduct reconnaissance, cyber attack, or even lethal operations. The service already fields a number of hand-launched "man-portable" systems such as the Raven, which can look over hills and resembles toy radio-controlled aircraft, and is investigating air-launched systems that may or may not be expendable.

At the high end, the roadmap talks about "tanker-sized" RPAs that could perform long, dull jobs such as serving as communications nodes while simultaneously providing air refueling and GMTI missions with onboard radars. The keys, Deptula said, are in modularity, and the fact that "we aren't ever going to use a single aircraft for a single mission" ever again.

However, Deptula does not think that military pilots are a profession on the edge of extinction.

He doesn't expect that, even with onboard computer processors rated equivalent to the human brain, an air-to-air fighter could be remotely piloted. So far, technology does not allow the "360-degree spherical situational awareness" necessary for a pilot to sense a rapidly changing situation and take the appropriate action in a split-second battle.

Moreover, "linkages are vulnerable," and for the near term, RPAs can't be trusted yet to wield lethal power without the overwatch of a human.

Especially as it involves nuclear weapons, "I don't know that we want to relegate the decision authority ... to an automated device. I don't think we're that close." ■

Keeper File

Koh's Legal Case for Drones

As the Afghan war has evolved, the Predator and other unmanned aircraft have become favorites of the Obama Administration, which views them as means for applying precision force. Critics of this practice mounted a major campaign to stigmatize such operations as illegal and illegitimate. In March, as criticism gathered force, State Department legal advisor Harold Hongju Koh advanced a strong defense of "targeted" drone operations against al Qaeda and its associated forces. The speech was all the more notable for the fact that Koh, a former Yale Law School dean, had earlier been a critic of such operations.

"The Obama Administration and and International Law"

Harold Hongju Koh
Legal Advisor, Department of State
American Society of International Law
Washington, D.C.
March 25, 2010

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

With respect to the subject of targeting, which has been much commented upon in the media and international legal circles, there are obviously limits to what I can say publicly. What I can say is that it is the considered view of this Administration—and it has certainly been my experience during my time as legal advisor—that US targeting practices, including lethal operations conducted with the use of unmanned aerial vehicles, comply with all applicable law, including the laws of war. ...

In particular, this Administration has carefully reviewed the rules governing targeting operations to ensure that these operations are conducted consistently with law of war principles, including:

First, the principle of distinction, which requires that attacks be limited to military objectives and that civilians or civilian objects shall not be the object of the attack; and

Second, the principle of proportionality, which prohibits attacks that may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, that would be excessive in relation to the concrete and direct military advantage anticipated.

In US operations against al Qaeda and its associated forces—including lethal operations conducted with the use of unmanned aerial vehicles—great care is taken to adhere to these principles in both planning and execution, to ensure that only legitimate objectives are targeted and that collateral damage is kept to a minimum.

Recently, a number of legal objections have been raised against US targeting practices. While today is obviously not the occasion for a detailed legal opinion responding to each of these objections, let me briefly address four:

First, some have suggested that the very act of targeting a particular leader of an enemy force in an armed conflict must violate the laws of war. But individuals who are part of such an armed group are belligerents and, therefore, lawful targets under international law. During World War II, for example, American aviators tracked and shot down the airplane carrying the architect of the Japanese attack on Pearl Harbor, who was also the leader of enemy forces in the Battle of Midway. This was a lawful operation then, and would be if conducted today. Indeed, targeting particular individuals serves to narrow the focus when force is employed and to avoid broader harm to civilians and civilian objects.

Second, some have challenged the very use of advanced weapons systems, such as unmanned aerial vehicles, for lethal operations. But the rules that govern targeting do not turn on the type of weapon system used, and there is no prohibition under the laws of war on the use of technologically advanced weapons systems in armed conflict—such as pilotless aircraft or so-called smart bombs—so long as they are employed in conformity with applicable laws of war. Indeed, using such advanced technologies can ensure both that the best intelligence is available for planning operations, and that civilian casualties are minimized in carrying out such operations.

Third, some have argued that the use of lethal force against specific individuals fails to provide adequate process and thus constitutes unlawful extrajudicial killing. But a state that is engaged in an armed conflict or in legitimate self-defense is not required to provide targets with legal process before the state may use lethal force. Our procedures and practices for identifying lawful targets are extremely robust, and advanced technologies have helped to make our targeting even more precise. In my experience, the principles of distinction and proportionality that the United States applies are not just recited at meetings. They are implemented rigorously throughout the planning and execution of lethal operations to ensure that such operations are conducted in accordance with all applicable law.

Fourth and finally, some have argued that our targeting practices violate domestic law, in particular, the long-standing domestic ban on assassinations. But under domestic law, the use of lawful weapons systems—consistent with the applicable laws of war—for precision targeting of specific high-level belligerent leaders when acting in self-defense or during an armed conflict is not unlawful, and hence does not constitute "assassination." ■

USAF photo by SrA. Nichelle Anderson

AirSea Battle

A new operational concept looks to prepare the US and its allies to deter or defeat Chinese power.

By Richard Halloran

USN photo by Mass Comm. Spec. Seaman Danielle A. Brandt

After three Air Force C-130 pilots and crews from Yokota Air Base in Japan finished an exercise called Cope West 10 in Indonesia in April, they wrote up evaluations of Halim Air Base and other airfields from which they had operated, assessing the condition of runways, reliability of electrical supply, safety of fuel storage, and adequacy of parking ramps.

Until now, that would have been a routine report to prepare for the next time American airmen might use Indonesian air bases. With the emergence of a joint Air Force-Navy operational concept called AirSea Battle, however, intelligence on airfields has taken on new significance.

A critical element in the concept is to identify alternate airfields all over Asia that Air Force and Navy aircraft might operate from one day. US aircraft can be dispersed there, making life hard for a potential enemy such as China to select targets. Dispersed bases simultaneously would make it easier for an American pilot needing an emergency landing site to find one if his home base had been bombed.

AirSea Battle looks to prepare the US and its allies to deter or defeat China's rising military power. It envisions operations of USAF fighters, bombers, and missiles coordinated with Navy aircraft flown from carriers and land bases—plus missiles launched from submarines and surface ships. Nuclear war plans will also be folded into the AirSea Battle operation.

A question, however, has arisen over who will control the joint war. USAF expects the 613th Air and Space Operations Center of 13th Air Force at Hickam AFB, Hawaii, to be assigned that task, but the Navy has traditionally been loath to give up control of its carrier air wings.

Moreover, the Navy has organized Maritime Operations Centers that would need to be meshed with USAF's AOCs, and Air Force and Navy sensors and communications gear that are not now compatible need to be made so.

At US air and naval bases in Japan, South Korea, and Guam, the evolving AirSea concept calls for hardening command centers, communication nodes, hangars and repair facilities, fuel tanks, electrical generators, warehouses, shipyard machine shops, and just about anything else that can be protected from missile attack. For runways and ramps that can't be protected, RED HORSE engineers are to be posted in protective shelters nearby from which they can swiftly emerge to repair damaged areas.

The plan even calls for developing new materials that will harden in far less time than ordinary concrete to make a damaged runway operational again.

Further, AirSea Battle will incorporate an "active" defense, employing a variety of measures to destroy enemy aircraft and missiles or to reduce the damage of such attacks. Active defense relies on aircraft, air defense weapons, electronic warfare, and cyber operations. In particular, AirSea Battle calls

USAF photo by A1C Cory Todd

USAF photo by TSgt. Cohen A. Young

Left: USAF bombers, tankers, ISR aircraft, and fighters fill the flight line at Andersen. Below: Lt. Col. Robert McCrady reviews a flight plan with Indonesian pilots at the end of Cope West 10.

***Top left: Two B-52s take off from Andersen AFB, Guam. Left: An F/A-18 Hornet launches over the Pacific from USS* George Washington.**

for greater emphasis on the development of ballistic missile defenses.

The purpose of AirSea Battle is clearly to deter China, with its rapidly expanding and improving military power, from seeking to drive the US out of East Asia and the Western Pacific. If deterrence fails, AirSea Battle's objective will be to defeat the People's Liberation Army, which comprises all of China's armed forces. The Obama Administration and the Pentagon contend that war with China is not inevitable, which may be so, but a memo outlining the purpose of a previous AirSea Battle wargame left no doubt that the US is preparing for that possibility.

"The game will position US air, naval, space, and special operations forces against a rising military competitor in the East Asian littoral with a range of disruptive capabilities, including multi-dimensional 'anti-access' networks, offensive and defensive space control capabilities, an extensive inventory of ballistic and cruise missiles, and a modernized attack submarine fleet," the memo read. "The scenario will take place in a notional 2028."

There is only one "rising military competitor in the East Asia littoral," and that is China. Long term, China offers the only real potential threat to US national security, far more than Iraq, Afghanistan, Iran, or North Korea.

In perhaps the most remarkable expansion of military power since the US geared up for World War II, China has relied on its surging economy to provide double-digit annual increases in military budgets. The Chinese are fielding an array of advanced jet aircraft, anti-aircraft missiles, radar, anti-air and anti-submarine ships, and minelayers intended to deny US air and naval forces access to Chinese skies and nearby waters. They are building a blue-water Navy to project power eastward toward Alaska, Guam, and even Hawaii and south into the South China Sea and the Indian Ocean.

Coordinated Requests

AirSea Battle is not conceived as a "go-it-alone" initiative but one that will rely on allies in the Pacific and Asia, notably Japan and Australia, as US forces seek to overcome what is known in this region as the tyranny of distance. Americans who haven't traveled the Pacific often have no notion of how far apart things are. For example, it is twice as far from Tokyo to Sydney, Australia (4,921 miles), as from Washington, D.C., to San Francisco (2,442 miles).

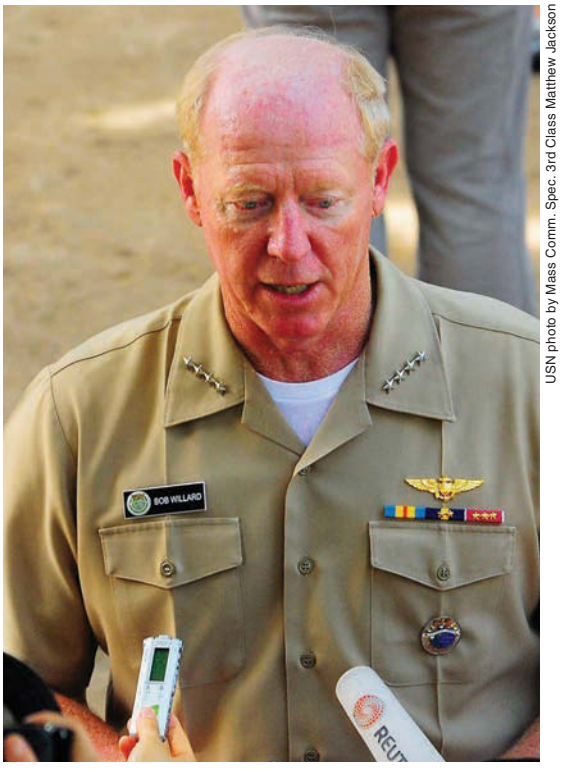
In addition to Japan continuing to host American forces, AirSea Battle calls for greater integration of Japan's Self-Defense Forces with US forces stationed in that country, particularly in intelligence and warning systems. Japan would be asked to continue contributing to the development of ballistic missile defenses and to increase its own air defenses. AirSea Battle would call on Japan to expand its anti-submarine barriers down through the Ryukyu Islands in southwestern Japan and into the Sea of Japan. Political turmoil in Tokyo today will make that coordination difficult, to say the least.

In contrast, the alliance between Australia and the US, resting on a foundation laid down during World War II and continuing ever since, is less likely to be affected by political changes in the government. Thus, AirSea Battle would have the Australians develop anti-ship cruise missiles and to erect long-range radar that would improve coverage in the southern hemisphere. The Australians take a special interest in the Southwest Pacific region that can be helpful to the US. Overall, Australia provides the alliance with strategic depth.

AirSea Battle calls on the Air Force and Navy to devise a division of labor to eliminate duplication in resources and equipment. The two services, for instance, have begun planning for a new joint air launched cruise missile to replace the aging AGM-86 and BGM-109 Tomahawk. So far, only relatively small

Below: Two Chinese J-10A fighters head out heavily armed with air-to-air missiles.

Photo by Weimeng



USN photo by Mass Comm. Spec. 3rd Class Matthew Jackson

Adm. Robert Willard.

Who Controls AirSea Battle?

A key player in executing AirSea Battle would be Adm. Robert F. Willard, who leads US Pacific Command from his headquarters in Honolulu. After taking command last fall, Willard set up five focus group to examine PACOM's strategy toward China, India, and North Korea, treaty partners and friends from Japan to Singapore, and transnational issues such as terror, piracy, drug smuggling, and human trafficking.

"This is what combatant commanders across the globe should be attending to," Willard said in an interview. Most American military leaders are comfortable with day-to-day operations, he said, but needed "more of a focus on alignment with our national strategies and policies and more of a focus on understanding the strategies and policies of our regional counterparts."

Elaborating later, Willard seemed cautious about how AirSea Battle would fit into his vision for PACOM. He said he had been briefed on the concept, and "I expressed some issues with what I heard, especially with regard to their ability to adapt whatever their concept derives to the ground forces." Willard contended that "the AirSea Battle construct will unquestionably need to integrate with what our Marine forces bring to the game," and because the battlespace "includes the littorals, what the Army brings to the game is important, too. So there is a great deal of work yet to do to see if this concept really reveals something that will be useful."

Willard, a naval aviator (as is the Pacific Fleet commander, Adm. Patrick M. Walsh), was asked who controls AirSea Battle. "It's presumptive to get into the command relations debate now when the concept is in fledgling development," he said.

"I need to see where and how it's intended to be adapted, and then we can talk about the command relations," he added.

change has been spent for wargames and research. Those engaged in AirSea Battle say that coordinated requests will go forward in the Fiscal 2012 budget. A good portion of that will go into joint training and robust wargames.

Even as the Pentagon is contemplating AirSea Battle to deter or defeat China, the US has been seeking stable, working military relations with the PLA. At the annual Shangri-La gathering of Asian and Pacific military leaders in Singapore in June, Secretary of Defense Robert M. Gates said the US wanted "sustained and reliable military-to-military contacts at all levels that reduce miscommunication, misunderstanding, and miscalculation. There is a real cost to the absence of military-to-military relations. I believe they are essential to regional security—and essential to developing a broad, resilient US-China relationship that is positive in tone, cooperative in nature, and comprehensive in scope."

At the same time, Gates has been publicly supportive of the AirSea Battle venture. In the Quadrennial Defense Review published in February, he said the Pentagon was directing "more focus and investment in a new air-sea battle concept, long-range strike, space and cyberspace, among other conventional and strategic modernization programs."

