

September 2008/\$4

AIR FORCE

JOURNAL OF THE AIR FORCE ASSOCIATION

MAGAZINE



Airpower by Keith Ferris

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MARCH 1932



Keith Ferris

1. LT. T.M. ROBINSON

4. LT. E. LAWSON

3. LT. G.E. PRICE

2. LT. C.F. FERRELL

AIR FORCE

MAGAZINE



Lt. C. I. Ferris, 1932. Artist Keith Ferris—profiled in “Airpower on Canvas,” p. 52—grew up in Texas, son of an Army pilot. This man is that pilot. Carlisle I. Ferris, flight instructor, appears in several Ferris paintings, including the one on our cover. It depicts eight P-12Bs of the 43rd Pursuit Squadron over Kelly Field in 1932. The man flying the lead aircraft, white-striped No. 2, is none other than Lieutenant Ferris.



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Conventional Un-Wisdom

DEFENSE Secretary Robert M. Gates on July 31 released a new national defense strategy. Not surprisingly, this event generated hardly a ripple in Washington, D.C.'s sluggish pool of summer political chatter.

It was, after all, the Bush Pentagon's third strategy. In 2001, after the Sept. 11 attacks, then-Pentagon head Donald H. Rumsfeld unveiled his first. He issued the second in 2005. This one comes very late in an Administration, turning off media interest.

The Gates strategy, though, bears closer scrutiny. From all appearances, its main purpose is to exalt irregular warfare above more-traditional "conventional" missions. Gates clearly hopes it influences the next Administration. If it does, USAF's forces, programs, and concepts could be affected.

The 23-page document lays out four striking assertions about the threat posed today by Muslim extremist irregulars.

- It's the No. 1 peril. The paper warns that "violent extremist movements such as al Qaeda and its associates" confront the US with an "urgent challenge," as did fascism and communism in the 20th century. "Winning the long war," it goes on, is the nation's "central objective."

- It's more than two wars. "Iraq and Afghanistan remain the central fronts in the struggle," notes the strategy. However, it adds that the US faces "an extended series of campaigns." Success in Iraq and Afghanistan—alone—"will not bring victory."

- It will last many years. The paper says we are fighting "a long-term, episodic, multifront, and multidimensional conflict." Our security situation is "defined" by this peril and will be "for the foreseeable future."

- US forces aren't ready. The task of "improving the US armed forces' proficiency in irregular warfare" is the "top priority" of the Pentagon, it says. It adds, "We must display a mastery of irregular warfare."

Few would oppose building more capability to confront this threat—particularly ISR systems, unmanned air vehicles, tactical airlifters, gunships, and the like. Yet what about conventional forces—fighters, warships, and

other weapons that have dominated the battlespace for decades? Don't they need to be modernized? Won't they ever be needed?

"US predominance in traditional warfare is not unchallenged," concedes the strategy paper, "but is sustainable for the medium term." The services can "assume greater risk" there, claims the paper.

It is notable that the strategy does not refer to being able to fight two more-or-less simultaneous major regional

The strategists have peered into the future and have seen no need to worry much about state-on-state war.

wars. That has been the US force-sizing standard for nearly 20 years.

What does this all mean? The strategy paper does not exactly ignore possible big-power conflict; it raises some muted concerns about a dynamic China and a rearing Russia, along with Iran and North Korea. Yet Gates says, "I firmly believe" the US military is "much more likely" to face irregular foes.

The spirit expressed by the strategists is plain; they have peered into the future and have seen no need to worry much about state-on-state war—the kind that can extinguish a nation or perhaps some major allies.

The paper observes that the Pentagon will hedge its bets on conventional warfare, to a certain extent, with "diversification parallelism"—defined as "developing alternative or parallel means to the same end." This evidently does not mean buying more weaponry.

A different picture, however, emerges from senior uniformed leaders, who see what may be described as the "least-likely-war fallacy" at work here. This means a failure to understand that some wars become "least likely" for a reason—the US has made itself so powerful that no one dares to mount a challenge.

Even the strategy paper concedes US conventional dominance is what has forced foes into irregular war in the first place. That is hardly an argument for soft-pedaling your dominance.

The four military service Chiefs reportedly opposed critical portions of the defense strategy. According to the June 19 issue of *Inside the Pentagon*, a trade publication, the four Chiefs "non-concurred," warning that the strategy posed "too much risk" by de-emphasizing the conventional in favor of preparations for more Iraq-like missions. Gates went ahead anyway.

Retired Air Force Lt. Gen. James R. Clapper Jr., undersecretary of defense for intelligence, told a conference audience that the US may be missing the development of serious threats. "I personally worry about China," he said. "I worry about a resurgent Russia."

Similar reservations have been voiced by many senior uniformed leaders over the past year.

Some in the Pentagon act—and write—as if the world will never see another traditional, force-on-force war. Given the dangers of guessing wrong, one might ask: How the devil do they know?

"Historically, we haven't been very good about predicting the future," Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, told a Washington audience. "You can go back to many of the conflicts that we have been in, and there weren't many people who had predicted we would be in whatever that conflict was."

Indeed, the human record of political prognostication is not unblemished. Take, for example, the infamous July 1936 prediction of Stanley Baldwin, Britain's Prime Minister, regarding Hitler's intentions. "We all know the German desire ... to move East," said he. "I do not believe he wants to move West, because West would be a very difficult program for him." Four years later came the blitzkrieg, fall of France, and Battle of Britain.

It is not crying wolf to say that humans have not seen the end of state-on-state warfare or that we might one day be glad to have the right numbers and kinds of weapons and forces for fighting it. Focusing on the current irregular wars, and assuming future wars will more or less resemble them, is surely unwise.

This is an analytical weakness of the first order. Call it "this-war-it-is."



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The Post-June 5 Air Force

"Decapitation" was the appropriate term to describe the ouster of Secretary Michael W. Wynne and Gen. T. Michael Moseley [*"Editorial: The Post-June 5 Air Force," July, p. 2*]. Mr. Dudley simply and candidly stated what many blue-suiters, including myself, have suspected since Defense Secretary [Robert M.] Gates abruptly fired both Wynne and Moseley—that rarely does an infraction such as the "B-52 nukes" issue result in the termination of the top echelon of USAF leadership. I personally applaud both Wynne and Moseley for "staying the course" and remaining loyal by defending, and acting in the best interests of, USAF during their tenure. It seems clear, in this case, that DOD and this Administration definitely do not want to hear about the continuing and dire shortages of both personnel and aging weapons systems (that they created!) and that USAF is currently experiencing. What does the American public have to say about this "evisceration" of their USAF? Probably not much, as most are clueless. However, they *should* be seriously concerned and moved to action. And, while there has always been friendly rivalry between the respective services, this ill-timed action by Secretary Gates must also send an ominous message to the top leadership of the Army, Navy, and Marine Corps to either keep your collective mouths shut, or take a hike.

MSgt. Randolph E. Whitmire,
USAF (Ret.)
Rochester, Minn.

Bets Down on Lightning II

I was disappointed, but not surprised, that the discussion of the F-35 [*"Bets Down on Lightning II," July, p. 24*] never mentioned the Air Force's rationale for not procuring any short takeoff/vertical landing (STOVL) F-35Bs, despite its supposed emphasis on expeditionary capabilities. It appears that the Air Force, by procuring the conventional takeoff and landing (CTOL) F-35A, prefers maximizing the F-35's airborne performance in the form of range over providing more flexible takeoff and landing perfor-

mance because of a seriously flawed requirements process. This process seems to be relying on recent experience where there has been no major threat to our bases and both basing and air refueling have been readily available. In doing so, the process seems to be ignoring both what more ancient history and recent technical developments in precision might tell us about the validity of assumptions regarding future basing availability and operability.

For example, looking at ancient history, during the early months of the Korean War, General Partridge often commented in his diary on the important roles basing availability and operability played in the effectiveness of Fifth Air Force's operations. The importance of basing explains why many units were converted from higher performance F-80s to F-51s that had the ability to operate from primitive fields. Regarding technical developments—imagine what a modern Salty Demo (the Cold War exercise) might reveal about future air base operability against a threat employing precision guided munitions.

Lt. Col. Price T. Bingham,
USAF (Ret.)
Melbourne, Fla.

The Gates Case

[*In reference to "The Gates Case," July, p. 30, and the "Nuclear Wake-Up Call," June, p. 50*]: Gen. Curtis LeMay, the father of America's premier nuclear Air Force, has to be turning over in

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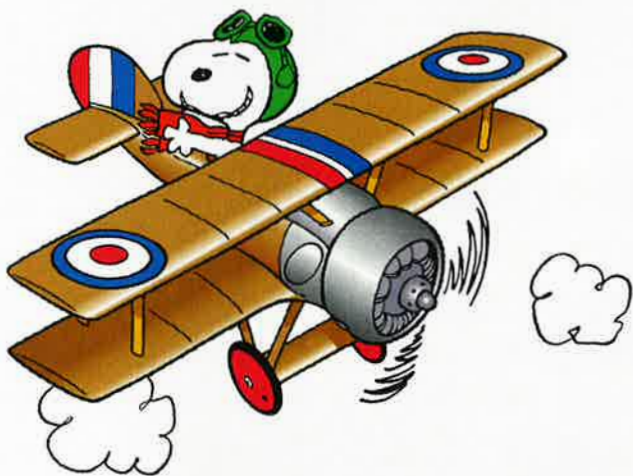
his grave after the nuclear handling incidents recently committed by the Air Force. Under LeMay's leadership, the United States Air Force established the nation's first and most potent deterrent to nuclear and conventional wars, a nuclear alert force that stood ready to defend America and her allies 365/24/7. Tireless practice and frequent inspections under dedicated leadership at all levels were the keys to maintaining that deterrence. The focused leadership from the top down ensured success was rewarded and failure was career ending. This was not a touchy-feely Air Force. The security of the nation and the Free World was at stake.

What's gone wrong since then? Despite the leadership of [former] Air Force Chief of Staff Gen. T. Michael Moseley and [former] Secretary of the Air Force Michael Wynne across a host of key national defense issues, it was their, and their predecessors', failure to place the required emphasis on the Air Force's nuclear mission that led to these nuclear incidents. Evidence of General Moseley's and Secretary Wynne's culpability in the current state of the Air Force's nuclear capability can be found in their failure to immediately fire and replace the wing commander and the other officers and senior NCOs in the chain of command at Minot AFB,

N.D., after the missing warheads were discovered. It's one thing to initiate an investigation and wring hands waiting for the recommendations. But the loss of control of not just one, but six live nuclear warheads required immediate, sweeping, and public action. As further proof that immediate and painful actions were required, the Minot wing failed their follow-up Nuclear Surety Inspection (NSI) this past spring, due in large part to lackadaisical security measures at the lowest levels.

Secretary Gates has stated the decline in attention to the Air Force's nuclear mission began about 10 years ago. I suggest the decay started in 1991. In that year, senior Air Force leadership made several contributing decisions. First, Strategic Air Command was broken up and subordinated to the new Air Combat Command, which viewed the nuclear mission as tertiary to air superiority and the conventional air-to-ground roles. Second, all nuclear alert aircraft worldwide stood down, which led to the evaporation of operational nuclear experience. Third, the nuclear weapon maintenance and handling career fields were reorganized, eliminating technical specialties specifically charged with nuclear weapon duties while shifting those duties to already overtasked general munitions troops.

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Fourth, the Directorate of Special Weapons, the Air Force agency for nuclear weapons logistics support, was disbanded, the remnants reorganized with a significantly reduced staff and commodity management given to the huge Defense Logistics Agency—an organization without the rigorous nuclear experience to manage our weapons. Finally, unit nuclear inspections became preannounced and routine, leading to complacency. These actions led to a decline in experience and loss of focus on the nuclear mission. It will be up to our new senior leaders, Gen. Norton Schwartz and Secretary Michael Donley, to refocus attention and devise the actions to ensure the safety and efficiency of our nuclear forces into the future.

Lt. Col. Adlai Breger,
USAF (Ret.)
O'Fallon, Ill.

Counterinsurgency

I read with interest Phillip Meilinger's "Counterinsurgency From Above" in the July issue [p. 36]. While his air-power credentials are impeccable, this effort is not up to his usual high standards.

Meilinger's assertion "you are bet-

ter off avoiding [COIN]" may be true, but is also irrelevant. US military force has been used over 300 times in our history, with only 11 declared wars and a few more conventional conflicts. While we may recommend against getting involved in other nations' internal wars, it's not the military's call. History shows we must be ready and able for a full range of challenges—to include assisting nations with internal conflicts. For more on these "next wars," I'd recommend the RAND study "Ungoverned Territories," available online.

A call to break the boots-on-the-ground and occupation-of-territory mind-set completely misses the point of counterinsurgency. COIN is all about controlling the population up close—a small unit, small arms, cop-on-the-corner conflict. What Meilinger missed is that it's local authority that must do the controlling with its own boots. The preponderance of US boots in Iraq and Afghanistan is the consequence of our destruction of the previous regimes and the extended time it has taken to build local authority.

The issue of legitimacy is complex, but Meilinger did not advance the discussion. Legitimacy is not a one-way street but the major point of contention

in an insurgency—the goal of both the insurgents and the local government. Meilinger's biggest legerd, "Success in COIN requires boots on the ground and occupation of territory," misstates a COIN fundamental. Success in COIN requires the local government be able to put boots on the ground to occupy and control its own territory, the de facto standard of government legitimacy. Whether that control is coercive or freely granted by the population is a detail. The \$604 billion we have spent in Iraq is the cost of both an interim occupation and our efforts to build an Iraqi government that can replace US forces in controlling Iraq's population and territory. We are paying for our tardiness in recognizing the need to get local security in place.