The precedent for AirSea Battle was AirLand Battle, an Army-Air Force effort in the 1980s to dissuade the Soviet Union from striking through the Fulda Gap in Germany and seeking to drive to the English Channel. Gen. Colin L. Powell, onetime corps commander in Germany and later Chairman of the Joint Chiefs of Staff, had said the US might resort to nuclear arms if NATO could not stop the first two waves of the Soviet force.

No Fait Accompli

The concept of AirSea Battle is being forged in a collaborative effort of Pacific Air Forces, the Center for Strategic and Budgetary Assessments, and the Pentagon's influential Office of Net Assessment.

AirSea Battle was begun under the former PACAF commander, Gen. Carrol H. Chandler, now vice chief of staff of the Air Force. CSBA is a Washington think tank with close ties to the Pentagon, two of its chief researchers, Jan M. van Tol and Andrew F. Krepinevich Jr., having worked in the Office of Net Assessment, while Mark A. Gunzinger was engaged in drafting the Pentagon's Defense Planning Guidance and Jim Thomas toiled on the Quadrennial Defense Review. The Office of Net Assessment, often labeled the Defense Department's internal think tank, has been led for nearly 40 years by Andrew W. Marshall, considered to be among the nation's foremost strategic thinkers.

Over the last three years, the collaborators have staged a half-dozen wargames to scope the tasks of AirSea Battle and have sent their findings to the Chief of Staff of the Air Force, Gen. Norton A. Schwartz, and the Chief of Naval Operations, Adm. Gary Roughead. Schwartz and Roughead signed a memorandum of understanding in September to proceed on AirSea Battle. Each appointed a team of four O-6s to draft tentative doctrine to govern AirSea Battle.

The draft doctrine will undoubtedly be sandpapered for many months before an agreement is reached.

Based on PLA writings, researchers at CSBA have discerned a likely Chinese strategy for seeking to drive US forces out of the western Pacific, a strategy they say "mimics the Imperial Japanese strategy of 1941-1942."

The Japanese mounted the surprise attack on Pearl Harbor on Dec. 7, 1941, intending to destroy the US Pacific Fleet. Simultaneously, the Japanese Army invaded the Philippines and broke out of northern Vietnam to transit across Thailand into what is now Malaysia and on to Singapore. They took what is now Indonesia, critical islands in the South Pacific, and threatened Australia, then marched to the gates of India. Japan intended to present the Western powers with a fait accompli and sue for peace. That strategy, however, failed.

USAF photo by SrA. Christopher Boltz

An A-10 readies for takeoff on the runway at Osan AB, South Korea, during an operational readiness exercise.

China, say the researchers, may be planning a pre-emptive missile strike intended to destroy US air bases at Osan and Kunsan in South Korea; Misawa, Yokota, MCAS Iwakuni, and Kadena in Japan; and bases on the US island of Guam, plus US naval bases at Yokosuka and Sasebo in Japan. South Korean and Japanese forces would be attacked. Chinese missile, naval, and air forces would try to keep other US forces out of range, to disrupt US command lines, and to block logistic resupply.

"The overall strategy may be to inflict substantial losses on US forces, lengthen US operational timelines, and highlight the United States' inability to defend its allies," the CSBA analysts wrote. "Once this is accomplished, the PLA could assume the strategic defense and deny reinforcing US forces access to the theater until the US determines that it would be too costly to undo what would, in effect, be a fait accompli."

If the Chinese attack, AirSea Battle would have US forces begin an active defense, disperse aircraft and ships, and rely on hardening and resilience to ride out and to recover from the assault.

The US and its allies would initiate a "blinding campaign" to knock out Chinese reconnaissance aircraft, surveillance satellites, and long-range, over-the-horizon radar. B-52 bombers and Ohio-class submarines, both armed with conventional cruise missiles, would seek to suppress further Chinese missile salvos and aerial assaults.

Gradually, the US would gain the initiative in the air, on the sea's surface, and in the undersea domain, relying on the better quality of US aircraft, ships, and submarines and the superior training of airmen, sailors, and submariners.

American forces from the continental US would begin to flow into the Pacific to enter a protracted campaign. A "distant blockade" against Chinese shipping would be started in the East and South China Seas and the Strait of Malacca and other passages, as Chinese industry is heavily dependent on imports. That would be easier than a close blockade just outside Chinese ports.

Basing Options Abound

A sustained logistic flow from the US into the Pacific would be built up, and industrial production of weapons, equipment, and especially precision guided munitions would be stepped up.

A complicated aspect of AirSea Battle will be identifying alternate air bases such as the one the C-130 crews operated from in Indonesia and then gaining long-term access to them. For many bases, the State Department may be required to negotiate agreements permitting US aircraft to fly in on short notice. That may stir diplomatic trouble as some nations worry that the Chinese will object.

In addition, funds may be required to bring the condition of some airfields up to snuff.

High on the list of basing possibilities are air bases the US has used in the past, such as Clark Air Base in the Philippines, dating back to 1903. The Philippine government and the volcanic eruption of Mount Pinatubo caused the US to leave Clark in 1991, but the base's runways have been scraped off, and the airfield is occasionally used by US forces passing through the Philippines.

In the Northern Marianas, airfields on Saipan and Tinian were built by naval construction battalions (Seabees) during World War II. Airfields at U Tapao and Korat in Thailand were built by the Thais but upgraded and expanded by the US during the war in Vietnam.

Air bases in northern Australia have been used for joint exercises.

An intriguing possibility might be Tan Son Nhut, the airport near Saigon (now Ho Chi Minh City) in Vietnam, built by French colonials in the 1930s and expanded by the US during the war in Vietnam. It is now the major civilian airport in southern Vietnam.

Similarly, the Vietnamese port at Cam Ranh Bay, the finest in Southeast Asia, was a stopping place for a Russian fleet on the way to disaster at the hands of the Japanese in the Battle of Tsushima in 1905. Japan used it to prepare for its drive into Southeast Asia during World War II, and the US enlarged it during the Vietnam War. Whether the Vietnamese, who don't much like the Chinese but see no need to anger them, would allow US warships to use the port is open to question.

US military leaders have been cultivating Indian military leaders for several years and might ask for access to the many airfields there. In Pakistan next door, the US used a military airfield at Peshawar, in the Northwest Frontier province, as a base for U-2 intelligence flights over the Soviet Union for three years until Francis Gary Powers got shot down in 1960.

Although AirSea Battle has China in mind, American political leaders have publicly maintained that the US is not seeking to contain China.

An American aviator, however, pointed to a map marking air bases from Osan in South Korea, to Korat in Thailand, to Peshawar in Pakistan, and asked: "It does sort of look like a picket line, doesn't it?" ■

Richard Halloran, formerly a New York Times *foreign correspondent in Asia and military correspondent in Washington, D.C., is a freelance writer based in Honolulu. His most recent article for* Air Force *Magazine, "China Turns Up the Heat," appeared in the April issue.*

USAF photo by SSgt. Richard Williams

The rise of "joint expeditionary taskings" has pushed airmen to train harder for ground combat.

MSgt. Patrick Seiler (c), a convoy driver assigned to a combined joint task force regional support team, is briefed at Bagram Airfield, Afghanistan.

Thinking Outside the Wire

By Megan Scully

As combat rotations and the demand on the military increase with the surge of forces into Afghanistan, Air Force leaders are perfecting the art of turning even the greenest of airmen into skilled ground warriors.

The last eight years of war in Iraq and Afghanistan have marked a significant cultural change within the Air Force, with officials placing a greater emphasis on expeditionary and combat skills training as airmen find themselves on the ground operating alongside the Army and Marine Corps.

"Our deployments are a lot different from the ones 25 years ago," said CMSAF James A. Roy. "Our airmen are on the leading edge, fighting terrorists alongside our joint and coalition partners."

During a visit to the US Central Command area of operations in December, Roy said deployment training was an issue that came up constantly, with airmen emphasizing that they want the right mix of skills to operate in a deployed environment. "They want those skills to include the most up-to-date lessons learned from Iraq and Afghanistan, which the deployment training sites I visited are constantly incorporating to give these warriors the best training possible," Roy said.

USAF photo by A1C Anthony Jennings

Airmen "recover" after discovering a simulated improvised explosive device during counter-IED training at Eglin AFB, Fla.

Prior to 2001, only certain specialties received advanced weapons training and other skills—such as emergency medical training and improvised explosive device detection—now considered necessary to operating on the ground. Now, no airman deploys to a hostile environment without a certain degree of training on how to operate in the enemy's backyard.

"I think our attitude has changed," explained Maj. Gen. Mary Kay Hertog, the commander of 2nd Air Force at Keesler

AFB, Miss., adding that airmen have embraced a new warrior ethos. Hertog, a self-described "ground-pounder" from a security forces background, is charged with overseeing all airmen throughout the Joint Expeditionary Tasking-Individual Augmentee training pipeline at Army training sites around the country. Second Air Force also provides an around-the-clock operations center for pre- and postdeployment support.

For Hertog, the Air Force's advances in combat training since 2001 are a point of pride. In a service once focused only marginally on ground combat skills, airmen at all levels are now getting training critical to their overseas deployments and are operating ably alongside the ground services.

"I think the Air Force as a service has truly benefited from being able to work these JET [joint expeditionary tasking] missions," Hertog said. "I think it has increased our credibility with our sister services [and] increased our self-confidence."

In addition to the JET training conducted for airmen by the Army, the Air Force has also in the last year established a tiered training construct for its own expeditionary training. The tiered system takes airmen from basic training through preparation for a hostile environment. The effort is aimed at airmen who, during deployment, operate largely "inside the wire" but are sometimes in areas where they could be vulnerable to enemy attack —such as when they are moving from one location to another.

In a combat zone where there is no defined front line, airmen need to learn a certain degree of hands-on combat skills, combat lifesaving, and defensive firing positions in order to operate for any period of time in enemy terrain.

"We want the worst day of your deployment to be while you're with us," said Brig. Gen. Richard T. Devereaux, commander of the Air Force Expeditionary Center at JB McGuire, N.J., which is the Air Force's center for advanced expeditionary combat support training and education.

"We want to stress you the hardest. We want you to make your mistakes here," said Devereaux.

Four years ago, 2nd Air Force gained responsibility for overseeing the training of airmen who received nontraditional taskings to deploy with other services, and ensuring they are prepared for tours in Iraq and Afghanistan.

In 2008, the Air Force changed the nomenclature of what had long been known as "in-lieu-of" taskings to "joint expeditionary taskings" to properly characterize the Air Force's "combat-focused mind-set and our joint posture," according to a December 2008 statement from Air Force Chief of Staff Gen. Norton A. Schwartz.

USAF photo by MSgt. Andy Dunaway

USAF security forces airmen in Iraq frequently deployed to patrol dangerous parts of Baghdad.

"Our airmen deliver game-changing capabilities in air, space, and cyberspace for combatant commanders in a multitude of ways around the globe," Schwartz wrote at the time. "We must ensure that those who contribute by serving in the JET role are appropriately recognized for the magnitude of their service."

Adapting as Needed

To Hertog, part of the cultural change within the Air Force has been recognition of the contributions of those airmen who do not sit in cockpits, but are contributing every day to operations in Iraq, Afghanistan, and elsewhere. For many airmen, their JET deployments have been the highlights of their career in the Air Force, she said. And, she added, their contributions have been acknowledged by the rest of the Air Force.

"The support side of the house has suffered the majority of the casualties," Hertog said. "Truly the rest of the Air Force has appreciated what the nonflying community has brought to bear."

Each year, about 8,000 airmen go through JET training, where they spend 30 to 70 days learning how to deploy with the Army. "Many didn't appreciate going through the training at the time," Hertog said. But after they deploy, 2nd Air Force routinely gets feedback that "this made the difference."

The Air Force also advocates on behalf of their airmen going through JET training. USAF sends in commanders and small staffs to each location to make sure airmen are taken care of, and their concerns with equipment or the training are addressed. Recently, airmen who had to get certified on crew-served weapons complained they had to report 10 days prior to their combat skills training—although they had plenty of "white space," or downtime, during their training time to get qualified. The Air Force worked with the Army to eliminate downtime and build the crew-served weapons training into the curriculum for certain airmen, allowing them to stay home longer before their deployments.

The JET training has evolved over the years as the missions in Iraq and Afghanistan have changed. Currently, JET airmen preparing for deployments with the Army are undergoing 60 to 70 days of training to support provincial reconstruction teams, to train for counterinsurgency operations and IED detection, and to gain cultural training and basic language skills. They also learn rules of engagement and combat lifesaving skills.

Over the last several years, the training focus has shifted from defending an area to reconstruction efforts to building police and military forces. The focus could change again as combat needs shift. " 'Building partnership capacity' is where we're headed now, but we'll adapt to whatever the combatant commander needs," Hertog said.

At the Air Force Expeditionary Center, the mission is to build power from the ground up. The center's philosophy is

that the Air Force cannot apply power in airspace or cyberspace without the ground support airmen who often must operate in austere environments.

Until a year ago, expeditionary training for ground support missions lacked standardization and had a significant redundancy built in. Airmen sometimes received it at basic training, other times at their home bases or at training ranges such as McGuire.

Four Tiers of Training

Last year, the Air Force developed a four-tiered approach that prepares airmen for expeditionary warfare in a "building block approach," said Mike Senna, the chief of the special missions and expeditionary training division at Air Education and Training Command. The ultimate goal, Senna said, is a "standard presentation of forces" to the combatant commanders.

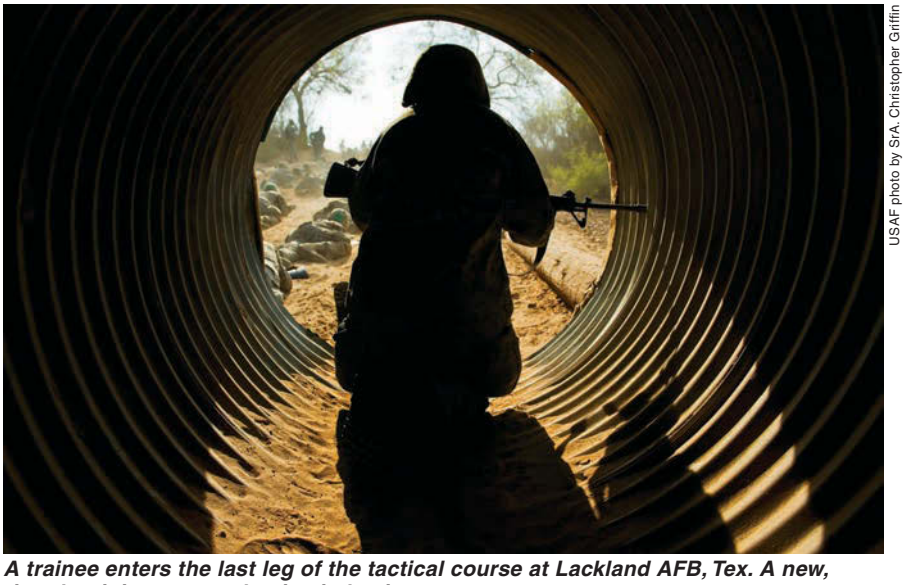
The first tier is what airmen receive during basic training or commissioning. The training is foundational and sends the message that the Air Force is "expeditionary in nature," he added.

The second tier, which is primarily computer-based with some classroom time, is done at home bases to prepare airmen to deploy into permissive environments to perform Air Force missions. Everyone receives at least Tier Two training. For many airmen, their expeditionary training will end at this point.

The third tier is for those airmen who are tapped for deployment and are going to a location in hostile terrain and need training in advanced combat skills, combat lifesaving, defensive firing positions, IED identification and recognition, convoy operations, and defense operations in urban terrain. These are environments that "our airmen never thought they would have to operate in, but find themselves in today," Devereaux said. The basic Tier Three course is Combat Airman Skills Training, a 10- to 11-day course where all ranks are in the same class and live in the same dormitory setting. The CAST course is held at McGuire, Camp Bullis in San Antonio, Tex., and Camp Guernsey, Wyo.

During the CAST course, airmen work not only on combat skills, but also on leadership skills, such as resolving administrative and other issues that arise among group members.

There are other Tier Three courses, based on specialties and missions. Transportation specialists, for instance, run through an intense 60-day combat convoy course focusing on the challenges of driving convoys in Iraq and Afghanistan. Airmen who go through JET training are essentially given credit for Tier Three training, but it is separate from the tiered system.



USAF photo by SrA. Christopher Griffin

A trainee enters the last leg of the tactical course at Lackland AFB, Tex. A new, tiered training system begins in basic.

Not all airmen deploying to hostile environments receive Tier Three training—only those who may be operating outside the wire. An F-16 unit going to Bagram Airfield in Afghanistan does not go through Tier Three training because it is considered a secure location. The same is true for A-10 units that have operated out of Balad, Iraq.

The Air Force also built a fourth tier into the expeditionary training construct to address new and emerging training requirements dictated by a specific mission or by a new requirement from the field.

The Air Force has not officially executed Tier Four yet, but is currently creating a training requirement involving explosive ordnance disposal.

Devereaux acknowledged there is a "potentially infinite" number of Tier Four training requirements, particularly when dealing with a constantly changing enemy. "When you're in the middle of a war, it's never static," Devereaux said. "The bad guys, the enemy, are always changing their tactics and techniques."

With tens of thousands of airmen logging valuable ground training and experience after nearly a decade of war, the Air Force sees potential for expeditionary training extending well beyond the missions in Iraq and Afghanistan. Hertog said she sees possibilities with US Africa Command, as well as with operations in Latin American countries. There are recovery and humanitarian relief skills learned during expeditionary training that are valuable in situations such as the response to the earthquake in Haiti earlier this year, she said.

So far, the feedback from airmen who have taken the JET and tiered expeditionary courses has been positive. Airmen quickly realize during their deployments the value of what they have learned, Senna and other officials said.

"The most important feedback we get are the students that graduate from training courses [and] say, 'Thank you, because your training was spot-on and appropriate for what I needed,'" Devereaux said.

Now, the Air Force must learn how to sustain airmen's combat skills in between overseas deployments.

"A lot of this is perishable, it's muscle memory," Hertog said, and the question is, "What do you do with these great warriors we have built?" Sustaining those combat and survival skills means making them a priority and building it into time at home station. This would be similar to the emphasis on maintaining physical fitness, something Hertog requires of herself and her staff.

The Air Force has "come such a long way," Hertog said. "I would hate to see us backslide" by letting combat skills decline through a lack of use. ■

Megan Scully is the defense reporter for National Journal's *CongressDaily in Washington, D.C., and a contributor to* National Journal *and* Government Executive. *Her most recent article for* Air Force *Magazine, "The Little Airlifter That Could," appeared in the July issue.*

Getty photo

Desert Shield

Twenty years ago this month, Iraq seized Kuwait, and the US launched a buildup that led to today's expeditionary Air Force.

By Rebecca Grant

Photo via Reuters

USAF photo

Left: Lt. Gen. Charles Horner, the coalition "air boss" (r), confers with Maj. Hamad bin Abdulla Al-Khalifa of Bahrain's Shaikh Isa squadron. Below: An F-15C preps for takeoff at Dhahran, Saudi Arabia.

World oil prices, in Saddam Hussein's view, were much too low, and the culprit was Kuwait. In the summer of 1990, the Iraqi dictator demanded that Kuwait stop flooding the market with cheap oil. He further demanded that Kuwait pay Iraq $10 billion.

Bickering over price and production levels was nothing new to OPEC nations, but this spat was different. This one was about to turn into a war that would shift the focus of American military strategy for the next two decades.

On July 17, 1990, Iraq's elite Republican Guard armored forces started moving from training areas. Within a week, 30,000 combat-ready troops were poised on Kuwait's border.

Gen. Colin L. Powell, Chairman of the Joint Chiefs of Staff at the time, remembers the moment well. "My intelligence officer came in and started to show me satellite photos and other intelligence which suggested an Iraqi buildup in the southern part of Iraq," Powell later told the PBS program "Frontline." "It wasn't immediately troubling, because it was just a buildup within their own country."

To the United States, Iraq was certainly no ally. However, Washington had quietly cultivated ties through the 1980s as a way of offsetting Soviet interests and Iranian fundamentalism.

"There was a lot of support at the time for Iraq as a balance to a much more aggressive Iran under [Ayatollah Ruhollah] Khomeini," President George H. W. Bush later recounted.

Relations were good enough that, in spring 1990, several prominent Senators met with Saddam in Baghdad. A big agriculture loan was in the works, and the US Commerce Department was reviewing the notion of loosening export controls.

Iraq's unusual military moves were hard to interpret. As a precaution, the US deployed two KC-135 tankers to the United Arab Emirates for air defense exercises. Navy ships spread a picket for air defense attack warning across the Gulf. The commander of USAF's 9th Air Force and commander of US air forces in the Persian Gulf region was Lt. Gen. Charles A. Horner. From his headquarters at Shaw AFB, S.C., Horner put on alert both the 1st Tactical Fighter Wing with its F-15Cs at Langley AFB, Va., and the 363rd TFW with its F-16s at Shaw.

On July 24, Egypt's President Hosni Mubarak flew to Baghdad for a meeting with Saddam, who assured him that he did not intend to attack Kuwait.

The US ambassador in Baghdad was April C. Glaspie, a career Foreign Service officer. She scheduled a meeting with Saddam for July 25. At that meeting, Glaspie famously said, "We have no opinion on the Arab-Arab conflicts, like your border disagreement with Kuwait."

Gen. H. Norman Schwarzkopf, commander of US Central Command, was summoned to brief Defense Secretary Dick Cheney and Powell at a meeting in Washington on Aug. 1. There, Schwarzkopf told the two top defense officials that, while Iraq was capable of crossing the border, CENTCOM's analysts believed they would stop at the oil fields and not try to seize the entire country.

They were wrong.

On Aug. 2, 1990, Iraq invaded Kuwait. Saddam announced that the emirate would be annexed and thereafter considered to be the 19th province of Iraq. Iraqi forces bypassed the Rumaila oil fields and occupied Kuwait City itself. They rounded up hostages and started issuing Iraqi license plates to all vehicles in Kuwait City.

Photo via Robert F. Dorr

Top left: Iraqi tanks roll into Kuwait City. Left: Saddam Hussein brandishes a gun in Anbar province.

Photo by Robert F. Dorr

Army paratroopers prepare to board C-141s at Pope AFB, N.C. C-141s hauled a massive amount of troops and cargo.

"Shocking," said Mubarak later. "I couldn't believe that this could happen in the Arab world."

Glaspie, recalling the moment in a 2008 interview with the Lebanese newspaper *Dar al Hayat,* said that Saddam was "a megalomaniac," and that he thought the US government "did not have any guts, that we would not fight, and certainly not for that little [piece] of desert that was Kuwait."

Saddam made "the pretty intelligent decision that he could probably get away with it," said Richard Haas of the National Security Council staff.

At first, the US simply condemned the invasion. "We're not discussing intervention," President Bush said Aug. 2. As Cheney later explained, "We really needed some time to come to grips with this basic, fundamental question of our strategic assessment of what this meant. Did it matter that he'd taken Kuwait?"

Modified on the Fly

Bush had traveled to Aspen, Colo., for a meeting with Margaret H. Thatcher, the British Prime Minister. She had no doubts about the need for international action. "I thought we ought to throw him out so decisively that he could never think of doing it again," Thatcher later said.

Their discussion strengthened Bush's growing resolve, and three days later he made an announcement: "This will not stand, this aggression against Kuwait."

No one knew Saddam's ultimate goals, and the early fear was that Iraqi forces would next move to capture Saudi Arabia's eastern province, with its vast oil reserves. With Kuwait already under Iraqi military control, defending Saudi Arabia was the top priority.

On Aug. 6, Schwarzkopf, Cheney, and Horner met with King Fahd of Saudi Arabia. The king quickly consented to host American forces. Schwarzkopf left Horner in Riyadh to take charge as "CENTCOM forward."

The ever-present question for Horner was: "What will we do if the Iraqis come across the border tonight?"

"Intelligence estimates now said that Saddam Hussein could throw 150,000 troops and 1,200 tanks against us in a heartbeat," Schwarzkopf later wrote.

"Those first few nights were pretty strenuous," Horner said later. "We didn't have very much to stop 'em."

The US government set in motion what it code-named Operation Desert Shield, a plan to deter an attack and contain the damage if it did come. Airpower was the first and most potent striking force in theater.

The first Air Force C-141 touched down in Saudi Arabia on Aug. 8. F-15C fighters arrived, and US Navy aircraft carriers steamed into position. Airlift control elements fanned out to airfields across the Persian Gulf to direct the influx of air and ground forces.

The first contingent of F-15Es touched down at Dhahran, Saudi Arabia, recalled Mike Decuir, one of the senior squadron pilots at the time. Still in their cockpits, they were "greeted by the 1st Tactical Fighter Wing vice commander, who said, 'Get the hell out of here, we're having alarm blacks [possible chemical attacks] all the time. Go here.'" And he gave them a yellow sticky with the word "Thumrait" penciled in.

The overwhelming requirement for Operation Desert Shield in August 1990 was to build up enough airpower to deter attack, to provide a response option, and of course, move other forces into position.

Within a week of the first US aircraft arriving in theater, large numbers of men and materiel were flowing into Saudi Arabia. Air Force E-3 AWACS aircraft, F-15C fighters, MH-53J Pave Low helicopters, and KC-135 tankers were all present in Saudi Arabia. Within days, KC-10 tankers, RC-135 Rivet Joint surveillance aircraft, and F-117 stealth fighters were bedded down at bases throughout the Gulf region.

"We expected a massive push of armor, should the Iraqis come south, and the airborne guys were lightly armed and not prepared to repulse an

DOD photo

US Army M1A1 Abrams tanks test their guns in the harsh desert climate. The arrival of heavy armor allowed US forces to begin planning for an offensive.

armored invasion," said Decuir. "We loaded 12 Mk 20 Rockeyes on our jets and stood by."

USAF's A-10 Warthogs would join the Army's 3rd Armored Cavalry Regiment and beef up the defensive line to deter attack.

"I was in the bar at Nellis Air Force Base [Nev.], doing a specialized upgrade training, when we watched the news of the 1st Tactical Fighter Wing [deployment] on TV," recalled then-Capt. Michael Isherwood. Two weeks later, he was at the unfinished King Fahd Airport, living with three others in a single room of a trailer left by airport workers.

Airpower in 1990 had many new technical capabilities. Laser guided weapons had been used effectively against bridges and other targets since Vietnam. Now planners could match precision weapons from aircraft such as the F-111F, Navy A-6, and the stealthy F-117 with impressive battlefield surveillance. The impact on Iraqi forces—if they dared move south—could be devastating if the right forces were in place.

That was just what Schwarzkopf had in mind.

The morning after he returned from Saudi Arabia to CENTCOM headquarters at MacDill Air Force Base in Tampa, Fla., Schwarzkopf called Air Force headquarters at the Pentagon. With Horner in theater indefinitely, Schwarzkopf wanted help expanding the air campaign plan. Gen. John Michael Loh, USAF vice chief of staff, offered his assistance.

Schwarzkopf's request dovetailed with a planning effort already in motion to expand the targets and concepts for a full air campaign against military targets in Iraq as well as Kuwait.

Several Air Staff planners watched CENTCOM's standard war plan unfold. To them, it didn't appear CENTCOM was tapping the right air forces or working from a full plan. "The Air Force initially began to deploy what was in the off-the-shelf CENTCOM 1003 OPLAN," said then-Lt. Col. David A. Deptula. "The problem was that it was outdated and had not kept up with precision weapon delivery capability of our aircraft, so the deployment plans were modified on the fly."

On the initial list were F-111Ds—capable, but not the latest models. "I asked Loh, 'Why aren't we sending F-111Fs?' " Air Force Secretary Donald B. Rice recounted. "We had to get the F-111Fs released from their commitment to NATO for deployment to the Gulf. ... I wanted to get all our precision guided capabilities over there that we could."

USAF photo by Rose Reynolds via Warren Thompson

EF-111s (foreground) and F-111s (background) such as these operated out of Taif in Saudi Arabia. If Iraqi forces came across the border that August, it would have been airpower blunting the attack.

The other big question was where to bed down forces. "In some places, there was nothing but concrete. In other places, the Saudi princes had built a big infrastructure," Rice said.

"Desert war historically has been won by those who have envisioned it more like a war at sea—with wide flexibility for maneuver and envelopment and associated air operations—than by those who have conceptualized it in terms of traditional land combat," summarized Air Force historian Richard P. Hallion in an August 1990 memo for planners working for Col. John A. Warden III, Pentagon "Checkmate" division chief.

Hallion pointed out that while air attack had mixed effects on civilian morale in World War II, history proved it devastating to enemy forces in the field.

Speed Bumps

Warden pulled together a wider plan named "Instant Thunder." He briefed it first to the Air Staff and then to Powell and a Joint Staff audience Aug. 11; to Schwarzkopf in Tampa Aug. 17; and to Horner in Riyadh Aug. 20.

That was also the day the buildup of forces in Saudi Arabia reached a critical point. The Army's 24th Infantry Division (Mechanized) arrived, and defenders now "had a capability of fighting in place," Horner later told "Frontline." "Up to then, we had light troops, ... and quite frankly, they'd have been speed bumps to the attacking Iraqi Army."

With the defensive prospects looking up, Horner kept the best of the Instant Thunder material and searched for someone who could fold it into a full-fledged air campaign—ranging from strategic attacks to heavy air attrition of Iraqi armor.

"I was in a fog about who to pick. Then, just like in cartoons when the lightbulb comes on over somebody's head, it hit me. Buster Glosson!" Horner recounted.