Col. John Jogerst,
USAF (Ret.)
Navarre, Fla.

Phillip S. Meilinger has posited a supposedly "outside-the-box" analyses that is really more "in" than "out." He commits the intellectual sin that he had just condemned—service-oriented parochialism. Mr. Meilinger's proposition merely exchanges "boots on the ground" for "boots in the air."

Although there may be much to criticize about the tactics and strategy employed in the Afghanistan and Iraq wars—and in every war since 1776, for that matter—the fact remains that the insurgents in both wars could not be rooted out by indigenous forces for the simple reason that those forces did not exist. Nor would F-16s or F-22s have been able to root out the insurgents in Sadr City, for example. Those indigenous forces are now materializing after a hefty investment of troops, treasure, and training by US, British, and other allied forces.

What Meilinger should have said was that the entire Department of Defense's current structure, roles, missions, and strategy are wedded to the last century. Service Chiefs and senior planners are still primarily service-oriented and not primarily mission-oriented. [Former DOD] Secretary Donald Rumsfeld attempted to wrestle the services into the new century, but was met with strong resistance. The department is long overdue for a redefinition of its 1948 foundation. Only after a realistic assessment of the threats facing the nation and world in the 21st century can a proper mix of military resources and capabilities be achieved. When future combat commanders need to act, they should have boots on the ground, boots in the air, boots in

space, and boots on the oceans at their disposal and under their direct command. Current unified commands are a step in the right direction, but what is needed is not "unity," but full integration of forces.

Lt. Col. Bill Getz,
USAF (Ret.)
Burlingame, Calif.

Not Turboprops

The July edition of *Air Force Magazine* report on "Tankers Through the Years" was well done [p. 40]. The description of the KB-50 on p. 43 and p. 45 needs a minor correction. The KB-50 was powered by four P&W R-4360 radial piston engines (not turboprops) and two jet engines.

R. Don Anderson
Poquoson, Va.

Regarding p. 42, photo No. 1: The KC-97 was not a variation of the B-29 and B-50. The KC-97 Stratotanker was an aerial refueling tanker variant of the C-97 Stratofreighter, greatly modified with all the necessary tanks, plumbing, and "flying boom." The cavernous upper deck was capable of accommodating oversize cargo accessed through a very large left-side door, or transferrable jet fuel was contained in tanks on the lower deck. Both decks were heated and pressurized for high altitude operations.

Regarding p. 47 photo 5: On 5 November 1965, USAF announced that it would purchase a version of the A-7, designated the A-7D, for Tactical Air Command. The Air Force ordered the A-7D with a fixed high speed refueling receptacle behind the pilot optimized for the KC-135's flying boom rather than the folding long probe of Navy aircraft. The photo shows refueling using the boom and not a basket for the probe.

MSgt. Jerry Reichenbach,
USAF (Ret.)
Little Rock, Ark.

The Big B

About a statement in [*The Big B*, July, p. 58] under the heading "USAAF's Biggest Raid," Ms. Grant writes: "The biggest USAAF raid on Berlin took place just a few months before the end of the war. On Feb. 3, 1945, almost 1,000 American B-17s hit Berlin in clear weather." I strongly doubt that all of the almost 1,000 bombers were B-17s. The B-24s were an integral part of Eighth Air Force and we often went to the same targets. In fact, when we were in the air over England putting our formations together before heading out over the North Sea, B-17s and B-24s were in the same general area. If there is documentation that all of the bombers over Berlin on Feb. 3,

1945 were in fact B-17s, I will certainly withdraw my comments.

Lt. Col. Robert W. Hansen,
USAF (Ret.)
Wrightstown, N.J.

■ According to the Office of Air Force History's *The Army Air Forces in World War II*, Volume Three, p. 725: "The mission took place on 3 February 1945. Nearly 1,000 Fortresses flew to Berlin while 400 Liberators simultaneously attacked railway and oil targets around Magdeburg."—THE EDITORS

AFSO21 Progress Report

In the article entitled "AFSO21 Progress Report" [July, p. 64], the first picture seen is of SrA. Scott Rodrigues working on the tail hook assembly of an F-15 in an unsafe manner. The caption states that the inspection was streamlined by seven days as part of AFSO21. Increasing efficiency should be on the mind of every aircraft maintainer. I spent my entire career in aircraft maintenance, retiring after 33 years as a 13-year chief, and I had the honor to work with hundreds of airmen who truly believed that there were better and more efficient ways to perform quite a number of their tasks. The one thing that remains foremost in my mind, which was stressed on a daily basis regardless of where I was working,

was safety first. Whether this photo was staged or not, Rodrigues is shown working on an aircraft while wearing his wedding ring. I have witnessed, and I am sure that all maintainers have been briefed on, the results of wearing jewelry while working on an aircraft. This photo hopefully does not represent a trend toward disregarding basic aircraft maintenance practices in the pursuit of saving time.

CMSgt. Craig B. Bergman,
USAF (Ret.)
Tucson, Ariz.

Classics

What an immense nostalgic pleasure it was to see the Lancaster featured in "Airpower Classics" [June, p. 80]. Helping build that wonderful airplane amidst the trials of nightly bombings and daily Heinkel incendiary attacks was accepted as part of the fight for the freedom of the British way of life.

At the start of World War II as the recipient of a college scholarship and as a requirement of my deferment of military service, I was obligated to spend three days at college and three days in industry. Due to satisfactory grades in the Air Cadets, I was assigned to work in the design office at A. V. Roe in Chadderton near my hometown of Manchester.

On my eight-foot-long drafting board I worked on the drawings of the new

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Lancaster 683, and I remember well that bright, cold, sunny Thursday morning in January 1941, when it was to be test flown from the Avro aerodrome in the beautiful village of Woodford in Cheshire.

As your article states, it was a redesign of the Manchester 679 and had a similar tail comprising dorsal tail fin as well as slightly increased fins and rudders at the tips of the 20-foot-span tailplane. The Lancaster 683 was number BT 308. For the record, it was piloted by Sam Brown and Bill Thorn, recognized always by their white overalls. My youthful memory remembers that (Sir) Roy Chadwick, the chief designer, took his beautiful daughter Margaret to see this memorable flight. She, as were many of the young draftsmen, was in her late teens and worked in the Chadderton plant. The romantic aspirations of many of us were dashed when she disappointed us all by her later marriage.

My Lancaster contribution, although quite small was in the quick-release dinghy stowed in the starboard wing as an escape after ditching in the sea. The prototype mock-up of the wing portion containing the dinghy was set up in the cafeteria and the panel was detonated and jettisoned, allowing the dinghy to automatically inflate so that the crew could occupy and use the automated radio which was operated by a battery activated by seawater. The success of this unique addition to the bomber subsequently saved many valuable experienced airmen.

There is one flying Lancaster in Hamilton, Ontario, and a second one is being refurbished in Toronto.

At my advanced age, it is certainly refreshing to know that the endeavors of the designers and builders, coupled with the valor, bravery, and courage of those who flew, are recognized and remembered. Another reason we need an Air Force Association.

Wallace R. Walsh
Etobicoke, Ontario, Canada

Both/And, Not Either/Or?

The Air Force may choose to procure both the KC-30 and the KC-767, because Northrop Grumman will likely protest should the tanker contract award be reversed to Boeing [*"Tanker Endgame," June, p. 30, and "Air Force World: Federal Auditors Side With Protest of KC-X Award," July, p. 12*]. The production of the two types should be staggered with the Boeing KC-767 going first. If [there is] no KC-767 contract, the 767 production line will shut down after the UPS and the TNT

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767-300ERFs are delivered. Airbus and Northrop Grumman should be encouraged to bring the A330-200F assembly to Mobile with a multiyear contract to provide KC-30s after civilian A330-200F deliveries. The contract would require price adjustments for labor and material costs in Europe and the USA when KC-30 deliveries start.

The main strength of the KC-30

over the KC-767 is its cargo volume. The KC-30 should be based on the A330-200F and not the A330-200 passenger aircraft. What good is its cargo carrying potential without the -200F's reinforced cargo floor and the repositioning of the nose gear to level the cargo floor? Should loading crews have to push heavy 463L pallets uphill? Airbus and Northrop Grumman should

have an established A330-200F assembly line in Mobile before a contract for KC-30s is activated.

After all the KC-135Rs and KC-10As have been retired, I would prefer a tanker fleet of KC-767 and KC-777. The KC-30 requires a lot of infrastructure upgrades over a small gain over the KC-767 in capability, 250,000 vs. 200,000 pounds total fuel. The KC-30's 250,000-pound fuel capacity is nowhere near the KC-10's 365,000-pound fuel capacity and the KC-30 is dimensionally larger than the KC-10.

The KC-777 can carry 450,000 pounds of fuel. There is a limit to how many KC-777s the Air Force can effectively use. There are many places that the KC-777 will have to limit its fuel load, due to bearing strength of taxiways and runways. I estimate the Air Force could effectively use 100 to 150 KC-777s after the KC-10s are retired.

The Air Force should determine the following in order then procure them in reverse order:

How many KC-777-sized tankers can the Air Force effectively use? How many KC-30s can the Air Force beddown with reasonable infrastructure cost? And how many KC-767s are required to fill out the total tanker requirement?

Col. David A. Carlson,
USAF (Ret.)
Dundee, Fla.

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Donley and Schwartz step up; F-22 gets some love; Why not do both?

WASHINGTON, D.C., Aug. 21, 2008

The New Team's Charter

Restoring the Air Force's credibility in nuclear and acquisition endeavors and finding some way to stop the decline of the service's aircraft fleet are the top priorities for Michael B. Donley and Gen. Norton A. Schwartz. The two were nominated to be the new Secretary of the Air Force and Chief of Staff of the Air Force, respectively.

They would be stepping into the jobs vacated by Michael W. Wynne and Gen. T. Michael Moseley, who on June 5 resigned under pressure exerted by Secretary of Defense Robert M. Gates. Gates claimed he sacked Wynne and Moseley for lapses in the Air Force's handling of nuclear weapons, although Wynne subsequently asserted that policy disputes with Gates had also been a major reason for the ouster.

Testifying July 22 before the Senate Armed Services Committee at their confirmation hearing, Donley and Schwartz both noted that they take their new posts under difficult circumstances, and have their work cut out for them.

"I believe the most urgent tasks for the new leadership are to steady this great institution, restore its inner confidence and your confidence in the leadership team, and rebuild our external credibility," Donley told the SASC.

He added that, since the time of his appointment as Acting Secretary, he had been busy developing a get-well plan to deal with what some perceived as the Air Force's laxness in handling nuclear weapons and related materials. He pledged to have, by the end of September, a new "roadmap" for the nuclear enterprise, one that will incorporate recommendations from a separate and parallel Pentagon-sponsored review headed by former Defense and Energy Secretary James R. Schlesinger.

Donley also pledged full support to Pentagon acquisition, technology, and logistics chief John J. Young Jr.'s effort to, as quickly as possible, re-compete the KC-X tanker contract and apply the relevant "lessons learned" within the Air Force to avoid the problems that caused the Government Accountability Office to set aside the service's award of the project to Northrop Grumman.

Donley declared it essential to "strengthen confidence in the Air Force and DOD's capability to manage these large, complex competitions and successfully withstand contractor protests," especially since more big programs, such as the 2018 bomber project, are coming up in the near future.

He doesn't think the Air Force's acquisition system is "fatally flawed," and advised against radical changes for their own sake.

"My experience in this area is that we do not throw the whole thing overboard and start over," he asserted. He later said that there are no "silver bullets" in fixing programs that get over budget and behind schedule, except to focus on "basic blocking and tackling" of going by the rules and making sure everything is done correctly.

Schwartz said he believes the Air Force "is still fundamentally a healthy organization," and assured the SASC that "we will be ready if called upon." He promised that Air Force leaders will be "good stewards" of the resources placed in their hands and put "protection of our nation and support of our joint warfighters" as his top priorities.

Donley is a career defense technocrat with experience on the professional staff of the SASC, and he even served briefly



Schwartz (l) and Donley at their July confirmation hearing.

as Acting Secretary of the Air Force in 1993. Schwartz is a career special operations pilot, with extensive experience in joint assignments. He would be the first Chief of Staff who has not piloted fighters or bombers.

Donley said that even before he became Acting Secretary, the Air Force had put in motion "over 100 individual actions" to correct deficiencies in the nuclear mission which were highlighted in two incidents: the unintentional movement of live nuclear missiles from Minot AFB, N.D., to Barksdale AFB, La., and the mis-shipment of nuclear missile components to Taiwan. The two incidents, he said, "are evidence of some deeper systemic issues" that he promised to address. Donley's review will encompass training, procurement, personnel, leadership, doctrine, and sustainment of the nuclear enterprise, and he promised to reveal any punishment for those involved in the Taiwan incident by the end of August.

Tackling the Fighter Shortage

Although Moseley was fired, in part, for pushing the Air Force's long-held requirement of 381 F-22s versus the Administration's wish to quit the program at 183 airplanes, Schwartz quickly stated his preference to keep the program going.