Then-Brig. Gen. Buster C. Glosson was in Bahrain as deputy commander, Joint Task Force-Middle East, embarked on USS *LaSalle.* He arrived in Riyadh on Aug. 21 and "became the engine that drove the Desert Storm air campaign," in the words of historian Richard T. Reynolds.

By the end of August, the shield was stronger. A capable force including 10 combat wings was in place. "Saudi Arabia had absorbed more of our troops and military hardware than it had in its own armed forces," observed Schwarzkopf.

"One more week and Saddam will have waited too long. ... He'll be in deep trouble," wrote Glosson in his diary on Aug. 28.

A comprehensive plan was taking shape by the time the air planners briefed Schwarzkopf on Sept. 5.

Deptula had come with Warden's team and stayed in theater assisting Glosson, including flipping slides in the first, tense brief to Horner. Deptula recalled the larger challenges of building and selling the air campaign that fall: "convincing the Air Force, Joint Staff, Office of the Secretary of Defense, and the CENTCOM leadership of the value

USA F photo

Airmen load a Mk 117 bomb onto a B-52 Stratofortress during prewar preparation.

of an air campaign as the centerpiece of Desert Storm; getting sufficient numbers of precision capable aircraft and weapons into theater rapidly; overcoming the visceral separate service component doctrines and dogma and turning those perspectives into a unified air campaign effort; dealing with an intelligence process, architecture, and culture that was then unresponsive to the demands of rapid planning and precision conventional air operations."

Outclassed

The buildup went on. In six weeks, Military Airlift Command surpassed the tonnage totals of the Berlin Airlift. Eventually, 145 C-130s formed an intratheater airlift web. C-5s and C-141s handled most of the passengers and air-delivered cargo, with the Civil Reserve Air Fleet activated for the first time ever to carry the rest.

Then, Gen. Michael J. Dugan, Air Force Chief of Staff, was abruptly fired by Cheney. Dugan had told reporters that airpower would play the leading role in an Iraq conflict, and advocated targeting downtown Baghdad. Cheney was outraged, and Dugan was out on Sept. 17—soon to be replaced by Gen. Merrill A. McPeak.

By October, a three-phase air plan was mature enough to brief to President Bush. Schwarzkopf dispatched Glosson to Washington. Bush "had an understanding of airpower execution that not very many people in politics have," Glosson realized as he worked through the charts. Bush and others peppered him with questions about the plan, but their buy-in was evident.

"The White House is very comfortable with the air plan," Powell later reported to Schwarzkopf.

By Nov. 1, the Air Force alone had brought in 700 aircraft, more than half of them combat types or "shooters," and more than 31,000 people, said McPeak. "At this point, CENTAF [Central Command Air Forces] by itself easily outclassed the entire Iraqi Air Force," he said. Additional forces were continually arriving.

There were public relations problems at home, however, and it was difficult generating support for a war to liberate Kuwait. Early planning estimates forecast heavy casualties–and Vietnam still cast a long shadow over domestic opinion. "There was very little public support in the United States for the idea of going to war in the Persian Gulf," said Secretary of State James A. Baker III. "In fact, it was overwhelmingly opposed."

The plan demanded more troops, but the Administration waited until Nov. 8 (two days after the 1990 midterm elections) to announce that more than 200,000 additional personnel were headed to the Gulf.

This represented a shift, as the new forces explicitly were to provide the coalition with the ability to attack Iraq. As Bush noted in his announcement, the next phase was "to ensure that the coalition has an adequate offensive military option should that be necessary."

In contrast to the domestic debate, international resolve was strengthening. Some 30 nations contributed military forces to the coalition. Gulf state allies, Germany, and Japan piled up monetary contributions totaling $54 billion to defray the cost of operations.

Most important, on Nov. 29, the UN Security Council passed Resolution 678, authorizing members to use "all necessary means" to restore Kuwait's sovereignty unless Iraq was out by Jan. 15, 1991. It was the first such resolution since the Korean War in 1950. The US had fought with allies before, but this international coalition was a colossus.

In fact, the White House was convinced of the necessity for war. "He was going to throw that son of a bitch out of Kuwait, regardless of whether the Congress or the public supported

Photo courtesy of Michael Isherwood

The 23rd Fighter Wing posted this sign at its deployed location, King Fahd Arpt., Saudi Arabia, noting the Flying Tigers' far-flung deployments.

him," Robert M. Gates, who was on loan from the CIA as deputy national security advisor, said of Bush.

For all their resolve, senior leaders were privately dealing with a major unknown. What weapons of mass destruction would Iraq unleash?

Horrifying precedent existed. During the long Iran-Iraq war of the 1980s, Iraq repeatedly and effectively used poison gas against Iran.

The Air Show Begins

On Aug. 20, 1988, a cease-fire between Iran and Iraq went into effect. Five days later, Saddam began poison-gas attacks on Kurdish villages in northern Iraq. In 1989, State Department officials told Baker that Iraq was working on chemical and biological weapons, and that terrorists were operating out of Iraq.

Gates remembered a widespread view "in the government at the very highest level" that "there was a real likelihood that Saddam would use chemical weapons."

Biological warfare was another worry. Iraq had opened four biological weapons complexes in 1989. Horner and Glosson already had plans to target suspected biological weapons bunkers early in the campaign, but intelligence sources were uncertain about what Saddam might truly have on hand.

One remedy was to vaccinate as many as possible. "Powell called me in one day and simply told me that we weren't properly prepared to deal with the potential that Iraq would use biological agents against our forces," said then-Brig. Gen. John P. Jumper, whom Powell tasked with solving the vaccine shortage problem.

By December, Horner had "an embarrassment of riches" at his disposal, according to McPeak.

Military will was also strong. "Nearly all US military officers occupying leadership positions were Vietnam veterans, united by a firm resolve not to repeat what we saw as the mistakes that led to defeat there," said McPeak. "People at the top, epitomized by Colin Powell, believed we must be 'decisive,'" and that meant providing more than enough force to tackle the Iraqis.

Crews waiting in the desert wondered if they'd get a chance to fight, or just be sent home. "The atmosphere during this time was mixed. There was a lot of 'BIV' [back in Vietnam talk] from the older pilots," Isherwood recalled. Within the A-10 wing, there were only two or three pilots with combat time.

Last-minute adjustments included importuning the Saudis to bring F-15Es closer to a base at al Kharj, just 621 miles from Baghdad itself. The ambitious attack plan called for the F-117s to make the first strikes deep in Iraq.

One last hurdle remained. In Washington, Congress had a joint resolution up for a vote. It authorized Bush "to use United States armed forces" to enforce the UN resolution. But would it pass?

"It is not an option for the Congress of the United States to disapprove what we for months have asked others to support. It is unthinkable that our government would now lose its will," said Sen. John C. Danforth (R) of Missouri.

The vote came on Jan. 12, 1991. Intense debate led to a Senate authorization for war by a vote of 52 to 47. The House quickly passed a similar resolution.

USAF photo by Rose Reynoldss via Warren Thompson

On Jan. 17, 1991, F-117 stealth fighters like these hit Baghdad with the first bombs of Operation Desert Storm.

January 1991 saw the coalition force grow to astonishing totals. Nearly 540,000 ground troops from 31 countries were in place. More than 660,000 total military personnel were in theater—nearly half a million of these were Americans. Some 1,800 combat aircraft and numerous supporting aircraft had deployed.

Across the Kuwaiti border waited up to 43 Iraqi divisions. Most were not at full strength, but one postwar estimate placed the number of Iraqi troops at around 330,000. With them were 4,200 tanks, 2,800 armored personnel carriers, and 3,100 artillery pieces. Seven hundred combat aircraft and a fully integrated air defense system laced with sector operations centers awaited the fate planned for them by Horner.

The A-10s were ready. "The wing commander came around and talked to the boys," said Isherwood. "He said there was nothing to be ashamed of if you had the jitters. He said before his first couple of combat missions, he threw up."

"The Air Force had been ready to go for some time, but the Army was stretched getting set," McPeak said. "My view was the Army could continue to prepare while watching the air show."

More than five months of massive buildup, with a major shift over time from defensive forces to offensive capabilities, was now complete.

H-Hour, 3:00 a.m. in Saudi Arabia, Jan. 17, 1991, passed with a low hush of activity in the semidark tactical air control center in Riyadh. Already, F-117s were in Iraq, flying in radio silence toward their targets. One F-117 slewed a laser guided 2,000-pound bomb into a telephone exchange building in Baghdad.

The command center's television, broadcasting CNN, went to blue-gray static. Up went the cheer. The war was under way. ■

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USAF photo

USAF's Indispensable "Failures"

By Peter Grier

The F-15, AWACS, and C-17 were derided as boondoggles early on. Things changed.

"**Congress** Is in Doubt Over Cost and Need in Air Force Buildup," blares the headline in the *New York Times*.

Among the charges under this headline: The Air Force is buying needlessly complex and expensive fighters, and it is asking for more warplanes than it needs.

Critics were particularly incensed about USAF's fighter recapitalization plan. Why does the Air Force feel it has to have new models when the Navy has already developed a perfectly good modern fighter both services could use?

"This is a dubious purchase costing billions," the *Times* quotes Sen. Carl Levin (D) of Michigan as saying. "Why not use a less expensive plane?"

This article sounds like an assault on the Air Force's F-22 and F-35 fighter programs, but it isn't new at all. Rather, it is from April 8, 1982. Levin was not chairman of the Senate Armed Services Committee, as he is today, but a low-ranking member.

The aircraft purchase he was objecting to was the F-15, which in decades to

USAF photo by MSgt. Dave Ahlschwede

Top: The F-15 prototype during testing. Above: An E-3 AWACS performs a mission over Iraq. Both aircraft types were the subject of caustic and derisive criticism, and both types have proved invaluable.

USAF photo by TSgt. Michael R. Holzworth

F-16s, such as these shown at Nellis AFB, Nev., were the preferred aircraft of military reformers, who largely were skeptical of the F-15's usefulness.

come would prove to be one of the most successful combat aircraft in history.

To be fair, Congressional critics at the time were complaining about Air Force plans to purchase large numbers of F-15s for defense of the continental US, while many felt the Navy F-14 could do that job at a lower price.

But this news piece from the past points out a basic fact of warplane development. For 30 years, most new models have been the subject of caustic criticism. Technical setbacks are treated as surprises which threaten a system's viability—or its very existence. Airframes always seem to be too complicated, too high-tech, too expensive, and not what the US really needs. That's the criticism, at least.

Lost in the volume is recognition of the fact that modern warplanes are among the most complex machines ever designed. It takes patience and hard work to make them deployment-ready. Many of today's Air Force legacy systems came out of "a long, arduous, and turbulent process," notes a RAND Corp. monograph on fighter acquisition. "Nonetheless, these often vitriolic debates ended in the design and development of several of the world's most capable fighters."

The F-15 Eagle, E-3 AWACS, and the C-17 Globemaster III, to pick three, all had significant teething problems, and all developed into aircraft the Pentagon can't do without today.

A look at the history of some current USAF systems puts the criticisms of today's development efforts in perspective. The F-15, from its very conception, was the target of a group of mostly retired officers and midlevel Pentagon systems analysts whom the press eventually named the "military reformers."

In the mid-1960s, a consensus developed in the Air Force on the need for a specialized air superiority fighter. Service leaders were dissatisfied with the progress and prospects of the joint Navy and Air Force TFX (Tactical Fighter Experimental) program, which would eventually produce the F-111. Their concern was partly motivated by the escalation of the air war over Vietnam, where aging but maneuverable MiGs were shockingly effective at shooting down F-4 Phantoms and other large, multimission US aircraft.

Persistent Criticism

Agreement on needs was one thing—getting the Air Force and the Defense Department to rally around an approach was another. Some groups wanted a large, complex multi-engine aircraft. Others pushed a light, single-engine dogfighter. Among the latter were John R. Boyd, a former Air Force colonel and Pentagon consultant, and Pierre M. Sprey, an engineer and OSD systems analyst. These two—later joined by a former Air Force captain, Franklin C. "Chuck" Spinney—were at the center of what became the military reformers group.

Boyd pushed the F-X project (the future F-15) away from a heavy design with variable-sweep wings. The new F-15, as it emerged from the design process, thus was lighter and more agile. But it was not as light and agile as Boyd and his allies wanted. They thought the Air Force would be better off buying more of a smaller and cheaper aircraft design, such as the F-5.

Their criticisms eventually helped lead the way to the lightweight fighter program, which morphed into the F-16. Even the F-16, however, had elements the reformers did not approve of, such as ground-mapping radar and multimission capability.

The criticism was nothing if not persistent. F-15 and F-16 aircraft, which still serve as the backbone of American tactical airpower, suffered early on from defective engines and something approaching all-around bad karma during development. They were "America's Jinxed Warplanes," according to an April 7, 1980 *US News & World Report* article.

The reformers continued to pick at the Eagle as the years rolled by. In 1981, Sprey wrote an airpower section in a book issued by the Heritage Foundation which questioned the F-15's effectiveness.

The F-15 was larger and more visible than its predecessor the F-4, wrote Sprey, making it vulnerable in daylight close-in dogfighting. He claimed the Eagle was too dependent on radar guided missiles, which "are not likely to be more effective than those used in Vietnam."

Since 1960, Sprey wrote in the 1981 piece, too much of the Air Force tacti-

USAF photo by TSgt. Matthew Loy

The C-17 was mocked as a $340 million ugly duckling, but it has proved its worth in worldwide operations.

cal aviation budget had been devoted to complex night/all-weather systems "of highly questionable capability." Sprey urged the Air Force to emphasize the F-16 over the F-15 because "in visual combat, the F-16 has been demonstrated to be the superior aircraft."

This was the point where the military reformers misfired.

Future air combat would not, as they assumed, take place largely in daytime, close-in engagements. The F-15 would go on to become the dominant air-to-air force in the skies precisely because of its radar missiles and long reach.

In the first Gulf War, the F-15 accounted for 36 of 40 Air Force aerial victories. Of those, 28 involved radar guided missiles. Worldwide, the Eagle has racked up an unprecedented kill ratio of 104-to-zero.

Writing in 2004, David R. Mets of Air University summed it up this way: "The Korea-style dogfight seems to have all but disappeared from the air-to-air battle. The agility of both [the F-15 and F-16] remains highly useful in dodging surface-to-air missiles, but that is not what Boyd and the [military reform] acolytes had in mind."

The F-15 was not the only Air Force system hit in its early years as overly dependent on high technology.

Today, the E-3 Airborne Warning and Control System seems beyond criticism, an obvious force multiplier without whose radar Air Force operations might be blind. AWACS can track enemy aircraft and guide friendly forces straight to them, making it an invaluable asset for both offensive and defensive air operations. But during development, AWACS was derided as a boondoggle: unnecessary, unworkable, and vulnerable.