"I believe that 183 is not the ceiling on the low end, but that 381 is too high on the high end. So, yes, I think we should preserve production at least for the near term," Schwartz said in response to queries from SASC chairman Sen. Carl Levin (D-Mich.). Levin wanted to know if buying more F-35s would be "the best way" to solve USAF's impending fighter shortfalls.



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Buying the F-35 would be the major way of addressing those deficits, Schwartz said, adding that the "key strategy" for success is to increase the Air Force's planned annual buy of F-35s from 48 "to as high as 110 per year."

However, he said the F-22 is "an essential part of the force mix." While some still see it as simply an air-to-air platform, Schwartz noted, "it has important capability for destruction of enemy air defenses in an era when surface-to-air missile threats are available from the commercial market and are increasingly lethal." He acknowledged that various studies have pegged the appropriate F-22 inventory as somewhere between 183 and 381, and pledged that, if confirmed, he would "delve deeply into that analysis" and return with his "best recommendation" on how to proceed.

The longest-lead producers of F-22 components will run out of work this fall, and the production line will begin to shut down at that point. Gates has said the next Administration should decide the fate of the F-22, and has left F-22 funding for 2009 available for either continued production or shutdown costs.

Donley, however, said it is his priority to get "bridge funding" to keep the F-22 line going so that the next Administration will have enough time to come to a reasoned choice on further production of the fighter.

"If we delay a decision on the future of F-22 too far into next year or even late next year, and we have not provided for this bridge funding, then it'll be almost a cold start for many of the [second tier] suppliers," Donley said in response to questions from Sen. Saxby Chambliss (R-Ga.).

"That would be a more expensive option for restarting the line. ... So I'm focused for the next few months on getting the bridge funding in place," Donley said.

In answers to questions for the record, provided to the SASC before the hearing, Schwartz said the Pentagon's budget guidance for the future years defense program beginning in Fiscal Year 2010 "authorized an approximately \$5 billion boost for our recapitalization efforts, and that will certainly help." He noted that the extra money "will be used in part to increase the F-35's annual production rate." Without such a funding boost, Schwartz noted that the average age of USAF aircraft, now at 24 years, will increase to 27 years by 2020. The service's goal, though, is to "reduce that average age to 15 years by 2030." To hold at just the current age, Schwartz said, USAF would have to buy 165 aircraft per year, but the Fiscal 2009 budget provides only for 115 aircraft per year, and most of those are unmanned aerial vehicles. Donley said that ratio probably would continue for the foreseeable future.

This War, and the Next

The Air Force shouldn't be compelled to choose between conducting the current wars in Southwest Asia or preparing for future conflict, but must be allowed to do both, Schwartz argued.

Asked by Sen. Daniel K. Akaka (D-Hawaii) to comment on how the Air Force should focus its resources, Schwartz maintained, "Fundamentally, I do not believe it is an either/or condition. ... The United States Air Force, like the other services, needs to be a full-spectrum capability." Schwartz said, "At the moment, ... our focus, obviously, is in Iraq and Afghanistan. And we have provided the kinds of capabilities on which the ground forces ... depend: lift, resupply, strike, intelligence, surveillance, and reconnaissance, even evacuation of the wounded." He noted that USAF people are involved in provincial reconstruction, ground convoys, and running detention facilities.

"The bottom line, Senator, is that we as an Air Force can provide both the kind of concentrated effort required by the joint team in Central Command today and posture ourselves for future potential adversaries at the same time."

Recapitalization is a huge challenge, Donley said, and



Schwartz would keep building it.

needed in several different mission areas—not just fighters, but tankers, tactical airlift, and search and rescue.

"We need more resources to get it all done," Donley said, but quickly added, "I have been in this town for 30 years, and we always live in a resource-constrained environment, where we have to make these trade-offs, and we are not always able to choose and implement the most effective acquisition profile for every program at the same time."

Donley said he would investigate "trade-offs" between mission areas such as strike and ISR, since he believes there could be synergy between the two. He also advised the SASC that USAF will not be able to look at any one program in isolation, but in the way it fits with all other aspects of the force. Schwartz concurred that this approach should be taken.

"We're developing comprehensive capabilities—systems of systems—not just one airframe at a time," Donley said.

"We have a smaller Air Force than we had in the past, and in most cases it's more capable," Donley said in response to Sen. James M. Inhofe (R-Okla.), who had pointed out that both China and Russia have launched programs to develop their own versions of an F-22-like fighter.

"But I share your concern to keep an eye on potential threats that might develop around the world. Technology continues to move abroad both in Russia and China in ways that we need to be attentive to," Donley said.


Schwartz said that the F-35 and 2018 bomber are both necessary. The F-35 is needed to maintain broad pressure on an enemy, while the bomber is required if close-in bases aren't available for fighters.

Schwartz told Sen. John R. Thune (R-S.D.) that the Air Force still plans for the new bomber to be ready for duty in 2018, "and if that is physically achievable, we will do so."

When it was pointed out by Sen. Bill Nelson (D-Fla.) that Russia is considering using Cuba as a staging area for bombers, Schwartz said such a move would be very dangerous.

"I certainly would offer best military advice that we should engage the Russians not to pursue that approach," Schwartz asserted. "And if they did, I think we should stand strong and indicate that that is something that crosses a threshold, crosses a red line, for the United States of America." ■

Persistent Awareness

A large MQ-9 Reaper drone is shown in flight against a cloudy sky. The drone is white with a large sensor pod mounted on its nose. It is carrying several missiles and a cluster of bombs under its wings. The background is a dramatic sky with dark clouds and a bright light source, possibly the sun, creating a silhouette effect on the ground below.

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Six Perish in B-52 Crash

A B-52H bomber assigned to the 2nd Bomb Wing at Barksdale AFB, La., crashed July 21 off the northwest coast of Guam during a training mission, claiming the lives of six airmen—five aircrew from Barksdale and a flight surgeon from Andersen AFB, Guam.

The deceased airmen are: Col. George Martin, flight surgeon; Maj. Christopher M. Cooper, 33, aircraft commander; Maj. Brent D. Williams, 37, navigator; Capt. Michael K. Dodson, 31, copilot; 1st Lt. Joshua D. Shepherd, 26, navigator; and 1st Lt. Robert D. Gerren, 32, electronic warfare officer. Martin was deputy commander of 36th Medical Group.

The mishap aircraft, which had no munitions aboard, was one of nine Barksdale B-52s that deployed to Guam in June for a four-month rotational stint

to maintain the continual US bomber presence in the region.

McKinley To Head Guard Bureau

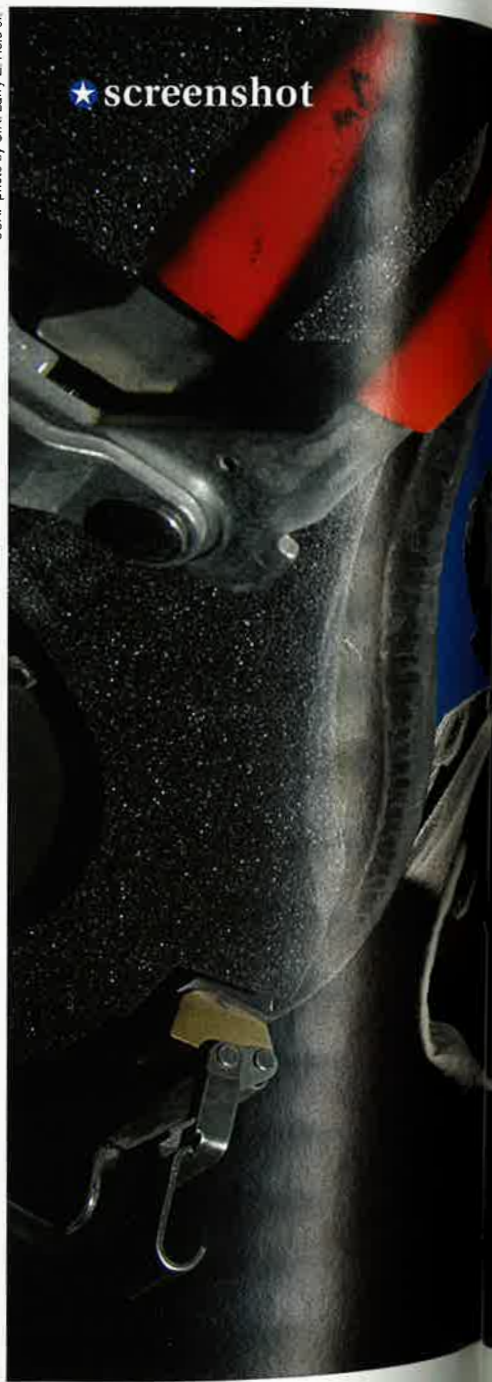
Defense Secretary Robert M. Gates on July 16 recommended to the White House that Air Force Lt. Gen. Craig R. McKinley, director of the Air National Guard, be the next chief of the National Guard Bureau.

"General McKinley is well-qualified for this important and historic assignment," Gates said during a press briefing on that day. McKinley would be the first officer to lead the National Guard as a four-star general based on a provision in the 2008 defense authorization act.

McKinley has led the Air Guard since May 2006 and has served in the Air Force for 34 years. He would replace Army Lt. Gen. Steven H. Blum as NGB chief.

USAF photo by S/A. Larry E. Reid Jr.

★ screenshot



DOD Aims To Keep Oversight of Military Space

Undersecretary of Defense John J. Young Jr., the Pentagon's acquisition czar, said in July that he intends to retain oversight authority over military space programs, rather than turning them back to the Air Force.

However, Acting Air Force Secretary Michael B. Donley said later that same month he would like to see USAF regain that role "at the earliest opportunity."

Appearing before a House subcommittee on July 10, Young said, "I fundamentally disagree that a single service should have the total acquisition decision authority and milestone authority for a set of programs, as was done in space, and I would intend to retain acquisition authority over space programs."

The 2001 Rumsfeld space commission recommended that the Air Force assume the role of executive agent for military space as one of many changes across the Defense Department to place a greater emphasis on space. The move was subsequently adopted by the Rumsfeld Pentagon, and the Air Force executed this role until March 2005 when the Office of the Secretary of Defense assumed control over all of the Air Force's big-ticket weapons programs, including the space portfolio, during a USAF leadership vacuum.

At that time, several of the space projects, such as the Space Based Infrared System early warning satellite program, were beset by cost overruns, performance issues, and schedule delays. While the nonspace programs were returned to USAF oversight in January 2006, the space portfolio was never relinquished to its control.

But Donley, in a written statement prepared for his Senate confirmation hearing on July 22 to be Air Force Secretary, said the service "should be taking steps internally to raise confidence in its ability to manage space programs" so it could regain the executive agent role.

Airmen Awarded Bronze Star Medals

SSgt. Dean Conner, a combat controller with the 23rd Special Tactics Squadron at Hurlburt Field, Fla., received two Bronze Star Medals, one with Valor Device, on July 21 for his actions while deployed to Southwest Asia. He received the Valor Device for a mission in which he was knocked unconscious from the impact of a rocket-propelled grenade, but then regained consciousness and returned fire, keeping the enemy from surround-

ing his team, and directed air strikes onto enemy locations.

SSgt. Joshua Andrews, a joint terminal attack controller with the 14th Air Support Operations Squadron at Pope AFB, N.C., received a Bronze Star Medal with Valor Device on July 3 for his actions in Iraq. Andrews controlled more than 30 combat aircraft during 36 hours of an operation and, even when wounded, he braved enemy fire to help move wounded to evacuation aircraft and continued controlling combat aircraft.

Three other airmen with the 14th ASOS—TSgt. Warren Williams, SSgt. George Earhart, and SSgt. James Spreter—also received Bronze Star Medals on July 3 for their actions in Southwest Asia.

USAF To Open Nuclear Summit

The Air Force said in July that it intends to convene a summit later this month to plot the way ahead to reinvigorate its nuclear mission. The summit will convene sometime after



08.11.2008

At remote Creech AFB, Nev., A1C Jordan Gogov, 99th Security Forces Squadron, stands guard during a convoy operations training session. The 99th Security Forces Ground Combat Training Squadron at Creech dispenses the so-called Joint Base Balad training curriculum, a new 45-day course created to help prepare Air Force security personnel to embed with Army forces in Iraq and take over many of the Army's "outside-the-wire" responsibilities at Balad.

the nuclear task force that Acting Secretary Michel B. Donley created on June 30 concludes its work in crafting a "roadmap for rebuilding" USAF's tarnished nuclear enterprise. Donley gave the task force 90 days to issue its final product.

The task force will also support the work of the independent review group that Defense Secretary Robert M. Gates established in early June to look into organizational, procedural, and policy improvements across DOD's entire nuclear enterprise.

F-22s Train at Guam

Five F-22s from the 90th Fighter Squadron at Elmendorf AFB, Alaska, arrived at Andersen AFB, Guam, on July 20 for two weeks of training and exercises with other USAF assets in the region. A maintenance issue with one F-22 prevented the unit from deploying six aircraft as originally planned.

This was the first time that Pacific Air Forces-assigned Raptors were forward based in the Pacific Theater, but was the second time overall that F-22s have appeared in the region. In February 2007, F-22s from the 27th FS at Langley AFB, Va., deployed to Kadena AB, Japan, for several months.

Donley Delays Maintenance Shift

Acting Air Force Secretary Michael B. Donley decided to delay the realignment of maintenance units for fighter,



USAF photo by SrA. Chad Strohmeyer

After 37 Years, General Moseley Calls It a Career

Gen. T. Michael Moseley, Chief of Staff since September 2005, formally retired from the Air Force on July 11 after 37 years of service. He was the 18th CSAF in the service's history.

"We lose a participant, a creator, and a valuable member of today's Air Force," former USAF Secretary Michael W. Wynne said during Moseley's retirement ceremony at Bolling AFB, D.C. Wynne presented Moseley with the Distinguished Service Medal.

"It was a real treat and honor to work with Mr. Wynne and fight the good fight for what was best for the US Air Force," Moseley said in his final address. "Every day, at every opportunity, I always felt we were working with the best interests of the republic, doing what was right for America."

Moseley's official retirement date was Aug. 1. He and Wynne had tendered their resignations on June 5 at the urging of Defense Secretary Robert M. Gates over what Gates said was his dissatisfaction with the Air Force's stewardship of nuclear weapons.

But not everyone has accepted Gates' rationale. For example, Rep. Cliff Stearns (R-Fla.), a member of the Congressional Air Force Caucus, gave a speech on the House floor July 16 claiming that the real reason for Gates' action was over "disagreements on the strategic defense" of the nation.

Wynne and Moseley, he said, were not content "with simply toeing the line for today," but were instead "pushing hard" to prepare for tomorrow's potential conflicts, a "sacred duty" of military leadership, which Gates, however, has "disparagingly" referred to as "next-war-itis," Stearns said.

Indeed Wynne and Moseley are owed "a debt of gratitude" for all they did to help win today's fight and posture the nation for the future.

Flight Check: SrA. Mario Almaraz, 35th Fighter Wing aircraft maintenance squadron, checks in with an F-16 pilot at Misawa AB, Japan. The 35th Fighter Wing conducts daily F-16 flight training in demanding Pacific combat scenarios.

bomber, and rescue aircraft into their respective flying squadrons, pending additional review, the Air Force announced July 2.

USAF originally announced the initiative in May as a means of enhancing warfighter capability by allowing the units to train as they would fight. Its implementation was set to commence on July 1 and be complete by Nov. 30. But Donley put off the move to have the opportunity "to discuss the appropriateness and timeliness of these changes with Air Force senior leaders," said service spokeswoman Vicki Stein. As of late July, the issue was still under review.

Airmen Battle Fires

The 302nd Air Expeditionary Group, an amalgam of Air National Guard and Air Force Reserve Command assets and airmen from Colorado, North Caro-

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Weapons School UAV Courses Postponed

Just days before they were to begin, the Air Force in June placed its unmanned aerial vehicle weapons instructor course at its Weapons School at Nellis AFB, Nev., on hold for six months, or perhaps a year.

The service had intended to begin the first UAV instructor course at the school in January—after completing a validation course this year—and start churning out an elite crop of instructors well steeped in tactics and capabilities. But instead, it is pressing every available operator, including instructors, back into an operational console seat at nearby Creech Air Force Base in Indian Springs, Nev., to provide additional intelligence-surveillance-reconnaissance capability over Southwest Asia, per direction of Defense Secretary Robert M. Gates.

While the Weapons School course is on hold, the basic schoolhouse at Creech remains open, and is receiving an influx of pilots through USAF's Transformational Aircrew Management Initiatives for the 21st Century.

UAV operators at Creech remain under a freeze on permanent change of station movements that is keeping them in place. In an effort to mitigate the stresses on them and others at Creech—still a very bare bones base—the Air Force on July 17 authorized assignment incentive pay.

"Today's ISR is a fast-moving ballgame," said Maj. Joe Campo, operations director for the provisional Weapons School UAV squadron. But building expertise has been difficult because most UAV operators have served "one-off" tours before returning to other aircraft.

lina, and Wyoming, began operations on June 26 out of McClellan Airfield near Sacramento, Calif., to help battle raging wildfires in that state.

The unit flew eight specially modified C-130s, each fitted with tanks to allow them to drop 3,000 gallons of fire retardant on the flames in one mission. The 302nd AEG also included Navy and Marine Corps helicopters equipped with water buckets.

Bucket-carrying HH-60G Pave Hawk helicopters of the California ANG's 129th Rescue Wing at Moffett Federal Field chipped in. The wing received its firefighting certification July 2, becoming USAF's first rescue unit so qualified.

Airmen Receive DFCs

Capt. Brian Erickson, an A-10 pilot with the 75th Fighter Squadron at Moody AFB, Ga., received the Distinguished Flying Cross with Valor Device on July 11. He earned the honor for providing close air support under hazardous conditions to help save the lives of six members of a German provincial reconstruction team that came under insurgent attack in a Hindu Kush mountain range valley of Afghanistan on Oct. 16, 2006. He was deployed to Bagram Air Base at the time.

In addition to Erickson, Maj. David Torraca (now retired), Capt. Timothy Hood, and SSgt. J. H. Smith, crew members of an AC-130 gunship of the 4th Special Operations Squadron at Hurlburt Field, Fla., each received the DFC on June 20 for their actions in supporting Navy SEALs during a mission in Iraq on Sept. 12, 2007. Their AC-130 provided protective fire so that the SEAL team could evacuate three of its members wounded in a firefight with insurgents.

NATO Nations Sign C-17 Accord

The United States on June 11 signed a memorandum of understanding that establishes the NATO Strategic Airlift Capability program, under which 15 nations, including 13 NATO countries and partners Finland and Sweden, will jointly operate three C-17s transports out of Papa AB, Hungary, starting with the first aircraft before the end of the year.


The US is providing one C-17, and the partner nations are purchasing the two remaining aircraft under a foreign military sales arrangement. Current planning calls for delivery of the first C-17 in November and for having the second and third aircraft in place in early and mid-2009, respectively.

Air Force, Army Discuss UAVs

Senior Air Force and Army leaders met at Langley AFB, Va., on June 30

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USAF photo by Capt. Patrick Nichols

Gen. Robert T. Herres, 1932-2008



Retired USAF Gen. Robert T. Herres, who in 1985 became the first commander of United States Space Command, died July 24 at age 75. Herres also had served as the first vice chairman of the Joint Chiefs of Staff.

Herres was born in Denver. He attended the US Naval Academy in Annapolis, Md., but, after graduation, chose a commission in the Air Force because he saw a better chance at flying duty. He became a pilot of F-86 fighters, then served as an air electronics maintenance officer and later as a technical intelligence analyst. He taught at Air University before going to test pilot school at Edwards AFB, Calif.

As a test pilot with a master's degree in electrical engineering and experience in technical intelligence, Herres was a natural to be selected, in 1967, as a military astronaut in the Manned Orbiting Laboratory program. The MOL was canceled in 1969 when it was decided that unmanned satellites could perform the same function at less cost.

Herres declined an offer to join NASA and returned to his Air Force career. He served in the Vietnam War, commanding the 310th Strategic Wing at U Tapao RTAB, Thailand, in 1973. After jobs at Strategic Air Command and Air Force Systems Command, he took over Air Force Communications Command in 1979. Two years later he became commander of 8th Air Force. He then took charge of North American Aerospace Defense Command (NORAD) and Air Force Space Command in 1984. When US Space Command was formed in 1985, Herres was well-suited to the job.

In 1986, the Goldwater-Nichols legislation created the post of vice chairman of the Joint Chiefs of Staff. Herres was chosen as the first vice chairman; the Chairman under whom he served was Adm. William J. Crowe Jr. Crowe recommended Herres as his successor, but President George H. W. Bush chose Army Gen. Colin L. Powell, and Herres stayed on in his post.

Herres retired from the military in February 1990, after 36 years of service. He soon joined USAA, the San Antonio-based insurance and financial services company, and rose to become its chairman of the board.

Herres is survived by his wife of 51 years, Shirley Snecker Herres, and three children.

—John A. Tirpak

Last Blast: The last 15,000-pound BLU-82 detonates at the Utah Test and Training Range. A 919th Special Operations Wing Combat Talon dropped the munition. For decades, the BLU-82, also known as a Daisy Cutter, was the largest conventional bomb in the US inventory.

to discuss a new concept of operations for the employment of unmanned aerial vehicles in combat.

At the meeting, the services signed a memorandum that formalized ongoing changes to employ UAV capabilities for battlefield support.

Korean War Pilot Identified

The remains of Capt. William K. Mauldin of Pickens, S.C., an Air Force pilot with the 45th Tactical Reconnaissance Squadron who had been missing since the crash of his RF-51 Mustang in February 1952 during the Korean War, have been identified, the Department of Defense announced July 3.

Mauldin departed Kimpo AB, South Korea, on Feb. 21, 1952, on an aerial reconnaissance mission over North Korea; he was shot down during the mission and crashed near Sinan-ri. His remains were identified from among the 208 boxes of human remains turned over by North Korea between 1991 and 1994.

Guard Units Get New Missions

The Illinois Air National Guard's 183rd Fighter Wing at Springfield was assigned two new nonflying missions on June 30. The unit will stand up an air and space operations center designated as the 183rd Air Operations

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Operation Iraqi Freedom—Iraq

Casualties

By Aug. 19, a total of 4,147 Americans had died in Operation Iraqi Freedom. The total includes 4,136 troops and 11 Department of Defense civilians. Of these deaths, 3,370 were killed in action with the enemy, while 777 died in noncombat incidents.

There have been 30,561 troops wounded in action during Operation Iraqi Freedom. This number includes 17,082 who were wounded and returned to duty within 72 hours and 13,479 who were unable to return to duty quickly.

Reapers Begin Iraq Operations

The MQ-9 Reaper unmanned aerial vehicle, which has been used in combat over Afghanistan since September 2007, began operating in Iraq on July 18, the Air Force said. The Reaper offers increased weapons capability and larger intelligence-surveillance-reconnaissance payload than its smaller cousin, the much-in-demand MQ-1 Predator.

The MQ-9 provides the capability to react with precision weapons "at the exact point where the ground commander wants the desired effect," stated Lt. Gen. Gary L. North, commander of US Air Forces Central and commander of 9th Air Force, in a USAF release on July 22. Since its inception in combat, Reapers have flown some 480 sorties for more than 3,800 hours, the release said.

Operation Enduring Freedom—Afghanistan

Casualties

By Aug. 16, a total of 573 Americans had died in Operation Enduring Freedom. The total includes 572 troops and one Department of Defense civilian. Of these deaths, 364 were killed in action with the enemy, while 209 died in noncombat incidents.

There have been 2,379 troops wounded in action during OEF. This number includes 872 who were wounded and returned to duty within 72 hours and 1,507 who were unable to return to duty quickly.

Close Air Support Pivotal in Battle of Wanat

A massive frontal attack on a remote US outpost in Northeastern Afghanistan near the border with Pakistan was beaten back on July 13 after troops and air support battled with upward of 200 Taliban fighters attempting to overrun the position.

Taliban elements infiltrated the area around the base, partially by hiding out in the nearby village of Wanat, which is in Kunar Province. The assault began early in the morning as Taliban fighters opened up on the outpost and nearby observation post with a barrage of rocket-propelled grenades and small-arms fire from two directions.

Ground forces called in air support, which came in the form of Air Force A-10s, F-15Es, a B-1B, and an MQ-1 unmanned aerial vehicle. The B-1B dropped several 500-pound and 2,000-pound Joint Direct Attack Munitions onto the attacking forces and their positions. A-10s made multiple passes firing 30 mm cannon rounds and dropping a 500-pound JDAM and general-purpose bomb on attackers as well.

The MQ-1 fired a Hellfire missile at the Taliban in the vicinity, while F-15Es performed a show of force to deter activities. Nearly four hours after the initial attack, the Taliban forces retreated.

Taliban elements suffered heavy losses in the fight. Nine US troops were killed in the attack, the highest single loss of life in an incident in the Near East nation since June 2005.

Group and a centralized intermediate repair facility for the General Electric F110 engine. The engine facility will support five ANG F-16 flying units across the country.

Under BRAC 2005, the wing is scheduled to relinquish its F-16s before the end of the year—even though

Illinois Gov. Rod R. Blagojevich has been resisting the loss of the aircraft mission. Conversion to the new roles will begin in Fiscal 2009; both should be fully operational two years later.

NORAD Moves Scrutinized

Rep. Ike Skelton (D-Mo.) and Rep.

Duncan Hunter (R-Calif.), chairman and ranking minority member of the House Armed Services Committee, respectively, introduced an amendment in July to the Fiscal 2009 defense authorization bill that would block further transfer of NORAD functions out of Cheyenne Mountain AFS, Colo., until there is more analysis.

In a July 2 letter to Secretary of Defense Robert M. Gates, Skelton and Hunter called on Gates to "thoroughly review the additional costs and the resultant vulnerabilities" stemming from the move into a new joint command center with US Northern Command that opened in May at nearby Peterson AFB, Colo. Based on a briefing they received from the Government Accountability Office, the two lawmakers said the relocation "may jeopardize the nation's ability to respond to a wide range of threats."

F-22 Costs Estimated

The estimated costs of procuring an additional 75 F-22 stealth fighters beyond the Air Force's current 183 aircraft program of record would vary between \$13.7 billion and \$19 billion out to Fiscal 2016, depending on which of three production schedules USAF chose, according to a RAND study completed in June.

RAND found that continuing F-22 production uninterrupted beyond the last aircraft currently under contract at rates of 20 aircraft per year in Fiscal 2010, 2011, and 2012, and then 15 in 2013, would be the most affordable scenario, costing \$13.7 billion, with an average unit flyaway cost of \$145 million.