On April 13, 1974, *The New Republic* ran an article on the ungainly airborne radar system. Titled "AWACS: The Plane That Would Not Die," it called the airborne warning and control mission "a complete phony." It described the aircraft simply as a means to keep money flowing to contractors. The article even took a shot at the airplane's appearance, describing it as a "mushroom with elephantiasis."

The author appeared to have little understanding of the mission of airborne command and control which the AWACS was designed to fulfill, and less understanding of the technology involved. But the story, and similar criticism in other media, helped fuel opposition to the system in Congress. Serious criticisms of the AWACS, leveled by the General Accounting Office and others, included worry that the slow E-3 airframe would be highly vulnerable to Soviet fighters and thus unable to get close enough to contested airspace to be of any use in a European conflict.

The Pre-eminent Symbol

"It was claimed that electronic countermeasures (ECM) would render the [AWACS] radar useless. The large number of targets in [Europe] would saturate the tracker," said Robert E. Cowdery and William A. Skillman, engineers who helped develop the radar for Westinghouse, in a history of the system published in a professional engineering journal in 1995.

Worried about these allegations, the Senate Armed Services Committee in 1974 requested the Secretary of Defense to certify that AWACS could perform in the cluttered environment of Central Europe. The Pentagon's Research and Engineering branch set up an ad hoc committee of experts to study the problem and allow lawmakers' concerns. Members conducted "ground-flooder" ECM tests, among other things, and by the end of 1974 had established to their own satisfaction that the AWACS performed just fine. "As a result, the Secretary of Defense certified to Congress that the performance of AWACS in ECM was adequate to meet the projected threat," wrote Cowdery and Skillman.

Since then, the "mushroom with elephantiasis" has become a symbol—perhaps the pre-eminent symbol—of an Air Force operational presence. It has directed traffic in conflicts from Grenada, to the Persian Gulf, to the Balkans, and recently over Iraq and Afghanistan. AWACS flew more than 7,000 combat hours in the first Gulf War, alone.

NATO has its own AWACS fleet, as do France and Great Britain. Saudi Arabia operates five. Japan also has four, based on a Boeing 767 airframe. After Sept. 11, 2001, seven NATO AWACS deployed to the United States to monitor commercial air traffic. It was "a mission never foreseen by any planner, but one which captures the uncertainty of weapon system planning," wrote Walter J. Boyne.

Mobility aircraft have not been immune to similar sorts of criticism, and more recently the C-17 has survived

Photo by Katsuhiko Tokunaga/DACT

The F-22 (shown here) and the F-35 have faced harsh Congressional criticism and media wire-brush attention, just like the AWACS, F-15, and C-17.

intense turbulence on its way to airlift pre-eminence.

"The C-17 program encountered political opposition and limited funding, plus technical development and program management difficulties, which affected the program's cost, production, and delivery schedule," wrote Betty Raab Kennedy, an Air Mobility Command historian, in a 1999 analysis of C-17 acquisition. At its onset in the late 1970s, the C-17 had a difficult time winning support in Congress. Lawmakers felt DOD had not clearly demonstrated the need for additional strategic airlift capacity. Thus, development funding was not approved until 1981.

Then, in 1982, DOD decided its airlift shortfall was so urgent it could not wait for development of a whole new aircraft. It asked for 50 new C-5s to make up part of the airlift gap. Congress approved the money, but asked for an airlift master plan to guide the way forward. This assessment concluded the C-17 was the most cost-effective solution to the airlift problem, but the study was not completed until the end of 1983, adding further delay.

"By the mid-1980s, the C-17 program appeared to be on track, if somewhat behind schedule," wrote Christopher Bolkcom of the Congressional Research Service in a 2007 report. But the C-17 had taken so long to get going that key personnel had drifted away from prime contractor McDonnell Douglas and production difficulties followed. These hiccups delayed the program even further and increased development costs.

In April 1990, then-Secretary of Defense Dick Cheney cut the production program from 210 to 120 aircraft, due to both the collapse of the Soviet Union and domestic budget constraints. Cuts of this sort have an inevitable effect: They increase the aircraft's unit price, fueling a new round of criticism.

In 1993, Defense Secretary Les Aspin disciplined four senior Air Force officials for their handling of the program. Among other things, they had improperly channeled cash to McDonnell Douglas at a time when the company was having financial problems.

Finally, in December 1993, the C-17 program reached its darkest hour. DOD announced the C-17 program would be killed by 1995 if McDonnell Douglas did not improve performance.

Political Gamesmanship

In fall 1995, as the deadline loomed, *The Bulletin of the Atomic Scientists* dubbed the C-17 a "$340 Million Ugly Duckling." The airlifter's unit cost had skyrocketed, according to the article, while technical glitches such as airflow problems around the cargo doors persisted. Quoting the GAO, the *Bulletin* piece said the C-17's specialized and expensive short-landing abilities had little use in any foreseeable conflict.

Convening at the end of 1995, a crucial Defense Acquisition Board decided to proceed with the full 120 C-17 program. The airlifter's combination of long reach with relatively short takeoff and landing requirements was not duplicated by other alternatives. "The DAB regarded the C-17 as best providing the greatest amount of flexibility in meeting the strategic airlift requirements," wrote Kennedy.

Since then, C-17s have become the backbone of the US air transport fleet, lauded for their versatility and high reliability. Globemaster IIIs have delivered military goods and humanitarian aid all around the world, neatly bridged the gap between the tactical C-130 and the massive C-5, and allowed USAF to fully retire its old C-141s.

In its first operational use, an October 1994 delivery to the Persian Gulf, the aircraft moved a five-ton "rolling command post," five vehicles, and other supplies. In a 1995 deployment of peacekeepers and cargo to Bosnia for Operation Joint Endeavor, the C-17 flew 26 percent of airlift missions while delivering 44 percent of cargo. Today, C-17s are routinely flying the 26-hour round-trips from Germany to Afghanistan, while dropping supplies directly at forward US operating bases.

The C-17 goes wherever the President goes, as it is the airlifter of choice for the armored limousines of the executive branch.

Weapons systems today still receive the same media wire-brush attention accorded past development efforts. The F-22, the F-35, and other programs all must achieve their technological advances under constant scrutiny. Developmental testing, which is designed to identify problems so that they can be corrected, is often regarded as if it were a program's final grade. A single flop in testing generates headlines and has the potential to send a system to the scrap heap.

Many members of Congress, meanwhile, love a show and must vote to continue system funding every year.

This means service leaders have a doubly demanding task, wrote Boyne in *Beyond the Wild Blue: A History of the US Air Force.* "They must have a vision of what will be required for the defense of the nation for many years into the future. At the same time, they must be proficient in the political gamesmanship necessary to shepherd the ideas of their predecessors through all the hazards into operational use."

Developing an advanced military aircraft is no easy feat, but the Air Force—and the nation—are better off when systems make it into service with problems identified and corrected. The past 30 years of military operations might have been very different if the military leadership had given up on the F-15, AWACS, or C-17 early on. ■

Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, *is a longtime defense correspondent and a contributing editor to* Air Force *Magazine. His most recent article, "CyberPatriot Gets Serious," appeared in the July issue.*

In Europe and Korea, Gen. Otto Weyland showed how airpower should support the ground forces.

Then-Lt. Gen. George Patton (l) and Weyland in Nancy, France, in 1944.

Weyland's Wars

By Walter J. Boyne

A fighter pilot at heart, USAF Gen. Otto P. Weyland instinctively punched his own ticket in exactly the right way to make him a top Air Force commander in two wars. He was as ardent in support of strategic airpower as any of his contemporaries. Yet Weyland also achieved spectacular success through his determination to support Army ground operations.

In his own words, he talked the Army's language.

Gen. George S. Patton commended Weyland as "the best damn general in the Air Corps" of World War II. He then received similar accolades from most Army flag officers in the Korean War. The term "most" does not mean "all," however, as he was the target of bitter criticism by a few Army officers who preferred "Marine-style" close air support.

Weyland's achievements were all the more remarkable because the wars he fought were so very different in their nature. He commanded successively larger organizations during World War II, applying first-class resources over huge areas, in concert with well-equipped, well-trained Army outfits. The results were unprecedented. Weyland's command, for the first time in history, provided an "aerial flank"—protecting the swift advance of Patton's armor in its advance through France.

His experience in the Korean War was notably different, for both the Army and Air Force were totally unprepared for the June 25, 1950 invasion of South Korea by communist North Korea. They had to fight with what they had: outdated and insufficient World War II equipment.

Fortunately, Weyland's wealth of experience and his credibility with both Army and Air Force leaders enabled the pragmatic airman to adapt quickly in fighting the three distinctly different phases of the Korean War.

In the beginning, overwhelming numbers of well-equipped North Korean troops overran the inadequately armed South Korean Army, seeking to swiftly conquer the entire peninsula. USAF's woefully inadequate numbers of obsolescent World War II aircraft helped keep ill-equipped and undermanned land forces from being pushed into the sea.

Then came the daring Inchon landing of Sept. 15, 1950, a move that turned the tide of the war. Weyland still lacked adequate resources but employed his forces so well they destroyed the North Korean Army even before Eighth Army began its breakout from the Pusan Perimeter.

Finally, communist Chinese troops poured across the Yalu River and joined

the fighting on the side of North Korea, pushing the war into a stalemate. As both sides sought to find palatable armistice terms, Weyland effectively applied his still-marginal resources, implementing a series of successful air interdiction campaigns. For all this, he drew criticism from some.

Weyland's success in the joint operations derived from his intimate knowledge of land warfare. Because of his effective support of strategic operations—he was a primary "pick and shovel" wielder in the creation of Strategic Air Command—Weyland had the confidence of his superiors when he advocated additional resources for tactical operations.

Weyland was born in Riverside, Calif., in 1902. He went through the classic career sequence of the era. Graduating with a degree in mechanical engineering in 1923, he accepted a reserve commission in the US Army Air Service. He toyed with the idea of working as an engineer for Western Electric but found that he preferred service life and sought a regular commission after entering flying school. He trained first at Brooks Field, Tex., and then at nearby Kelly Field.

Promotion was slow in those days—he was not made a first lieutenant until 1930—but there were compensations. Weyland went to Hawaii's Luke Field on Ford Island, to command the 4th Observation Squadron.

Weyland (l), then commander of XIX Tactical Air Command, meets with Maj. Gen. Hoyt Vandenberg, commander of Ninth Air Force, in Rennes, France, in 1944.

This might have begun a perfectly ordinary career progression except for Weyland's determination to learn how the Army operated at every level, and more important, how the Army wanted air operations conducted. It was a unique viewpoint at a time when most Air Corps officers unswervingly supported the concept of strategic bombing, and when a recalcitrant such as Claire L. Chennault might find his career progress blocked.

By the time of Japan's Dec. 7, 1941 attack on Pearl Harbor, Weyland was a lieutenant colonel, commanding the 16th Pursuit Group in Panama and serving as Sixth Air Force chief of staff. Promotions came swiftly now, but he had to serve in staff roles at headquarters before being promoted to brigadier general and given the command of the 84th Fighter Wing.

Best Damn General

It was a good start to what became a brilliant career in World War II, for in March 1944, he was made the commanding general of XIX Tactical Air Command. It was here that his personality, experience, timing, and circumstance coalesced into great success. Weyland spiced his taciturn conversational mode with a subtle levity, which made him an ideal foil for his Army counterpart, then-Lieutenant General Patton.

Patton allowed Weyland to dictate the role of airpower and he did so ruthlessly. One unique consequence is that Weyland personally accepted the surrender of German Maj. Gen. Eric Elster's 20,000 Nazi troops in exchange for a cessation of air attacks.

Weyland's ability to get along extended to another colorful commander, his boss at 9th Fighter Command (and commander of the "rival" IX TAC), Maj. Gen. Elwood R. Quesada. Someone had the foresight to pair the more volatile Quesada with the quieter personality of Army Gen. Omar N. Bradley, while similarly placing together the contrasting personalities of Weyland and Patton.

Harmony thus assured, Quesada's IX TAC worked with Bradley's First Army, while Weyland's XIX TAC supported Patton's Third Army in six major campaigns.

This was the sort of leadership that led Patton to his famous "best damn general" assessment and to another, far more meaningful tribute: After the war in Europe was won, Patton personally told Weyland that he would be pleased to have him as an Army corps commander. This was perhaps the greatest compliment Patton could give.

Yet, like many of his contemporaries, Weyland languished in staff jobs when demobilization decimated the strength of American armed forces.

The newborn USAF was hampered by tiny budgets, the drastic need for re-equipment with modern jet aircraft, and the threat of a nuclear-armed and increasingly belligerent Soviet Union.

Just after the North Korean invasion of South Korea, Weyland was given command of TAC, but quickly relinquished it to proceed to Japan. There he was vice commander for operations, Far East Air Forces, under Lt. Gen. George E. Stratemeyer.

Stratemeyer reported to Army Gen. Douglas MacArthur, commander in chief, Far East.

Upon his arrival at his headquarters on July 20, Weyland realized he was not going to immediately reprise his successes in Europe. Instead of a well-equipped Air Force supporting a well-equipped Army, he found both services short of men and equipment. Further, the easy rapport with Patton was not going to be repeated, despite the fact that Eighth Army and Fifth Air Force had set up a joint operations center.

Weyland discovered that the air war was being directed by MacArthur's staff, led by Maj. Gen. Edward M. Almond—a man who would try in vain to thwart him.

Almond had attended Air Corps Tactical School in 1938 and considered himself well-versed in air doctrine. He objected violently when, only three days after his arrival, Weyland wrote a memo stating his objections to the way things were being handled. There followed a face-to-face confrontation in which the quiet but stern Weyland reminded Almond that he outranked him, was more knowledgeable about air operations, and would carry out his instructions to run the air war.

Weyland was promoted to general in 1952, while serving as commander of Far East Air Forces. He made close air support a top priority during his time in Korea.

It was the start of a long and bitter battle that Weyland won, but which Almond never conceded. Weyland first had to win the fight in Korea, where his ragtag airpower stiffened the defenses of Pusan sufficiently for United Nations forces to hold on around Pusan.

Initially equipped with only the Douglas B-26, Boeing B-29, and a handful of fighters, he did the improbable: defending Pusan by concentrating on close air support with the forces in hand. His force was ultimately supplemented by Lockheed F-80s and North American P-51s, and Col. Jack Broughton recalls seeing ground troops standing up in their foxholes and cheering when Lockheed F-80s whistled across the orange and green cloth panel that marked the bomb line. He also recalls the Chinese soldiers standing up in their foxholes to fire rifles at the jet aircraft.

Ironically, the very success of this effort established a heightened set of Army expectations for close air support that would haunt Weyland throughout the war. He saw immediately that the Army was fighting without the resources on which it traditionally relied, especially huge concentrations of artillery and virtually unlimited ammunition. Weyland committed FEAF to substitute for the artillery and it did so brilliantly.