The next option, warm production (i.e., continuing production but at a reduced rate), would cost \$17.7 billion, with a flyaway cost of \$170 million. The third option is the most expensive at \$19 billion, with a unit flyaway cost of \$200 million, because it entails shutting down Raptor production for two years and then restarting the line.

Mobile VIP Workspaces Sought

The Air Force announced in mid-July that it is purchasing two types of removable mobile command work spaces for use by military and senior civilian leaders traveling aboard mobility aircraft to austere or hostile locations.

The first model is the Senior Leaders In-transit Conference Capsule, an enclosed pod with work and rest areas that can be equipped with secure communications. The second module is the Senior Leaders In-transit Pallet that features a lighted conference table with reclining chairs.

The service came under some fire on Capitol Hill after press reports por-

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trayed the work spaces as a luxurious acquisition for VIPs that the Air Force had at first attempted to buy with War on Terror funds.

USAF countered that these modules are needed to ease the burden on the service's heavily taxed VIP transport fleet for shuttling members of Congress and senior members of the Administration and the Pentagon to the war zones and enabling them to be productive during the journey.

USAF Buys Missiles, Decoys

The Air Force awarded Lockheed Martin a \$107 million contract in June for the seventh production lot of the Joint Air-to-Surface Standoff Missile. This lot covers 111 missiles, which brings USAF's order to date to 1,053 missiles of the total 4,900 planned.

This is the first contract award since the national security importance of the JASSM program was recertified to Congress in May after a thorough Office of the Secretary of Defense-led review.

In July, Raytheon's Miniature Air-Launched Decoy received approval for low rate initial production. Raytheon said it expects to build 150 of the radar spoofing weapons in the first production lot. The Air Force wants to have MALD assets ready to use by the end of 2009 on aircraft such as the F-16 and B-52H.

Maintenance Bidder Fights On

Alabama Aircraft Industries Inc. (formerly Pemco Aviation) filed a lawsuit in federal claims court in late June challenging the Air Force's decision to award a \$1.1 billion depot mainte-

Robert C. Seamans Jr., 1918-2008



Robert C. Seamans Jr., a gifted technologist-administrator who served as the ninth Secretary of the Air Force and oversaw the development of many systems which are still in front-line service, died on June 28 at his home in Massachusetts. He was 89.

During his tenure at USAF, Seamans oversaw the development of the F-15 fighter and the E-3 AWACS airborne command and control system, set requirements for the B-1 bomber, launched the program which led to the A-10 attack aircraft, and chose the finalists in the Lightweight Fighter competition. That program eventually yielded the F-16

and F/A-18 fighters now serving in the Air Force and Navy, and in more than 30 allied nations around the world.

Born in 1918, Seamans earned an engineering degree from Harvard in 1939 and a master's in aeronautics from MIT in 1942. By 1951, he had earned a doctorate in guidance and instrumentation, also from MIT, where he taught throughout the 1950s. During that period, he also became an advisor to the Navy, Air Force, and NASA, and worked for RCA and the Navy as a program manager on guidance systems for missiles, aircraft, and spacecraft. He also served on the Air Force's Scientific Advisory Board from 1957 to 1967.

He was recruited to be Secretary of the Air Force in 1969 by Melvin R. Laird, Secretary of Defense under the newly elected president, Richard M. Nixon. Seamans originally planned to stay only two years in the job, but served four years because he wanted to put major programs such as the F-15, C-5, B-1, and F-111 on a more sound footing.

In addition, Seamans undertook a reform of Air Force personnel policies and ushered in the era of the all-volunteer force.

Seamans fell out of favor with the Nixon White House for his view—stated internally in the Administration—that the US should withdraw from the Vietnam War with all deliberate speed. He also made headlines when he acknowledged that he had not been consulted on or informed of operations such as the Cambodian bombing campaign of 1969-70.

Upon stepping down as Air Force Secretary in 1973, Seamans became head of the National Academy of Engineering. In 1978 Seamans returned to MIT and soon thereafter became its dean of the School of Engineering.

Seamans is survived by his wife of 66 years, Eugenia Merrill Seamans of Massachusetts, their five children, 11 grandchildren, and two great-grandchildren.

—John A. Tirpak

USAF photo by ATC Courtney Witt



Raptor Again: Two USAF F-22s shoot through the sky above Andersen AFB, Guam, in July operations. This is the second time Raptors have been deployed to the Pacific Theater.

nance contract for the KC-135 tanker fleet to Boeing.

The move came after the Government Accountability Office in mid-June rejected the company's most recent protest over USAF's September 2007 award to Boeing. GAO first sustained a portion of AAI's protest issues, but later sided with the service, after which USAF lifted its stop-work order on Boeing.

Jammer Work Goes Forward

The Air Force Research Lab awarded Boeing a \$14.9 million contract in June to mature standoff jamming technologies for the service's Core Component Jammer concept. Boeing and principal industrial partner Northrop Grumman



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Senior Staff Changes

RETIREMENTS: Lt. Gen. Charles E. **Croom Jr.**, Maj. Gen. Stephen M. **Goldfein**.

NOMINATIONS: To be General: William M. **Fraser III**. **To be Major General:** Lawrence A. **Stutzriem**.

CHANGES: Brig. Gen. Salvatore A. **Angelella**, from Dep. Dir., Strat. Planning & Policy, PACOM, Camp H. M. Smith, Hawaii, to Vice Cmdr., 5th AF, Yokota AB, Japan ... Brig. Gen. (sel.) Samuel D. **Cox**, from Dir., AF General Officer Mgmt., DCS, Manpower, Personnel, & Svcs., USAF, Pentagon, to Commandant of Cadets, USAFA, Colo. ... Brig. Gen. Susan Y. **Desjardins**, from Commandant of Cadets, USAFA, Colo., to Dep. Dir., Strat. Plans, Rqmts., & Prgms., AMC, Scott AFB, Ill. ... Brig. Gen. Richard T. **Devereaux**, from Cmdr., 82nd Tng. Wg., AETC, Sheppard AFB, Tex., to Dir., Intel. and Air, Space, & Info. Ops., AETC, Randolph AFB, Tex. ... Brig. Gen. Mark A. **Ediger**, from Command Surgeon, AETC, Randolph AFB, Tex., to Cmdr., AF Medical Ops. Agency, Lackland-Kelly AFB, Tex. ... Brig. Gen. Barbara J. **Faulkenberry**, from Dep. Dir., Strat. Plans, Rqmts., & Prgms., AMC, Scott AFB, Ill., to Cmdr., 15th Expeditionary Mobility Task Force, AMC, Travis AFB, Calif. ... Gen. (sel.) William M. **Fraser III**, from Asst. to the CJCS, Pentagon, to Vice C/S, USAF, Pentagon ... Maj. Gen. Irving L. Halter Jr., from Cmdr., 19th AF, AETC, Randolph AFB, Tex., to Vice Dir., Ops., Jt. Staff, Pentagon ... Brig. Gen. John W. **Hesterman III**, from Cmdr., 48th FW, USAF, RAF Lakenheath, UK, to Dep. Dir., Politico-Mil. Affairs (Europe), Jt. Staff, Pentagon ... Gen. (sel.) Donald J. **Hoffman**, from Mil. Dep., Office of the Asst. SECAF for Acq., Pentagon, to Cmdr., AFMC, Wright-Patterson AFB, Ohio ... Lt. Gen. (sel.) Larry D. **James**, from Vice Cmdr., 5th AF, Yokota AB, Japan, to Cmdr., 14th AF, AFSPC, Vandenberg AFB, Calif. ... Gen. Duncan J. **McNabb**, from Vice C/S, USAF, Pentagon, to Cmdr., TRANSCOM, Scott AFB, Ill. ... Maj. Gen. Anthony F. **Przybylski**, from Dir., Intel. and Air, Space, & Info. Ops., AETC, Randolph AFB, Tex., to Vice Cmdr., AETC, Randolph AFB, Tex. ... Lt. Gen. (sel.) Jeffrey A. **Remington**, from Dir., Ops., Plans, Rqmts., & Prgms., PACAF, Hickam AFB, Hawaii, to Cmdr., 7th AF, PACAF, Osan AB, South Korea ... Brig. Gen. Lori J. **Robinson**, from Cmdr., 552nd Air Control Wg., Tinker AFB, Okla., to Dep. Dir., Force Application, Jt. Staff, Pentagon ... Gen. Norton A. **Schwartz**, from Cmdr., TRANSCOM, Scott AFB, Ill., to C/S, USAF, Pentagon ... Lt. Gen. William A. **Shelton**, from Cmdr., 14th AF, AFSPC, Vandenberg AFB, Calif., to Chief, Warfighting Integration, & Chief Info. Officer, OSAF, Pentagon.

COMMAND CHIEF MASTER SERGEANT CHANGE: CMSgt. Robert **Tappana**, to AETC, Randolph AFB, Tex. •

will conduct engineering studies over the next three years focused on integrating powerful jamming pods on the wingtips of the B-52H bomber.

The B-52H has been designated as the demonstration airframe for the CCJ capability. The demonstration is notionally planned for 2011-12 after the initial three-year technology maturation effort. The Air Force envisions deployment of an operational system in the middle of next decade on the B-52H or perhaps a different platform.

Kaiserslautern Problems Linger

The Air Force has made significant

improvements in its oversight of the Kaiserslautern Military Community Center project in Germany, but there are still problems with the complex's schedule, construction quality, and costs, service and outside officials said during a House oversight hearing June 25.

Maj. Gen. Marc E. Rogers, vice commander of US Air Forces in Europe, said the service has created a Resident Director's Office with a staff of 29 to oversee the project, but the real changes to resolve the issues must come from the German state entity charged with construction. The failure on the part of this state agency to overcome manage-

ment failures led USAF to ratchet up the issue to the federal level, enlisting the help of the US Embassy in Berlin, he said.

Government Accountability Office analysts said the total costs could rise above \$200 million, some \$80 million higher than originally projected.

RAND Hits T&E Consolidation

The Air Force should re-examine its plans to consolidate its test and evaluation infrastructure because some of the proposed changes would shutter facilities with unique capabilities, causing the service to sacrifice "high quality" T&E functions and place strains on the remaining assets, RAND concluded in a cost benefit analysis issued in late June.

Air Force Materiel Command in 2006 proposed the changes, which included the merger of the 46th Test Wing at Eglin AFB, Fla., with the 412th Test Wing at Edwards AFB, Calif., and the closure of additional facilities as a means of purportedly saving hundreds of millions of dollars. But RAND says, for example, that while the merger of the two wings at Edwards, in fact, could yield substantial savings in personnel costs, it "involves a fair amount of risk."

Laser Shootdown Moving Forward

All of the technical capabilities for the Airborne Laser have been proved on the ground, and the program is planning a live shootdown in 2009, Air Force Lt. Gen. Henry A. Obering III, outgoing Missile Defense Agency director, told reporters July 15.

Afterward, the effort will go into a "transition period" during which MDA officials plan to examine the lessons learned from the testing phase and simultaneously look at how to manufacture components more easily and more cost efficiently since operational costs are threatening the program's future.

"All of that data and knowledge will go into [deciding] what ... the next tail number will look like," Obering said. ■

News Notes

■ Gen. William R. Looney III stepped down as commander of Air Education and Training Command on July 2 and retired from the Air Force after 36 years of service. Gen. Stephen R. Lorenz succeeded him.

■ On June 30, two F-16s from the 20th Fighter Wing at Shaw AFB, S.C., flew the milestone 50,000th sortie for the Continental US NORAD Region as part of Operation Noble Eagle.

■ The F-22 made its first appearance over Britain in July, performing at the Royal International Air Tattoo at RAF

Fairford in Gloucestershire on July 12 and July 13 and at the Farnborough International Air Show outside of London on July 14.

■ USAF and its British, French, and German counterparts on June 27 held a memorial ceremony at the Berlin Airlift Memorial at Tempelhof Airport in Berlin. They commemorated 78 Allied airmen who died during the 15-month airlift in 1948-49.

■ Lt. Gen. William L. Shelton was nominated on July 10 to be the new chief of warfighting integration on the

Air Force Secretariat as well as USAF's chief information officer.

■ Beale AFB, Calif., home to the Air Force's RQ-4 Global Hawk unmanned aerial vehicle fleet, received its first Global Hawk Block 20 air vehicle on June 30.

■ The pilot's loss of consciousness of the pilot from high G forces during a high speed turning maneuver caused the fatal crash of an F-16C fighter aircraft northwest of Luke AFB, Ariz., during a training mission on March 14, investigators announced in July. ■

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Fighter Generations

In 2004 mock combat exercises, Indian Air Force pilots flying Russian-made Su-30s unexpectedly waxed USAF pilots flying front-line F-15Cs. This rumble on the subcontinent was a matchup of two "fourth generation" warplanes. The outcome jolted the Americans; it revealed they no longer had technological superiority.

One year later, USAF's "fifth generation" F-22 Raptor—an agile, stealthy, radically new aircraft—entered operational service. We mean no disrespect by saying that, should the Indians today send their Su-30s against it, their excellent fighter pilots wouldn't stand a chance.

Air dominance is like a cut flower—it can fade quickly. The Cope India exercises taught many lessons—about the importance of good training and tactics, about the need to avoid underestimating your adversary. Here's another: If you are fighting outnumbered, you'd better have the superior aircraft.

Because of the enormous stakes, it is important to understand the practical significance of the difference in fighter generations.

The exact list of capabilities and aircraft belonging to each generation is debatable; the classification refers only to jet-powered fighters. Use of the generations helps to demarcate technological advances and capabilities that emerge worldwide at around the same time.

■ Gen 1. This category comprised the earliest jet fighters. Classic cases were Germany's Me 262 and Britain's Meteor, both of which entered service in 1944 toward the end of World War II, and the US F-80, which came along the next year. The hallmark of the Gen 1 fighter was its revolutionary advance in speed over its piston-engine predecessors.

■ Gen 2. Second generation fighters starred in the Korean War. Most notable were the USAF F-86 and the Soviet MiG-15. According to Walter J. Boyne, writing in Lockheed Martin's *Code One* magazine, this generation "sought to maximize fighter performance by tailoring the airframe to the potential of the jet engine." Example: the use of highly swept wings.

■ Gen 3. State of the art in the late 1950s and early 1960s, fighters of the third generation included USAF's "Century Series" fighters—F-10C, F-101, F-102, F-104, F-105, F-106—and the Soviet MiG-17 and MiG-21. They featured advanced missiles, supersonic speed, and more-sophisticated engines. The F-4 Phantom was a late Gen 3 fighter, and perhaps iconic of the group.

■ Gen 4. These fighters debuted in the mid-1970s and are still tops in most of the world. This group includes USAF's F-15 and F-16 and Russia's Su-27 and MiG-29 (and offshoots). Weapons, engines, and avionics put earlier aircraft to shame. Thirty years of improvements have pushed some fighters into a group known as "Generation 4.5." These include the latest F-15s and F-16s for overseas customers, and the MiG-35, Su-30, and Eurofighter Typhoon.



The F-22 and F-80 represent Gen 5 and Gen 1.

Illustration by Lockheed Martin and Zaur Eylanbekov

■ Gen 5. The class is defined by all-aspect stealth, internal carriage of precision weapons, active electronically scanned array (AESA) radars, and "plug and play" electronics. There is only one member—the F-22. The F-35 Lightning II will join the club when it goes operational in a few years. No Russian Gen 5 fighter is at hand, it is thought.

What about a Gen 6? This class is on the drawing board, but won't be available for decades. It could feature hypersonic speed, dual-mode engines, and adaptive shapes.

Some still issue calls for the Pentagon to continue buying legacy Gen 4 aircraft. Sen. Christopher S. Bond (R-Mo.) has called the F-15 Eagle a "very viable alternative to the F-22." The F-15 is assembled by Boeing in Bond's home state.

Just last year, the Congressional Budget Office presented several "budget options" for Congress. One was to cancel the F-35 and buy more F-16s and F/A-18s instead. CBO wrote that "new F-16 and F/A-18 aircraft—with upgraded radar systems, precision weapons, and digital communications—will be sufficiently advanced to meet the threats the nation is likely to face in the foreseeable future."

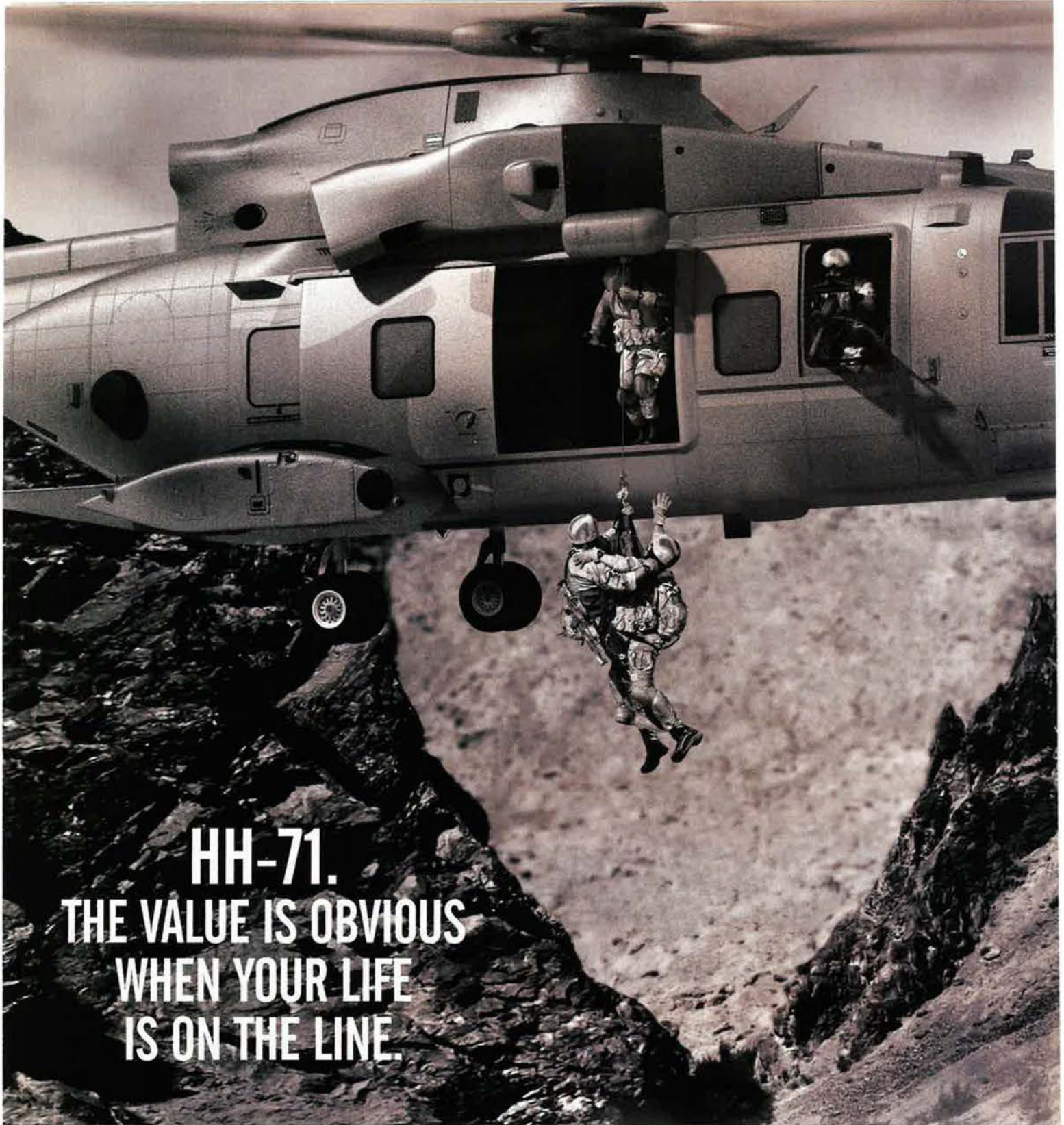
That is, in a word, bogus. Later generation aircraft are far superior to previous generation fighters. The early returns from F-22 visits at Red Flag and Northern Edge exercises bear this out. The Raptors easily cleared the skies of Gen 4 fighters. Congress has gone so far as to ban foreign F-22 sales, even to longtime allies.

Allies will be able to buy the F-35. Until the F-35 taxis out onto some foreign runway, though, the US has a unique advantage—no other nation has a fifth generation aircraft.

In the 1980s and 1990s, the F-15 was the world's dominant fighter, with unprecedented success in aerial combat. The years of advantage for Gen 4 fighters have passed, however. The Gen 4.5 machines are making it difficult for them.

The Air Force desperately needs to replace its oldest F-15s and F-16s with something better than what the opposition can buy. For the next few years, the F-22 is the only option. ■

More information: http://www.codeonemagazine.com/archives/2005/articles/oct_05/gap/index.html



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The All-Seeing Air Force



Sophisticated networks and tactics have turned ISR into an “in-your-face” asset for America’s combat forces.

By Rebecca Grant

Not long ago, the task of gathering and processing intelligence was generally viewed as a staff function carried out in support of operational commanders. The terms “surveillance” and “reconnaissance,” meanwhile, still conjured up images of spyglasses and Jeb Stuart’s Civil War cavalry movements.

Now, however, the three functions have been fused into the hybrid known as ISR, a capability seen by many as perhaps the top Air Force contribution to the Global War on Terrorism. In less than a decade, ISR has vaulted to this lofty position on the strength of sophisticated networks and new tactics

that have created an in-your-face asset for America’s combat forces.

ISR now encompasses activities of numerous fixed-wing and space-based sensors, plus the cyberspace networks that link these platforms together.

How good is today’s ISR system? Fighters such as the F-16 now routinely use their sensors not only for weapon targeting but also for surveillance. Lt. Gen. Gary L. North, commander of US Air Forces Central, told the *National Journal* not long ago, “We literally have pilots now walking ground forces through cornfields and backyards, telling them where insurgents are hiding.”

Indeed, these nontraditional ISR mis-

sions—known as NTISR—have become a staple for fighters in today’s war zones.

“ISR has never been more important during our 60 years as an independent service,” said USAF Gen. T. Michael Moseley in 2007, when he was the Air Force Chief of Staff. “ISR has become the foundation of global vigilance, reach, and power.”

Intelligence-surveillance-reconnaissance efforts today “make up the vast majority of the operations required to achieve our security objectives,” Lt. Gen. David A. Deptula, deputy chief of staff for ISR on the Air Staff, wrote in a recent article for *Air and Space Power Journal*.

with making intelligence an integrated function.

Prominence has also stirred up controversy. Open conflicts between the Air Force and Army over medium- and high-altitude UAVs grabbed headlines in 2007. The dispute was part of the reason why the House Armed Services Committee voted to order a roles and missions review in 2008.

But it is Secretary of Defense Robert M. Gates who has taken the most prominent shots at the Air Force's ISR efforts.

Teeth-Puller Story

Gates, who served briefly as an intelligence officer for a Minuteman ICBM wing in 1967, butted heads with the Air Force over its lack of interest in funding a UAV with the CIA as far back as 1992. He's consistently explained that he wants the services to focus on today's war.

In April, he acknowledged tremendous increases in ISR, but made clear it wasn't enough.

"I've been wrestling for months to get more intelligence, surveillance, and reconnaissance assets into the theater," Gates told students and faculty at the Air War College in April. "Because people were stuck in old ways of doing business, it's been like

pulling teeth. While we've doubled this capability in recent months, it is still not good enough," Gates concluded.

To that end, he commissioned a task force to find ways to rush more ISR assets to Central Command and subsequently requested \$240 million more from a war supplemental to move things along.

"I just found that the only way to get a lot of these things that are high priority that we need into theater now is for me to take ownership of the problem and galvanize the department," Gates added in May.

Air Force training and deployment of Predator crews is at the heart of the matter, but the bigger issue is how ISR moved from a supporting function to a roles and missions flashpoint.

It all began inside the Air Force with a renaissance of tactics, technology, and platforms in the 1990s.

In the Cold War, a static enemy put the emphasis on long, measured collection of data on the order of battle. Detailed photographic intelligence such as that delivered by the U-2 was particularly prized both by combat forces and intelligence officials building national policy. Electronic and signals intelligence was important, too, and led to the development of dedicated platforms such as the RB-47.

A U-2 in flight. Right: TSgt. Donnavon Huss puts ISR into action as he directs an F-16 during a live-drop mission.

ISR has come a long way, and fast. When a US-led coalition launched ground operations in Iraq in March 2003, it did so with just nine Predator UAVs in theater. Today, a force of 76 Predators sustains 25 full-time orbits over US Central Command's hotspots and the number is set to grow.

Welcome to ISR, the Air Force's dominant new mission area.

While airmen have long performed intelligence-surveillance-reconnaissance functions, it has only been in recent years that ISR has risen to the status of a true mission area.

A 2006 Air Force summit led to the stand-up of the Air Staff's new A2 organization, the first unit to be charged



USAF photo, 14th Air Support Operations Squadron



An E-3 AWACS in flight. At the beginning of Iraqi Freedom, aircraft such as this one helped give US forces greater situational awareness than in any war in history.

These and other aircraft of the Cold War flew daring and difficult missions to capture the data needed. Once collected, it was analyzed methodically behind closed doors. Only those with compartmented “need-to-know” access understood how the process worked or saw the fruits of that labor.

Of course, tactical reconnaissance—usually performed by minimally modified strike platforms—had to be turned as quickly as possible. While the restrictions might be fewer, the basic process was to fly, capture the data, land, and turn it over to be whisked away by analysts on the ground.

Technology advances during and after the Vietnam War moved more reconnaissance closer to the edge of the battlefield. Hunting for emissions from surface-to-air missile batteries became a vital task.

But the real breakthrough linking intelligence and operations would come only with creation of a network of sensors, analysts, and shooters.

One early vision of highly integrated ISR was the 1970s research on an Advanced Research Projects Agency favorite named Assault Breaker. The concept was for an airborne platform to monitor moving targets and direct missiles at Soviet echelons, for example. Assault Breaker caved in due to immature technologies, but what survived was the concept of a superintegrated sensor mission capable of monitoring moving targets under centralized control.

ARPA’s work on Assault Breaker led directly to the moving target indicator that debuted on the E-8 Joint STARS in the Gulf

War of 1991. Joint STARS was rushed to theater while still in test, with contractor personnel still aboard to keep the systems running. It was a roaring success.

A House Armed Services subcommittee praised the Joint STARS and noted that the “Army liked the downlink which showed in real time what was in front of it, while the Air Force used it for target acquisition, chiefly of moving targets.”

Operation Desert Storm foreshadowed the intense demands for continuous battlespace coverage and hinted at the tactical possibilities for this new wave of ISR.