As soon as possible, Weyland reached out to decimate incoming columns of North Korean troops and supplies, believing that after establishing air supremacy, the first role of airpower was to conduct an interdiction campaign to cut enemy lines of communication and supply. In doing so, Weyland demonstrated his innate flexibility. He called upon Far East Air Forces Bomber Command to execute tactical air strikes, something he generally deplored. The B-29 strikes were later seen to be very effective.

It was not until the coordinated landings at Inchon and the breakout from the Pusan Perimeter that Army leaders saw the real effects of the interdiction campaign. The North Korean Army had been scattered to the winds, and the roads beyond the Naktong River were littered with dead enemy soldiers, shattered tanks, and derelict trucks.

Commander, Far East Air Forces

Then the accolades began to flow in. "I am willing to state that no commander ever had better air support than has been furnished the Eighth Army by the 5th Air Force," said Lt. Gen. Walton H. Walker, Eighth Army commander. "I will gladly lay my cards right on the table and state that if it had not been for the air support that we received from the 5th Air Force, we would not have been able to stay in Korea."

One person who was not convinced was Almond, who had a less than major role in the Inchon landings. He continued to negatively contrast Air Force close air support to that provided by the Marines.

The victories stemming from the Inchon landing and the Pusan breakout seemed about to bring the war to a close with the complete occupation of North Korea. A side effect of the intoxicating allied advance was an expectation of close air support the Army never wished to relinquish. When FEAF and Bomber Command turned to more far-reaching targets, many Army commanders resisted.

The surprise massive Chinese intervention that began in November and did not grind to a halt until late January 1951 totally reversed the strategic situation. United Nations forces were thrust back far down the peninsula. Once again, it was airpower that enabled UN forces to end their retreat and create a solid front line.

The new commander of Eighth Army, Lt. Gen. Matthew B. Ridgway, successfully re-established the morale and offensive capability of his army, but soon realized, as the Chinese did, that a complete military victory was no longer possible. Both sides then settled down to attrition warfare. The armistice was more than two years away.

By June 1951, Weyland was commander, Far East Air Forces.

In his new position, Weyland once again demonstrated his understanding of the requirement of joint operations. The Army was still short of artillery, and close air support was still required as a substitute. Further, the Chinese had become masters of the art of resupply at night, making air interdiction less profitable. Frugal Chinese forces consumed a minimum amount of supplies, reducing the effectiveness of attacks on the roads and railways used to provide them. An effort by Weyland in 1951, Operation Strangle, attempted to sever seven enemy supply routes, but was never entirely successful. The Chinese compensated for diminished rail traffic by vastly increasing nighttime road traffic, sometimes sending convoys south with headlights blazing. They provided easy targets for the two hard-working B-26 wings, the 3rd and 452nd.

The problem, as with the succeeding Operation Saturate, was twofold. First, the Chinese, with their masses of labor, could effectively repair most damage to railways quickly, even as they brought in additional anti-aircraft units to protect them. Second, 5th Air Force was increasingly short of aircraft. In Operation Saturate, 253 fighter-bombers were lost, and only 131 replacement aircraft were provided.

The most important effect of Weyland's air interdiction was to ensure that the massive Chinese Army never reached a point that it could undertake

Weyland congratulates A2C Walter Schwarz, a crew chief for the 18th Fighter-Bomber Wing, on a job well done in Korea in 1952.

a decisive offensive. When the nature of the war rendered air interdiction less profitable, Weyland's staff offered more productive options. Col. Richard L. Randolph led a staff team which suggested an "air pressure" strategy that Weyland backed, against an expanded group of targets.

Although Ridgway's successor, Lt. Gen. James A. Van Fleet, initially espoused what Weyland called the "Army party line" with regard to control of CAS, he soon became one of Weyland's greatest supporters.

"The war that does the most damage to the enemy [in Korea] is from the air. It is an almost one-service war that goes on, air war, doing the damage to the enemy deep in his own territory," Van Fleet told Congress in 1953. "If the Army had been adequately supplied with ammunition, ... it would consume more of the enemy, the enemy supplies, create problems for him, which, in turn, would help our air service."

Van Fleet's comments were a virtual echo of Weyland's previously expressed opinion that "tactical airpower will contribute more to the success of the ground forces and to the overall mission of a theater commander through a well-planned interdiction campaign than by [any] other mission short of the attainment of air supremacy."

Weyland knew that the foot soldiers loved to see his aircraft in action, and that they had no way of measuring the effects of air interdiction. He also knew that the Army remained critically short of artillery ammunition. As a result, despite Weyland's desire to increase the interdiction campaign, he made close air support FEAF's first priority during the frigid winter of 1952.

Tactical Airpower Advocate

Yet, when successively pressured by Almond, Ridgway, and Army Gen. Mark W. Clark to cede control of tactical air operations, Weyland successfully defended his turf, preparing the way for the later introduction of his own views on the value of air interdiction. More formal recognition came with Weyland's promotion to general in July 1952.

FEAF had also maintained air superiority despite the inherent advantage possessed by the enemy, which had superior numbers and flew from "off-limits" air bases close to the MiG Alley battleground. In the spring of 1953, when the communists attempted to use 10 North Korean airfields for MiG operations, Weyland responded with vigor, sending the B-29s in to knock them out.

The air pressure strategy led to strategic attacks against the North Korean electric grid and against such vital but controversial targets as the Toksan dam, which provided irrigation water for the vital North Korean rice crop. That May 13 attack not only took out the dam but damaged five railway bridges, a huge section of the main highway, and five square miles of rice crops. This hurt the North Koreans in two areas: communications and providing food for the Army.

The fact that the air war he was conducting suffered from so many economic and political restrictions made Weyland a realist. He was adamant that there should be no consideration of United Nations forces crossing the Yalu River and expanding the war unless they had access to nuclear weapons.

In spite of the difficulties, the shifting campaign, and the shortage of equipment, however, Weyland had successfully balanced the Army's desperate calls for close air support with the enduring need to use airpower for strategic purposes.

Weyland remained in command of FEAF until March 1954. That May, he returned to the United States as commander of Tactical Air Command. There he continued to assert the need for tactical operations and to convince others that limited wars were an important future consideration. One of his innovations was the creation of the composite air strike force, a predecessor of the modern air expeditionary force.

Weyland's efforts to build up TAC were hampered by budget cuts and the inevitable but expensive requirement for TAC to acquire a nuclear capability. He insisted that TAC retain its proficiency with conventional weapons and sought flexibility because future enemies would be extremely flexible in their use of conventional weapons. Weyland retired from the Air Force in 1959, but continued, until his death in 1979, advocating for the use of tactical airpower as a deterrent and a war-winning force. ■

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 Hypersonic Thunder. *His most recent article for* Air Force *Magazine, "When the U-2 Fell to Earth," appeared in the April issue.*

Day of the Hound Dog

Photo by Strategic Air Command.; Text by Andrea K. Dudney.

A Strategic Air Command crew at Minot AFB, N.D., speeds toward a B-52 bomber in an early 1960s drill. Displayed prominently is the bomber's GAM-77 Hound Dog, USAF's first operational air-launched cruise missile. The huge 42-foot-long Hound Dog, equipped with a W-28 thermonuclear warhead, could fly at Mach 2.1 for 700 miles at high altitude. At peak deployment in 1963, SAC had 600 of the more than five-ton missiles in active service.


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The Air Force Association Nominating Committee met on April 16 and selected candidates to send forward for five national officer positions and three elective National Director positions on the Board of Directors. The committee comprises three most recent past Chairmen of the Board, one person selected by the two Vice Chairmen of the Board, two persons from each geographic area, and one person each from the Total Air Force, Air Force veterans, and aerospace industry. The slate will be presented to the delegates at the National Convention in Washington, D.C., in September.

Chairman of the Board

Ronald E. Keys, Woodbridge, Va., nominated for a first one-year term. Keys is a Life Member of AFA, was a constant supporter of AFA during his active duty career, and presently serves as a member of its Force Capabilities Committee, AFA's policy advisory group. In 2007, AFA presented Keys with its most prestigious award, the H. H. Arnold Award, as the military member who had made the most significant contribution to national defense. Upon retirement, Keys was also recognized by the Air Force Reserve Officer Training Corps as the first recipient of the ROTC Distinguished Alumni Award. Keys retired in November 2007 as a general, after more than 40 years of active duty service. During his military career, Keys commanded organizations eight times, including three wings, the USAF Weapons School, a numbered air force, and Allied Air Forces Southern Europe. He was the Air Force Deputy Chief of Staff for air, space, and cyber operations and retired as commander of Air Combat Command, the Air Force's largest major command. Keys earned a bachelor's degree from Kansas State University and a master's degree from Golden Gate University. He also attended Air War College, as well as various other professional courses to include Leadership at the Peak, Center for Creative Leadership, in Colorado Springs, Colo. Keys is the owner of RK Solution Enterprises, and now consults on a wide range of defense and energy-related issues, and serves on several advisory and trustee boards.

James R. Lauducci, Alexandria, Va., nominated for a first one-year term. He is serving his second year as Vice Chairman of the Board for Field Operations. Lauducci is a Life Member and has served in many AFA positions. He is past President of the Donald W. Steele Sr. Memorial Chapter in Northern Virginia, and is a former Virginia State President, Vice President of Programs, Vice President of Special Projects, and Vice President of Membership. At the national level, Lauducci served on AFA's afa21 Governance Task Force, Membership Committee (two years as Chairman), Strategic Planning Committee, Nominating Committee, and as a National Director. Lauducci was Virginia AFA's Member of the Year and was awarded AFA's Medal of Merit, Exceptional Service Award, and Presidential Citation. He spent 24 years on active duty, serving in communications and information-related assignments at Strategic Air Command, NORAD, the Joint Staff, NATO, and the Air Force Secretariat. He is a 2007 inductee into the Air Force Communications and Information Hall of Fame. In private industry, he has held posts in program management, government relations, and business development. Lauducci holds a bachelor's degree from LeMoyne College and a master's degree from Troy State University. He was also a Senior Executive Fellow at Harvard University's JFK School of Government. He is currently Director of Air Force Field Marketing for Harris Corp.

S. Sanford Schlitt, Sarasota, Fla., nominated for a first one-year term. Serving his third year as Vice Chairman of the Board for Aerospace Education, he founded and led CyberPatriot, AFA's national high school cyber defense competition. He chairs the Aerospace Education Council and is a member of the Board's Executive Committee. Schlitt, a Life Member and Gold Wings Club and Thunderbird Society member, served as a Trustee for the former Aerospace Education Foundation and, after the merger with AFA, was on AFA's Board of Directors. He was a member of the afa21 Governance Team. He served on the AFA Constitution and Strategic Planning Committees, was Co-chair of the AFA-AEF Audit Committee, Chair of the AEF Audit Committee, and was on the AEF Nominating and Program Committees. Schlitt was commissioned in the Air National Guard, transferred to the Reserve, and served for 34 years, mainly in contracts

Keys

Lauducci

Schlitt

Nominees

management and acquisition. He retired as a brigadier general. He holds degrees from The American University and also attended SOS, ACSC, AWC, and the Leadership Institute at Eckerd College. He established or purchased and sold or successfully merged several businesses, also serving as Chairman of one firm and Board Member of a NASDAQ-listed company. Schlitt served on the staffs of Sen. Hubert H. Humphrey and Sen. Walter Mondale. He is Senior Managing Director of a mortgage investment trust with daily involvement in financial portfolio management.

Vice Chairman Field Operations

Justin M. Faiferlick, Fort Dodge, Iowa, nominated for a first one-year term. He is a Life Member and chartered the Fort Dodge Chapter and has served as Chapter President, VP, Secretary, and Treasurer and as a State VP and President. Faiferlick completes his term as the National Director at Large in September. On the national level, he has also chaired the Membership Committee for two years, served on the Field Council, Transition Review Team, and Nominating Committee. Faiferlick was recognized as State and Region Member of the Year and has received the AFA Medal of Merit and Exceptional Service Award. In Iowa, he received the Governor's Volunteer Award and was one of the Top 40, under the age of 40, outstanding community leaders. Faiferlick received a bachelor's degree from Buena Vista University and a master's degree in management, with a concentration in organizational leadership, from American Military University. He started his military career as an enlisted member in the active duty Air Force. Now an officer in the Iowa Air National Guard, Faiferlick is the Director of Test with the 133rd Test Squadron, with more than 20 years of total service.

Scott P. Van Cleef, Fincastle, Va., nominated for a first one-year term. Van Cleef is a Life Member and currently is an AFA National Director. While he was the Roanoke Chapter president, it was named the AFA medium-size Chapter of the Year for 2005 and winner of an AFA Unit Exceptional Service Award in 2006. He was State President for Virginia, named the Outstanding State Organization of the Year for 2008. He has held several other chapter and state positions and holds office at every level of the association. He served on the afa21 Internal Review Group in 2005 and afa21 Field Structure Team in 2006. He further served on the Field Council and Strategic Planning Committee, which for the past two years, he has chaired. Van Cleef was Virginia's Member of the Year in 2004 and recipient of the Central East Region President's Award, AFA's Medal of Merit, Exceptional Service Award, and Chairman's Citation. Van Cleef served more than 29 years on active duty as a fighter pilot. He commanded an F-16 squadron, was vice commander of an F-16 training wing, and commander of a fighter wing. He is currently a self-employed maker of fine furniture.

Vice Chairman Aerospace Education

George K. Muellner, Huntington Beach, Ca., nominated for a first one-year term. He is a Life Member and has served as a National Director, member of the Compensation Committee, and is on the Aerospace Education Committee, leading development of the Aerospace Education Strategic Plan. He received the 1997 AFA Theodore von Karman Award. Muellner retired from Boeing in 2008 as President of Advanced Systems and had been VP-GM of Air Force Systems and President of Phantom Works. He served for 31 years in the Air Force, retiring as a lieutenant general, as Principal Deputy, Office of the Assistant Secretary of the Air Force for Acquisition. Key Air Force assignments included Program Executive Officer for the Joint Strike Fighter program and Deputy Chief of Staff for Requirements, Air Combat Command. Muellner flew combat missions in Vietnam and commanded the Joint STARS deployment during Desert Storm. He is past President of the American Institute of Aeronautics and Astronautics. He holds a bachelor's degree in engineering from the University of Illinois; master's degrees in engineering from the University of Southern California and from California State University; and an MBA from Auburn University. Muellner is an aerospace industry consultant.