Tighter Links

Immediately after Desert Storm, the Air Force moved to reform its intelligence structures and lay the foundation for the growth of ISR as a dominant mission area.

Step 1 was to bring the headquarters intelligence directorate and several field operating agencies under the command of operators. The goal was to forge a much tighter link where new ISR capabilities functioned as an integrated team with operations and campaign planning.

The first deployments of the RQ-1 Predator for operations in the Balkans in 1995 opened up many new possibilities. By the time of the NATO air campaign to save Kosovo in 1999, the full potential of ISR was emerging. Predators were essential for monitoring Serb forces. “You’d have the Predator up there looking at targets, but you had no way to get that information, other than verbally, to the airplanes that were going to attack those tanks,” recalled Gen. John P. Jumper in 2003, when he was Chief of Staff. He had been commander,

United States Air Forces in Europe, during the air campaign.

Then Predator became an armed reconnaissance vehicle, while command and control improvements centered around the concept of the combined air operations center as a weapon system increased the potential for rapid exploitation of ISR and near real-time attack of targets. A new tactical mind-set for how to employ ISR assets emerged.

The Air Force goal at the turn of the century was to run “a mean, aggressive, in-your-face ISR campaign,” said Maj. Gen. Glen D. Shaffer, who was director for ISR on the Air Staff in 2001.

Networking and the creation of new systems within the AOC laid the foundation for closer integration. “If you run an ISR campaign properly, you put the right sensors over the right part of the battlefield at the right time, and they are sharing data,” Shaffer told *Signal* magazine in 2001. “You are building what many people call a metasensor,” he said.

Never did America need aggressive ISR more than when the Global War on Terrorism began with Operation Enduring Freedom in Afghanistan in October 2001.

Afghanistan was the kind of battlespace where striking power quickly outstripped numbers of targets. The Taliban had no huge bases or second echelons. Instead, commanders found themselves searching for concentrations, tracking retreating forces, and hunting for terrorists over a huge land mass.

In Afghanistan, ISR took on a much more dynamic mission. Crews for systems such as Predator, Global Hawk, and the Navy EP-3s adapted fast. They learned to generate targets for air attack in a fluid battlespace, watch over dispersed ground forces, and supply them with tactical reconnaissance. The ISR operators were able to satisfy the knowledge demands of higher headquarters and hunt for terrorists.

Ground forces also got a look at what steady full-motion video could do. Predator literally opened the eyes of ground forces which arrived in theater in greater numbers after mid-November 2001. In intense fights such as Operation Anaconda in March 2002, ground commanders demanded as much real-time video surveillance of the battlespace as possible.

Still, ISR in Afghanistan was a fraction of what it later became.

Major combat operations in Iraq in 2003 set a new high-water mark for ISR.

Intelligence platforms flew more than 1,600 sorties from March 19 to the end of April 2003. They delivered more situation



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awareness and fine-grained detail than in any other air war in history.

The ISR armada included eight Joint STARS, nine Rivet Joint RC-135s, 15 U-2s, and more than 30 Navy P-3s. Nineteen AWACS and 20 Navy E-2s fanned out in a command and control network. More than 50 satellites pitched in.

Unmanned forces included 16 Predators and one Global Hawk—the only one in flying condition. Beyond this, bombers, fighters, and gunships with specialized target acquisition capabilities did double duty by making contributions to the ISR picture.

Spectacular results ensured, as the coalition prosecuted 156 time-sensitive targets and another 686 dynamic targets. All of these demanded last-minute feeds of ISR data prior to mission execution.

Yet all of this was just a prelude to the burgeoning of ISR in stability operations.

More than any other single factor, the demands of stability operations vaulted ISR to a new level.

From 2004 onward, coalition air and ground forces settled in for the difficult work of finding and countering insurgents and terrorists. It quickly became apparent that active stability operations would fuel an insatiable demand for ISR.

ISR platforms scanned for individuals placing improvised explosive devices on key routes. They tracked high-value targets on a near-constant basis to attempt to provide actionable intelligence, so ground or air forces could move in for the kill.

When contact was made, ISR assets followed insurgents as they scattered down roads or across open terrain. Then the ISR assets helped find additional hideouts or other suspicious locations.

Specialized signals intelligence assets provided final, positive identification by intercepting an insurgent's cell phone signal or sniffing out other electronic markers. Each mission was urgent, and many were also painstaking.

The 2006 strike that killed Abu Musab al Zarqawi, leader of al Qaeda in Iraq, took an estimated 300 hours of full-motion video to set up.

To manage all this, the CAOC beefed up a separate intelligence-surveillance-reconnaissance division, called the ISRD. Here the blue-suit sleuths worked at combining feeds from multiple platforms to fulfill mission requirements. Their level of play advanced continually, and it was the synergy they created that resulted in some of the most spectacular successes.

Soon stability operations were eating up ISR so fast that it changed the

balance of power between strike assets and ISR.

The ratio shift was plain to see by 2005. During major combat operations, the ratio of ISR sorties to strike sorties was about one-to-12.5; in other words, each ISR sortie supported more than 12 strike sorties.

(Of course, nearly a dozen years of monitoring preceded the March-April 2003 campaign, so plenty of work had been done in advance. However, the ratio also reflected the priorities of major combat operations: ongoing identification of SAMs, sensitive targets, and Iraqi military formations, and equipment.)

Tougher Targets

Stability operations trained ISR assets on a different target set and demanded much longer dwell times. The search for insurgents, their safe houses, routes, and strongpoints demanded a high degree of positive identification. It also took more time and assets to ferret out targets and direct the complicated cuing of assets.

Often, missions required repeated, sequential sweeps of key target areas.

As a result, the ratio of ISR to strike averaged one-to-3.9 during 2005. Stability operations took three times as much ISR by proportion as major combat operations. No wonder ISR assets began to get the attention of top Pentagon officials.

The trend continued through surge operations. The fierce activity of the first half of 2008 shifted the ratio even more. By the end of June, the coalition had flown 5,541 ISR sorties in Iraq and Afghanistan and 16,459 strike sorties—for a ratio of one-to-2.9.

That meant the coalition was consum-

ing ISR at a rate four times greater than required for major combat operations.

The new ISR mission reflects the evolution to a far more dynamic kill chain. It has also blurred distinctions between ISR aircraft and strike aircraft. Many times it still takes a collection of ISR and strike platforms to carry out a mission, but as Deptula said, "Increasingly, a single platform executes the entire kill chain."

An armed MQ-1 Predator may be able to execute most of the kill chain itself—and so can an F-16 using its onboard sensors.

Commanders are not likely to want to give up the highly refined ISR now in their hands. ISR is just too good.

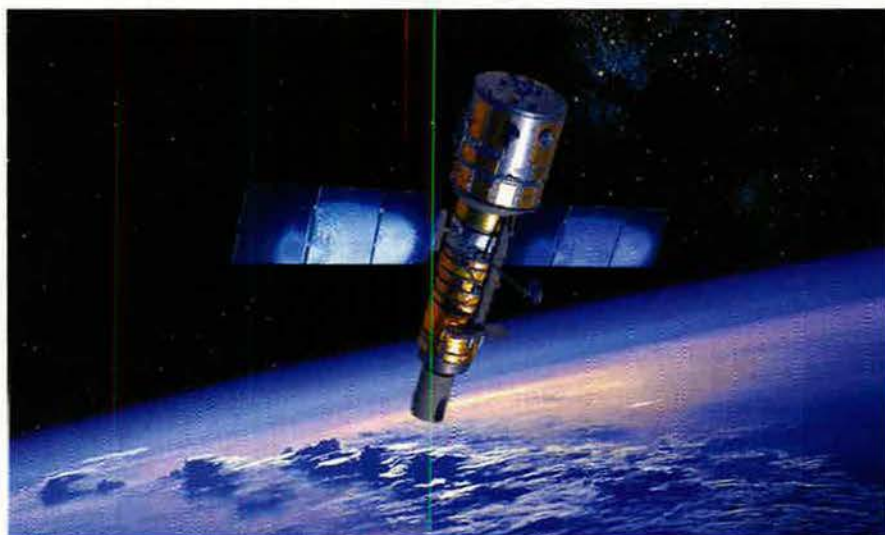
"We spent the last hundred years in aviation endeavors trying to figure out how to target any location on the face of the Earth, rapidly, day and night, all weather, and we can do that today," Deptula said in a 2007 interview. "The issue now becomes, where is it you want to hit? And, oh by the way, do you want to hit it kinetically or nonkinetically? What kind of effect do you want to achieve there?"

Every trend points toward more, not less, need for ISR as a dominant mission area.

Commanders "want more, want it better and want it now," said Marine Corps Gen. James E. Cartwright, vice chairman of the Joint Chiefs of Staff, in a recent Capitol Hill meeting.

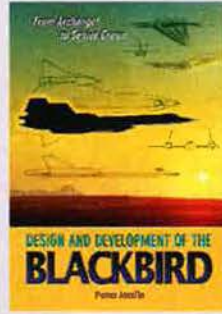
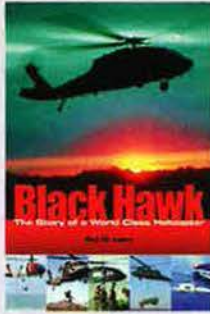
Irregular force engagements and policing environments will sustain the demand for unprecedented levels of ISR. As Cartwright put it, we must see "the sweat on the brow" of individual targets.

It will be up to the Air Force to keep leading the way, although the Navy will buy up to 64 Global Hawk aircraft, with sensors specially configured for maritime



An artist's conception of an imagery intelligence satellite. Eye-in-the-sky assets are becoming increasingly valuable in the War on Terror.

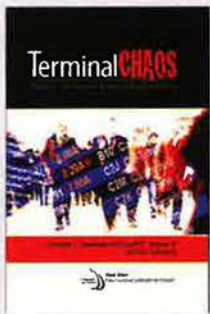
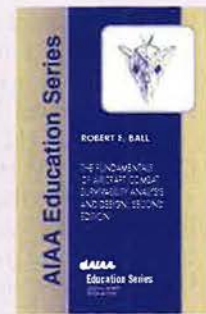
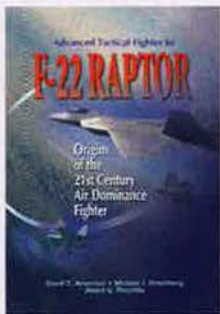
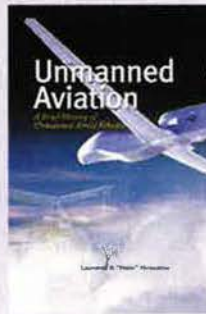
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Wearing her pressure suit, U-2 pilot Capt. Heather Fox greets members of the 380th Expeditionary Aircraft Maintenance Squadron in Southwest Asia.

missions, and up to 108 new P-8 aircraft to replace the P-3 Orion.

However, allies and joint partners are unlikely to duplicate fully the US air component's ISR advantages. An additional factor is that ISR assets will enter the fight early, and remain on station even as strike assets deployed decline in number. In the future, sizing for ISR forces should look at metrics such as the strike-to-ISR sortie ratio to plan on heavier use of ISR assets. After all, the term low-density, high-demand was coined mainly for ISR and battlespace management assets.

Joint and Collaborative

The Air Force is proceeding with its restructuring to make ISR "an Air Force-wide enterprise," as Deptula termed it.

Despite the squabbles, the view from the theater has always been brighter than that from Washington. North discussed how the UAV tasking, for example, is handled on a joint, collaborative basis. There are few disagreements from a theater perspective.

There's good news from the Tidewater region, too. Joint Army-Air Force talks in June yielded more agreement on the way ahead for UAVs.

"As opposed to finding independent solutions, we are trying to find joint, collaborative solutions that best support the joint warfighter in any spectrum of war," said Gen. John D. W. Corley, head of Air Combat Command. Washington may not be able to solve this problem, but there's every chance that those leading the war effort can.

Whatever happens with ISR in theater, the Air Force must choose carefully how



An MQ-9 Reaper in flight near Baghdad. The Reaper adds an expanded attack capability to the Predator's already impressive ISR portfolio.

it will cultivate this vital mission area. The public furor over ISR for Iraq and Afghanistan is masking a very real dilemma within the Air Force.

CIA director and recently retired USAF Gen. Michael V. Hayden described it as a split between the application of intelligence and the creation of intelligence. In a 2007 speech, he commented on how USAF has lost its leading role in the production of signals intelligence and imagery, to cite two examples.

Creation of intelligence involves paying attention to analysis and dissemination, not just collection.

From this perspective, ISR improvements from the mid-1990s to the mid-2000s centered on the application of intelligence. The keys to success were linking intelligence sources to operators in ways that cut the time in the kill chain. Future care and feeding of the mission area must also address the creation and production of intelligence.

"What you're seeing now," said Hayden, is an effort to "reinforce this half of the equation—the creation of intelligence, so the Air Force role in Sigint, the Air Force role in imagery, that's what the whole Air Force imagery UAV question is about—the creation of intelligence."

The Air Force is more than ready to take up the challenge.

USAF collects vast amounts of data, noted Deptula. "We suck it up in terms of Sigint. We take multiple pictures with a variety of systems. We collect lots and

lots of full-motion video. We've got so much stuff, we've got to be careful that we don't exceed the processing capability," he cautioned.

The Distributed Common Ground System has helped immensely. However, exploitation of full-motion video remains below par, to note one example. The next wave for ISR will hinge on improvements in rapid and automated analysis to go along with the big gains in the tactical arena.