Faiferlick

Van Cleef

Muellner

National Secretary

Joan Sell, Colorado Springs, Colo., nominated for a second one-year term. Sell is a Life Member and has been a Community Partner since 1995. She served as Lance P. Sijan Chapter

President, leading the chapter when it received the national-level Unit of the Year award. Sell served as Colorado State President and the Rocky Mountain Region President. Nationally, Sell was in the Field Council's first class, chaired the Credentials Committee, and served on the Long-Range Planning Committee. She twice received AFA's Presidential Citation. She served six years on the Colorado Aerospace Education Foundation's board (three as Chairwoman); 16 years on the Rocky Mountain Chapter Board of the National Defense Industrial Association (two as President); 10 years on the Peterson Air and Space Museum Board (five as Director of Development); six years on the Armed Services YMCA Board; three years on the Colorado Springs Chamber of Commerce Board; and five as Co-chair of a Colorado food bank's fund-raiser. Sell had a 40-year career in the aerospace industry, retiring as

Sell
Incumbent

a Director of Business Development. She has provided program development direction for Air Force Space Command, NORAD, US Northern Command, and Space and Missile Systems Center. She owns and operates a spa in Falcon, Colo.

National Treasurer

Steve Dillenburg, Knoxville, Tenn., nominated for a first one-year term. Dillenburg, a Life Member, joined AFA 30 years ago. He is the Senior Member on the AFA Finance Committee. He provided financial oversight for AFA's financial objectives, including the merger of AFA, AEF, and the Air Force Memorial Foundation; the AFA building expansion; growth of AFA's Air & Space Conference; and development and diversification of AFA's investment portfolio. He served as President of the Gen. Joseph W. Ralston Chapter

Dillenburg

and the state of Ohio. He was Ohio AFA Member of the Year in 2004 and received an AFA Medal of Merit. He currently serves as Treasurer of the Jerry Waterman Chapter in Tampa, Fla. After six years of active duty as an instructor pilot at Sheppard AFB, Tex., he has spent 30 years in the investment management industry. As a principal at an investment management firm, he served as a Portfolio Manager and Investment Advisor to more than 100 for-profit and nonprofit organizations. Dillenburg created the first Securities and Exchange Commission-registered, stakeholder-enhanced Standard & Poor's 500 Index fund. Dillenburg graduated from Iowa State University, has an MBA from Midwestern State University in Texas, and is a Chartered Financial Analyst. He is a Senior Vice President-Portfolio Manager in the Tampa office of Bank of America-US Trust.

Leonard R. Vernamonti, Clinton, Miss., nominated for a first one-year term. An AFA member since 1964 and a Life Member since 1984, he has served as a Chapter, State, and Region President and currently serves on the Board of Directors. He has been active at the national level since 1989, having served on the afa21 Field Structure Team, Field Council, and Constitution, R&D, and Nominating Committees.

Vernamonti

He is currently Chairman of the Audit Committee. He has received the Exceptional Service Award and two Medals of Merit. Vernamonti's more than 40-year military and civilian professional careers have focused on management and finance. He was the Comptroller for all USAF ballistic missile programs and President, CEO, and CFO of a nonprofit with an operating budget twice that of AFA. He currently serves as a Senior Consultant to the aerospace industry, specializing in strategic planning, acquisition, and budget and cost analysis. Vernamonti has a bachelor's degree in economics from the Air Force Academy and a master's degree in systems engineering from the University of Florida. He is a graduate of the National War College and the Industrial College of the Armed Forces.

National Director Central

Marvin L. Tooman, West Des Moines, Iowa, nominated for a first one-year term. He has been a member of AFA since 1991 and is a Life

Tooman

Member. As an undergraduate, he was an Arnold Air Society member. Within AFA, he has served as Gen. Charles A. Horner Chapter President, Iowa State President, and Midwest Region President. Nationally, he is a member of the Aerospace Education Council and previously served on the Field Council and Membership Committee. Tooman received the Medal of Merit, Exceptional Service Award, and Midwest Member of the Year 2004 award. Tooman has served as President and CEO of a regional health care corporation providing rehabilitation services for individuals with brain injury. He then became Iowa's Chief Regulator for all Iowa health care providers. He volunteered as Secretary and then

President of the National Association of Health Facility Survey Agencies. Tooman served for five years on active duty as an Electronic Combat Countermeasures Officer on a B-52. He served for 22 years in the 132nd Fighter Wing, Iowa Air National Guard. In this unit, he served as Chief of Base Administration, Chief of Personnel, Wing ECCM Officer, Chief of Intelligence, and Support Group Commander. He graduated from Central Michigan University and Drake University and holds an educational doctorate in administration.

The Nominating Committee submits three names—John Timothy Brock, Angela Dupont, and Nora Ruebrook—for National Director at Large. Two will be elected.

National Director at Large

John Timothy Brock, Oviedo, Fla., nominated for a first one-year term. He is a Life Member, a member of the Airman's Society of the Air Force Memorial Foundation, and a Charter

Brock

Member of the Thunderbird Society. While still on active duty, he acted as Liaison Officer between the Tennessee Ernie Ford Chapter in San Jose, Calif., and Onizuka Air Force Station. After his retirement from the Air Force, he became active with the Central Florida Chapter. He served as the chapter's Executive Vice President and as Chapter President. Under his leadership, the chapter won the Donald W. Steele Sr. Memorial Award as AFA's Unit of the Year. On the state level, he served as Secretary, Executive Vice President, and President. During his tenure as State President, Florida was named AFA's Outstanding State Organization. Brock served as the Florida Region President. Nationally, he was on the Field Council, Strategic Planning Committee, and Dues Review Committee. He received the Medal of Merit, Exceptional Service Award, and two Presidential Citations. He holds a bachelor's degree from the University of Georgia and a master's degree from the Air Force Institute of Technology. He served for 24 years in the Air Force and 11 years with Boeing. He is retired.

Angela Dupont, Haverhill, Mass., nominated for a first one-year term.

Dupont

She is the Vice President of Business Development, C2 Programs, and the Electronic Systems Center Account Manager for SAIC. She is responsible for all C2 business development on behalf of SAIC and business development at Electronic Systems Center, Hanscom Air Force Base. She is active in organizations that promote the exchange of ideas within the defense industrial community. Her primary focus has been as a leader in the Paul Revere Chapter, serving eight years on the Executive Committee. Dupont entered the aerospace and defense industry when she joined the Titan Corp. in 2002. Before that, she spent six years at the Massachusetts Port Authority, serving as deputy director, international marketing and administration, responsible for developing new direct international routes to Boston's Logan Airport. Dupont was chosen by Rep. Martin T. Meehan (D-Mass.) to serve as his Director of Finance from 1993 to 1995. She represented the Congressman at public events, acted as primary liaison for contributors, and recruited and trained volunteers. As Director of Marketing and Sales Development for an international marketing company from 1989 to 1993, Dupont created new sales territory and served on the company's advisory board to develop strategies for corporate growth.

Nora Ruebrook, Honolulu, nominated for a first one-year term. She is a Life Member and serves on the Finance Committee, is the Far West Region Leadership Development VP, and is President of AFA Hawaii. Ruebrook is a member of the Thunderbird Society, Legacy Society, and Gold Wings. She has received the AFA Medal of Merit and the Exceptional Service Award. Ruebrook serves on the National Board of Directors of the Navy League of the United States. She has been involved with the national governance of organizations such as American Society of Military Comptrollers, Armed Forces Communications and Electronics Association, Association for the Advancement of Artificial Intelligence, Association

Ruebrook

of Old Crows-Electronic Warfare and Information Operations, Association of the United States Army, Institute of Electrical and Electronics Engineers, International Association for Counterterrorism and Security Professionals, National Classification Management Society, National Contracting Management Association, National Defense Industrial Association, National Defense University Foundation, National Military Intelligence Association, and the US Naval Institute. Ruebrook is the CEO-Director of a company supporting the cyber, ISR, and R&D communities. ■

Full-length biographies are at: www.airforce-magazine.com, "2010-11 AFA Nominees"

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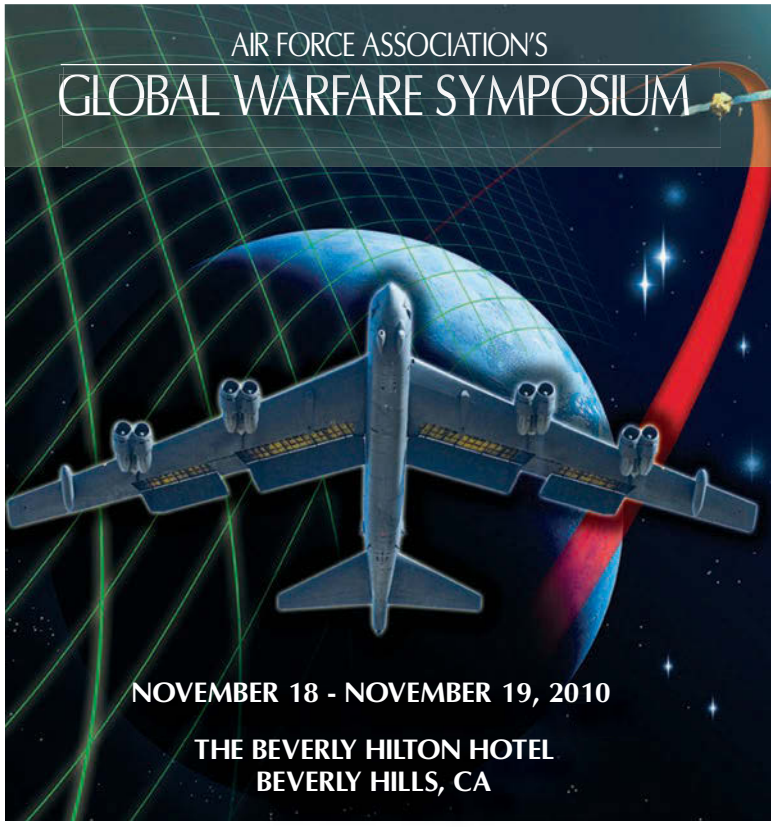

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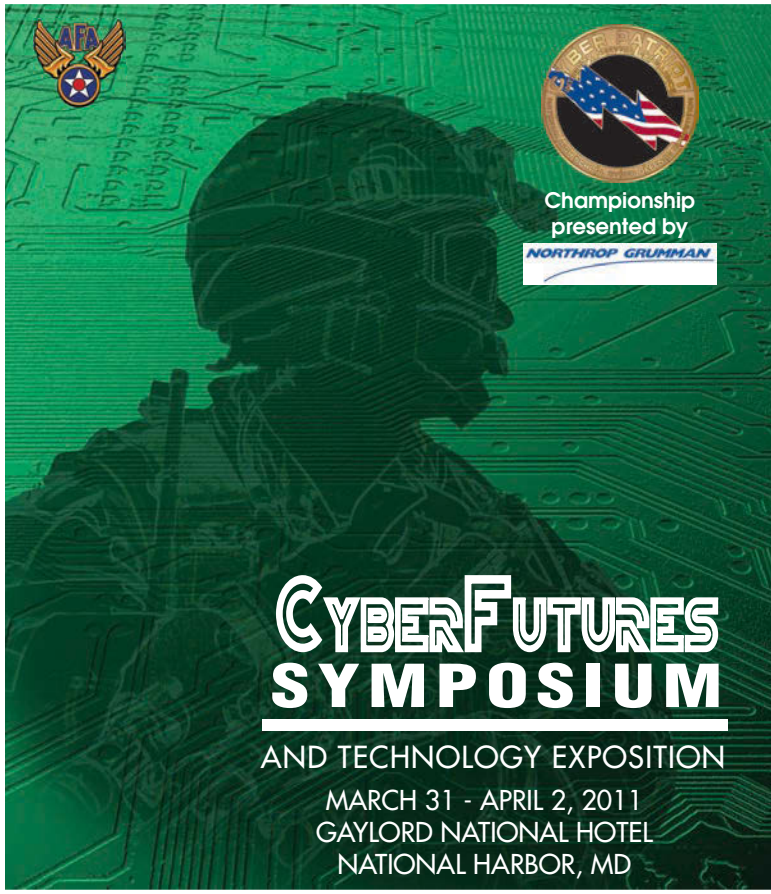

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AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

Enlisted Appreciation in Oklahoma

Sponsored in part by the **Enid Chapter** in Oklahoma, Enlisted Appreciation Night at Vance Air Force Base offered dinner, games, and some highly coveted door prizes.

The Enid Chapter—led by Scott Northcutt—donated $1,000 for the pizza party's two top cash awards. Chapter Secretary Mary Feightner contacted local businesses to solicit door-prize donations. She and other volunteers rounded up nearly $19,000 worth of cash and goods from 170 donors, more than half of them chapter Community Partners.

George Pankonin, chapter leadership development VP and co-chairman of the event, said cash donations paid for the party's food, as well as prizes.

And what a list of door prizes: two freezers packed with food, flat screen TVs, iPods, digital cameras, Blu-ray DVD players, a home theater system, a laptop computer, and camping equipment.

"The businesses in Enid really like to support the enlisted men and women at Vance," said Pankonin.

Enlisted Appreciation Night took place at the Vance Collocated Club. Col. Mark C. Nowland, the 71st Flying Training Wing commander, and CMSgt. Mitchell K. Balutski, the wing's command chief master sergeant, were among those taking part in this event.

The Leadership of Irene Johnigan

In May, F. E. Warren AFB, Wyo., celebrated Armed Forces Day, and to hear the wing commander tell it, "This occasion would not have been possible or a success without the leadership of Irene Johnigan, the AFA **[Cheyenne] Cowboy Chapter** president."

Col. Gregory S. Tims, 90th Missile Wing commander, didn't stop there. "Irene has unlimited energy and the heart of an angel," he wrote in an F. E. Warren Web page commentary. "We are so lucky to have her on our team." He singled out Johnigan, in particular, because of the chapter's sponsorship of the banquet that kicked off the 60th annual celebration.

The Cheyenne Cowboy Chapter gained even more publicity when the base newspaper, *The Sentinel,* featured that banquet, putting a photo of AFA Pitsenbarger Award recipients on its front page.

SSgt. Millie Gargurevich of the 90th Forces Support Squadron and SSgt. Christopher Melton, 90th Logistics Readiness Squadron, were pictured receiving the awards from Tims and guest speaker Brig. Gen. Everett H. Thomas. He is commander of the Air Force Nuclear Weapons Center, Kirtland Air Force Base, N.M.

AFA's Pitsenbarger Awards provide $400 to top active duty, Guard, or Reserve USAF enlisted personnel who plan to go on for a bachelor's degree after graduating from the Community College of the Air Force.

Photo by Gregg A. Moser

AFA Board Chairman Joe Sutter addresses AFA's Midwest Region Conference, hosted by the Whiteman Chapter at Whiteman AFB, Mo., in June.

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

Tweet From the ACC Boss

"Just returned from a great evening at the AFA 18th annual Salute to ACC," typed Gen. William M. Fraser III.

It was 7:55 p.m. on May 20, and the commander of Air Combat Command wanted readers on the microblogging service Twitter to know his thoughts on the gala hosted by the **Langley Chapter (Va.).**

Held at the Hampton (Va.) Convention Center, the reception and dinner was the chapter's black-tie celebration for ACC personnel and Team Langley. Nearly 450 guests attended the gala, described by Chapter Vice President Stanley S. Stevens as "a most successful event."

Stevens had organized the evening, directing a group of more than 40 chapter members and Community Partners, as well as ACC and Langley representatives. The gala culminated two days of events associated with the Combat Air Forces Airpower Symposium.

The symposium opened with Fraser delivering a welcome on the morning of May 19. Air Force Chief of Staff Gen. Norton A. Schwartz was the symposium's keynote speaker, on video, addressing some 250 attendees.

Gen. Gary L. North, Pacific Air Forces commander; Gen. Roger A. Brady, US Air Forces in Europe commander; and Maj. Gen. Jay H. Lindell, Global Power Programs director in the Air Force acquisition office, moderated panels for this sixth annual symposium.

("Tough issues; great discussion with industry," Fraser tweeted in one of his short messages sent during the symposium's lunch break.)

Chapter members Bob Allison, Vince Wisniewski, and Scott Frazier organized a golf outing as part of the symposium's roster of activities.

Mentors at Palm Springs

Along with the Palm Springs Air Museum in California, the **Palm Springs Chapter** co-hosted the "Gathering of Mentors"—a fly-in of aptly named T-34 training aircraft—in May.

Beech Aircraft-built T-34 Mentors were used for Air Force primary flight training in the 1950s.

The May 7-9 Palm Springs flight exhibitions, formation flights, and contests with the Mentors and other training aircraft took place at the museum, located at the city's airport. Chapter Community Partners were among those receiving incentive rides on the T-34s during the weekend.

Chapter President John L. Hill said he and chapter board member Gene Ramirez took the lead in organizing the behind-the-scenes tasks that make for a successful fly-in: They found motels for the pilots and, with chapter funds, booked a hospitality room and paid for the pilots' incidental expenses.

Derived from the Beech Bonanza, Mentor tandem-seat trainers were also used by other services. "This year," wrote Hill in an e-mail, "we even had an Army T-34 come in from Wisconsin."

The Book on LeMay

The Air Force Chief of Staff recommends it, so why not encourage **Iron Gate Chapter** members to read it?

In New York City, author Warren Kozak was invited to address a chapter luncheon meeting in April, to speak about his book, *LeMay: The Life and Wars of General Curtis LeMay.*

Published last year, the book about USAF's fifth Chief of Staff—and former Strategic Air Command commander—is still gaining fans: The book was added, this April, to the Air Force Chief of Staff's 2010 Reading List.

Kozak had knowledgeable listeners among the Iron Gate Chapter crowd: Ed Whitman told chapter members that he still remembered LeMay's speech on leadership, delivered to Whitman's graduating class at the Air Force Academy 50 years ago. Another chapter member, J. Stanley Holtoner, worked for LeMay as chief of the Aircraft Branch in the R&D directorate at the Pentagon.

Such an audience made for a lively question and answer period following Kozak's talk, said Chapter President Frank Hayes.

On Record

"Madam Speaker," began US Rep. Jeff Miller (R-Fla.) in the House of Representatives on March 25. "I rise today to honor Sandy Palmer upon receiving the Hurlburt Air Force Association Chapter 398's Overall Teacher of the Year Award for 2010."

Miller went on to describe how Palmer, a third-grade teacher at Shalimar (Fla.) Elementary School, incorporates space and aviation topics into her classroom. Thus the **Hurlburt Chapter's** Teacher of the Year, as well as her two fellow finalists, became part of the record—the Congressional Record.

In April, some 40 chapter members and guests gathered for dinner at the club at Hurlburt Field to honor Palmer and the runners-up: Jeff Baugus from Woodlawn Beach Middle School in Gulf Breeze and Amy Davis from Kenwood Elementary School in Fort Walton Beach.

The teachers all received membership in AFA, a cash award, a chapter commemorative coin, a plaque, and a certificate presented by Helen Rigdon, from Miller's office, attesting that their selection as top teachers had been read into the Congressional Record.

In addition, the principals from each school received a US flag that had been flown over the US Capitol.

USAF photo by SSgt. Mike Tryon

Brig. Gen. Everett Thomas (l), Air Force Nuclear Weapons Center commander, and Col. Gregory Tims (r), 90th Missile Wing commander, present SSgt. Millie Gargurevich and SSgt. Christopher Melton with awards sponsored by the Cheyenne Cowboy Chapter.

Photo by Eric Van Gilder

The Palm Springs Chapter helped organize a T-34 fly-in in California. Chapter member Gene Ramirez is at far left; Chapter President John Hill is front row, third from right.

More Chapter News

■ In North Carolina, the **Tarheel Chapter** selected Bob Penny of Sanderson High School in Raleigh as its 2010 Teacher of the Year. A retired Air Force colonel and now a senior aerospace science instructor, Penny caught the group's attention when his AFJROTC cadets earned scholarships worth more than $1.3 million. That includes student Jaron Moore, who reeled in several scholarships totaling some $456,000, including one to Stanford worth more than $177,000.

■ Taking a kind of Tom Sawyer approach, the **Tarheel Chapter** put a group of cadets to work, tasking the AFROTC unit from North Carolina State University with planning the chapter's quarterly meeting. "It's a first," noted Chapter Secretary Joyce Feuerstein. Cadet Zachary Jarvis, who also heads the AFA-affiliated Arnold Air Society group at the school, organized the event, held at the university's coliseum. Lt. Col. Christopher P. Froeschner, the Det. 595 commander, was guest speaker for a presentation about current AFROTC training.

■ The **Leigh Wade Chapter** in Petersburg, Va., announced its Teacher of the Year 2010 at a banquet and ceremony at the county airport in May. Cindy M. Jones of Clover Hill Elementary School in Midlothian was also named Virginia State Teacher of the Year. James White, chapter VP, presented her with $500 and an AFA certificate. Guest speaker Kirk Cox, a state legislator, praised the innovative teaching approaches to science and math taken by Jones and by the chapter's AFA Educator Grant recipients recognized that evening: Nancy Hoover of Lloyd C. Bird High School in Chesterfield, Allison Couillard of J. B. Watkins Elementary School in Midlothian, and Timothy Couillard of James River High School in Midlothian.

■ In Valdosta, Ga., the **South Georgia Chapter** selected as its Teacher of the Year Mimi Wetherington, a third-grade teacher at Lake Park (Ga.) Elementary School. She told Chapter President Nick Lacey, "Year after year, my students leave my classroom proclaiming that they love math and science because I made it fun." Lacey and Dean Failor, chapter VP for aerospace education, presented her with $250, a plaque, and certificate. School Superintendent Steve Smith and School Principal Cathie Felix attended the ceremony, held at a meeting of the Lowndes County Board of Education. A press release about the award and a photo was posted on the school board's Web site.

■ In Texas, **Concho Chapter** President Jim Graham invited AFA Texoma Region President David Dietsch and Texas State President Kelly M. Jones to San Angelo to help chapter members represent AFA at celebrations for Air Force Medal of Honor recipients George

E. "Bud" Day and Leo K. Thorsness. AFA leaders Dietsch, Kelly, and Graham went to Goodfellow Air Force Base in San Angelo, where two visiting officers quarters buildings were dedicated on May 7 in the names of Day and Thorsness. That evening, the AFA guests attended a gala for Day and Thorsness, held at Angelo State University.

■ The AFA National Chaplain, retired Maj. Gen. Donald J. Harlin, has announced his resignation, effective Oct. 1. Appointed to the post in 1998, Harlin said that being AFA's chaplain gave him more satisfaction than any other project he had taken on since retiring from active duty in 1995. Harlin lives in LaGrange, Ga. ■

Reunions

reunions@afa.org

6th BG, Tinian island (1944-45). Sept. 9-12 in Dayton, OH. **Contact:** Bill Webster (651-345-4575) (wbw-ejw@mchsi.com).

11th BG, WWII. Nov. 3-7 at the Best Western Buena Vista Resort in Orlando, FL. **Contact:** Phil Gudenschwager (480-945-9119 or 602-361-7846) (11bga@cox.net).

14th Special Operations/Air Commando Wg, including all AC-47 personnel. Sept. 9-11 in Branson, MO. **Contacts:** Junior Skinner (352-653-7081) or Dale White (970-884-2699).

40th Fighter/Flight Test Sq., all veterans and active duty. Oct. 1-3 at Eglin AFB, FL. **Contact:** Bill Highfield (770-229-4297) (reddevil40@bellsouth.net).

81st FW/FTW (January 1942-December 1993). Nov. 10-14 in Las Vegas. **Contact:** Ken Ward, 4422 Carta Luna St., Las Vegas, NV 89135 (702-804-9301) (janken7616@aol.com).

376th Air Reueling Sq. Sept. 28-30 in Bossier City, LA. **Contact:** Bill Bryan (360-692-3609) (bill77B@gmail. com).

966th Airborne Early Warning & Control Sq. All EC-121 personnel are invited. Oct. 15-17 in Kissimmee, FL. **Contact:** Phil Szymkowicz (503-645-3917) (philszy@verizon.net).

4080th/100th Strategic Recon Wg and support units. Nov. 12-14 in Tucson, AZ. **Contact:** George Barnett (520-749-3982) (gebarnett@aol.com).

AF Security Forces Assn. Oct. 7-9 at the Crowne Plaza Hotel in San Diego. **Contacts:** Jerry Bullock (888-250-9876) or Tom Foster (760-438-0683).

Seeking personnel for **Iceland radar sites and 667th, 932nd, 933rd, 934th AC&W** reunion. **Contact:** William Chick (803-932-9596) (littlechick@msn.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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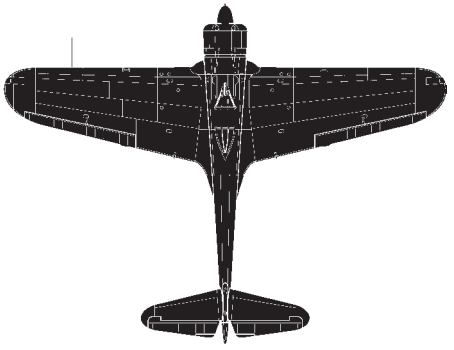
Artwork by Zaur Eylanbekov

Ki-43 Oscar



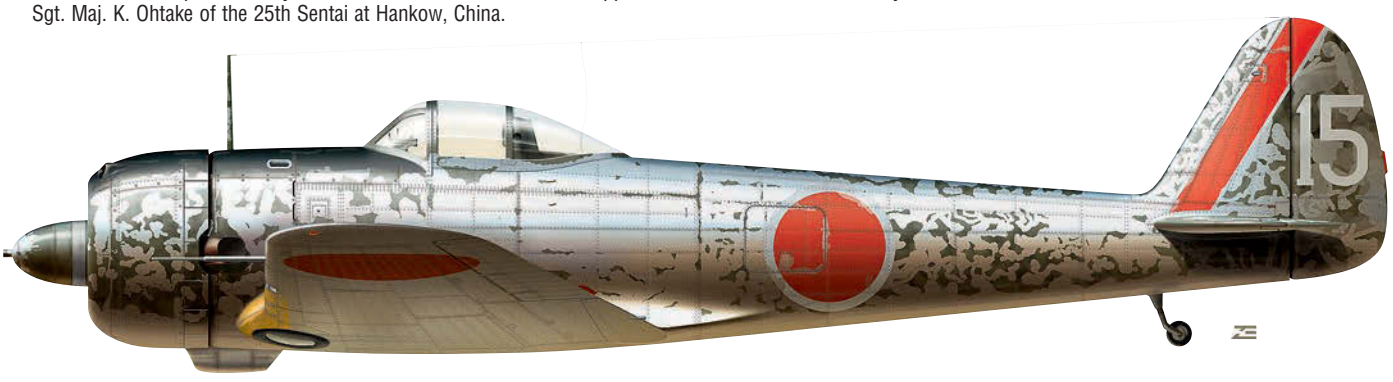
The Ki-43 Hayabusa, called "Oscar" by the World War II Allies, was the primary Imperial Japanese Army Air Force fighter of that conflict—the higher public profile of the Mitsubishi Zero notwithstanding. It was much liked by its pilots, despite inherent weaknesses in its design. It was a tight-turning and swift dogfighter, highly maneuverable, and with an awesome rate of climb. Even so, the Oscar's greatest advantage was its extremely long range.

The Nakajima-built Oscar derived from the earlier and very successful Nakajima Ki-27. Its designers were tasked with almost the same requirements levied on the Zero. The JAAF wanted an airplane that was faster and longer ranged than the Ki-27, with the same degree of maneuverability. The Nakajima response was to reduce weight and drag, resulting in a clean, all-metal, very lightweight fighter that encountered persistent structural difficulties. Attaining the goals set by the government had induced the designers to cut structural weight to the point that many early Ki-43s experienced wrinkled or collapsed wings during high-speed pullout. Massive rework of airplanes already in the field and a redesigned wing for airplanes going into production partially solved this problem.

Still, the airframe of the Hayabusa was never as robust as its American opponents, and was susceptible to destruction from bursts of machine gun fire. The early versions of the fighter did not have rubber-coated self-sealing fuel tanks or armor protection for the pilot. Worse, its armament was limited to variations of two guns mounted in the cowling. This was no match for the concentrated firepower of the typical US fighter.

—Walter J. Boyne

This aircraft: Japanese Army Air Force Ki-43 Oscar—*#15*—as it appeared in late 1943 when flown by Sgt. Maj. K. Ohtake of the 25th Sentai at Hankow, China.



The Oscar is feted by Japanese schoolgirls.

In Brief

Designed by Nakajima ★ built by Nakajima, Tachikawa, and Japanese First Army Air Arsenal ★ first flight January 1939 ★ crew of one ★ number built 5,919 ★ **Specific to Ki-43 II:** one Ha-115 radial engine ★ armament two 12.7 mm machine guns; two 250 kg bombs ★ max speed 329 mph ★ cruise speed 273 mph ★ max range 1,990 mi ★ weight (loaded) 5,710 lb ★ span 35 ft 6 in ★ length 29 ft 3 in ★ height 10 ft 9 in.

Famous Fliers

Top aces: Satoshi Anabuki (39), Isamu Sasaki (38), Yasuhiko Kuroe (30), Chiyoji Saito (28), Goichi Sumino (27), Moritsugu Kanai (26), Isamu Hosono (26), Tomoari Hasegawa (22), Katsuaki Kira (21), Naoharu Shiromoto (21), Saburo Nakamura (20).

Interesting Facts

Nicknamed by Japanese as Hayabusa ("Peregrine Falcon") ★ used after World War II by French air arm against Viet Minh ★ produced more Japanese aces than any airplane ★ served as mainstay of Army's large "Special Attack" (Kamikaze) program ★ flown (with PLA star) over Tiananmen Square in Beijing on Oct. 1, 1949, as Mao Zedong proclaimed People's Republic of China ★ subject of Japanese Army feature film ★ film's song, "The Kato Hayabusa Fighter Wing," found on Japanese karaoke menus.

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