What's not in doubt is that in 21st century warfare, ISR is a dominant Air Force mission—and one almost certain to continue to grow in importance. ■

Rebecca Grant is a contributing editor of Air Force Magazine. She is president of IRIS Independent Research in Washington, D.C., a Senior Fellow at the Lexington Institute, and has worked for RAND, the Secretary of the Air Force, and the Chief of Staff of the Air Force. Grant is a fellow of the Eaker Institute for Aerospace Concepts, the public policy and research arm of the Air Force Association. Her most recent article, "A Force Remade by War," appeared in the August issue.

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The experts at Nellis AFB, Nev., are working overtime to help USAF keep a sharp combat edge.

By Adam J. Hebert, Executive Editor

Weapons School Rising

In January, the Air Force will open a new F-22 weapons instructor course at the USAF Weapons School, Nellis AFB, Nev. At about the same time, it will probably launch a similar course for two unmanned aerial vehicles—the MQ-1 Predator and MQ-9 Reaper. Some of the service's top young operators should begin cycling through the courses now in the final stages of development.

Establishment of these new disciplines is a big deal, but the change doesn't stop there. The Weapons School is undergoing a large-scale rejuvenation. This is expected to be a critical factor in preserving the Air Force's qualitative combat edge.

New aircraft with advanced capabilities—the F-22, for example—often are entering the operational force inventory in numbers far smaller than planned. Many systems, such as the B-52, are older than the typical pilots. Other aircraft, such as the Predator and Reaper, essentially went straight from development to combat, with USAF scrambling to maximize their power.

All of these factors conspire to make the quality of its operators a key Air Force advantage. The Air Force is determined to exploit that advantage, which is where the Weapons School comes in.

The Weapons School once focused on creating experts in "their" system. Today, platform-specific expertise is still developed, but is followed during the 5.5-month class by course work and training flights that emphasize integrated effects.

Part of the USAF Warfare Center, the Weapons School dates to 1949, when it was the Aircraft Gunnery School. It rose to its greatest prominence in the 1970s. Future generals John P. Jumper, Ronald E. Keys, and other students and instructors worked to improve F-4 Phantom tactics in response to the frustrating results in Vietnam, and to develop the tactics needed to make the most of the then-new F-15's capabilities.

USAF photo by CMSgt. Gary F. Emery



A Weapons School F-22 takes off from Nellis AFB, Nev. The Raptor course will begin turning out new F-22 weapons officers next year. The graduate patch (inset) is awarded to about one out of every 20 qualified officers.

Throughout the 1980s, the school steadily added new courses and today has 17 squadrons executing weapons instructor courses (WICs) for everything from the F-16 to intelligence. The demands of the Global War on Terror have accelerated the changes.

In-House Experts

The goal remains the same, however: Train a cadre of officers who return to their squadrons and become the in-house tactical experts, the masters of integration.

Plans for the Predator and Reaper WIC have been turbulent. It was just February when Gen. T. Michael Moseley, then Chief of Staff, announced the plan for a Weapons School UAV squadron. Since then, the nascent squadron has been scrambling to assemble a cadre of instructors, build a syllabus, and secure access to the necessary equipment. The goal was to run a validation course in the second half of 2008 (08B), with 09A being the first full-up course.

In June, however, this plan was deferred by a minimum of six months—a casualty of the surge of Predators and Reapers into the US Central Command war zone. The students and equipment needed to run a UAV weapons course are instead being diverted to the operational units at Nellis and nearby Creech Air Force Base. "All my instructors were 'deployed' back to the ops units to assist with the surge," said Lt. Col. Daniel J. Turner, commander of the provisional UAV squadron.

The F-22 course also has a problem of too few airplanes. Raptors are spreading out to operational units around the United States, and the 433rd Weapons Squadron received its first F-22 earlier this year. The squadron, which also runs the F-15C WIC, has to share Raptors with Nellis' operational test community, however, because of the Air Force-wide shortage of F-22s.

Nine to 13 Raptors with WA and OT tail codes will be shared at Nellis. Brig. Gen. Stephen L. Hoog, com-

mander, USAF Warfare Center, said the aircraft will all be identically prepared so that they can perform both test and WIC sorties, perhaps on the same day. The number of Raptors at the Warfare Center will fluctuate as aircraft become available and depart again for other assignments.

The F-22 curriculum has been several years in the making, and will run a “validation course” the first half of 2009, said Maj. Micah Fesler, chief F-22 instructor with the squadron. The first full-up course will be 09B.

The ultimate goal is to train about four Raptor weapons undergraduates (WUGs) per session, in addition to six F-15C WUGs. The F-22 and Eagle share the air dominance mission, which is why they are grouped together.

“The biggest thing is force enabling,” said Fesler. “I can go into an anti-access environment” and hit somebody really hard, really fast, and “they don’t see it coming.” Most legacy platforms can’t go into the most dangerous zones on Day 1 of a war, meaning the F-22 and B-2 bomber remain the “centerpiece” for anti-access operations, he said. The Raptor course will fly integrated missions with the stealth bombers.

The course will teach skill sets, not responses to specific threats. Air superiority and suppression of enemy air defenses/destruction of enemy air defenses “go hand in hand,” Fesler



USAF photo by TSgt. Kevin J. Gruenwald

An HH-60G Pave Hawk search and rescue helicopter approaches Ft. Bliss, Tex. The crew was taking part in a Weapons School live-fire training exercise.

said, “Air dominance is both of those things.”

Building a proper F-22 course is difficult because the fighter is so much more capable than the other fighters in the Air Force’s inventory. Traditional tests don’t necessarily challenge Raptor pilots.

A straight-up battle against F-15s or F-16s isn’t a fair fight, as evidenced by the Raptor’s performance at its first-ever Red Flag exercise last year—when the pilots rang up lopsided victories

against the more experienced Red Air force.

“I can’t see the [expletive] thing,” Royal Australian Air Force Squadron Leader Stephen Chappell, an exchange F-15 aggressor pilot, said at the time. Battling the F-22 “annoys the hell out of me.”

Adversaries “focus on the things they see,” said Fesler. “They look at all the F-15s and F-16s out there, and [an F-22 is] basically a ghost. ... I can pick and choose who I kill.”



USAF photo by MSGt. Robert W. Valencia

A C-17 prepares to receive fuel from a KC-135 over Nevada during a Weapons School mobility event. Once for fighters only, the school in the 1980s began adding courses for other aircraft.

Overloaded

The Weapons School is therefore searching for the right ways to challenge the F-22 pilots. One of the basics is to overwhelm the students with numbers, said Col. Scott A. Kindsvater, USAF Weapons School commandant. It is important to put the Raptor pilots into “situations where they’re outnumbered and where they run out of missiles,” or where they have to protect large numbers of vulnerable aircraft against enemy attack.

In fact, Fesler noted, one of the early proposed F-22 scenarios was already rejected for being too hard.

Information management is another skill that must be developed, Fesler said. Raptor pilots will have to learn when to get on the radio to distribute the information their sensors have gathered, and when it is best to just shut up.

Small numbers of new aircraft don’t change the fundamental reality that the



USAF photo by Ann Stephanie Rubi

Six C-130s taxi at Nellis during a Weapons School-sponsored mobility exercise. The C-130 and C-17 weapons instructor courses emphasize tactical skills such as dirt-strip landings in hostile areas.

Weapons School has a much broader group of assets at its disposal than in years past. Today, only 30 percent of the students come from the traditional fighter specialties.

Simply getting the needed office space and airspace time over the Nellis Range can be a problem with 17 squadrons.

"Range wars" and shared spaces are nothing new—prioritizing access has been difficult since at least the 1970s. Crowding does have one undeniable advantage: It helps bring the Weapons School squadrons together, fostering the integration needed to get past platform-centric insularity and the notorious service stovepipes. The F-15 and A-10 courses joined the F-4 WIC in 1977 and 1978, respectively.

"After the A-10 school had knocked around the base for a few months," it was put into the same building as the F-15 school, wrote Clarence R. Anderegg, chief USAF historian, in the book *Sierra Hotel*. This "forged strong associations among the pilots of the two vastly different jets with totally different missions."

The recently expanded Weapons School building houses the majority of the squadrons (some, such as the B-52 WIC, are headquartered at other bases) and allows the various squadrons to easily get together to discuss tactics and upcoming missions.

For flying time, the Warfare Center has to keep a "priority matrix," Hoog said, which means lots of night flying and staggered schedules.

Weapons School officials cite the need to balance immediate combat needs with efforts to build the tactics, techniques, and procedures needed for future fights. Much of this is accomplished through course work that builds skills useful in all theaters. Improved close air support skills developed for Iraq, for example, are also of use in Korea.

Solutions and Skills

The various WIC syllabi are updated every year, and many of the changes are made to address the demands of the War on Terror. A look at some of the recent updates illustrates how the school is working to solve immediate combat needs so that graduating "patch wearers" head to the operational squadrons with solutions in mind and the skills needed to perform new missions.

F-16: The focus of the flying missions has shifted away from air-to-air toward air-to-ground strikes, with roughly three-quarters of the sorties now emphasizing A2G missions. Maj. William Betts, one of the F-16 instructors, said there is talk of reducing the air-to-air component even further, and two close air support missions were recently added to the curriculum. Three of the scenarios are "specific" to the desert, he said, but the skills carry over.

B-52: This year, a nuclear-themed sortie returned to the B-52 course after being cut in previous years. Maj. Mark Dmytryszyn, B-52 instructor, said there is interest in further increasing the

nuclear profile to reflect the priorities at the operational squadrons, but there are "limits on what we have access to" at the Weapons School. There is a heavy emphasis on standoff strike and the skills needed in the Pacific Theater, including the overwater mining mission. Gone is training for low-level conventional bombing.

C-130: Missions have taken on a distinct tactical bent. Night-vision goggle landings, arrivals at unimproved assault landing zones, and delivery with the Joint Precision Air-Drop System are all keyed to CENTCOM's needs. Access into denied or dangerous areas is a priority.

KC-135: The course is now emphasizing combat arrivals and departures and avoiding Stinger-type man-portable missiles. The tankers have no defensive systems and poor situational awareness, so from MANPADS to small-arms fire, "[anything] can threaten us," said Maj. Matt Petro, one of the refueling instructors. Students spend two weeks on these terminal-area threats and learn how to safely move refueling locations as close to the fight as possible.

HH-60: High-altitude missions, above 6,000 feet, have become a priority as combat search and rescue teams operate in the mountains of Afghanistan. Students work with escort aircraft, such as A-10s and F-15Es, and rescue personnel. In this high-demand field, "one of the issues is even getting enough students," said instructor Capt. Kirk Adams. The squadron has the ability to train four WUGs per term, but has only been getting two.

Space: The Weapons School's space squadron traditionally prepared students to move into air operations centers, the Joint Space Operations Center, or space command and control squadrons. Now space weapons officers are also being sent to individual space squadrons to serve as experts more akin to the other weapons officers. Training focuses on theater missile defense, CSAR support, and other current missions.

Though the UAV WIC is on hold, its goals are clear for when it does stand up. Maj. Joseph L. Campo, who was serving as director of operations for the provisional squadron, said UAV assignments were previously one-offs. Rated officers did a tour before returning to their primary aircraft.

This made it hard to find expertise in the systems, so one of the goals will

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Building a Weapons Officer

The Air Force expects new Weapons School graduates to be tactical experts for their commanders and top instructors at their units. Getting to that point is not easy.

The process begins with selection. Candidates must be instructors, volunteer for the course, and be selected by their wing leadership and a larger selection board. They are typically first lieutenants or captains with five to 10 years of experience. This demographic means the "9/11 generation" is now working through the school.

Only five percent of qualified candidates are selected, and roughly 80 new "patch wearers" graduate every six months from the thousands of pilots, rated aircrew, and space and intelligence officers the Air Force produces every year.

Even with the rigorous selection standards, 10 percent of the students wash out before completing the course.

There is a definite grooming process. Capt. Megan Luka, a 2008 graduate, noted that her previous wing and squadron commanders, and her director of operations, were all Weapons School grads. They helped steer her toward the course.

Maj. Kevin P. Coyle, Weapons School staff director, said at "about the first lieutenant level, you start looking for the person to replace you."

What follows is a 5.5-month course averaging 379 hours of classroom instruction and 25 missions, culminating in a two-week long Mission Employment phase that serves as a sort of final exam. Students must manage the battle and master their combat system and how it integrates with others.

The ME phase is "as close as we can get to combat," said Col. Scott A. Kindsvater, Weapons School commandant. Unlike Red Flag, which is geared toward young wingmen and first-time mission commanders, ME throws the book at the students.

Coyle noted that many skills are not exercised on current deployments. There is presently little need for AWACS crews to perform tactical battle management in Southwest Asia, but all relevant skills get exercised in ME. Coyle said, "No missions are harder than what you see here."

For example, if there is a pilot down, "do you send a CSAR package into an SA-10 ring?" Kindsvater asked.

To help foster creative thinkers, "some problems presented are unsolvable," said Kindsvater.

Most of the Air Force's fighter wing commanders are Weapons School graduates. There is less historical connection in USAF's other communities, but patch wearers are starting to show up as squadron commanders in the mobility, space, and other communities.

The course was a rare chance to "integrate all the pieces instead of the unit specifics," said Capt. Ryan Garlow, a graduate of the 08A course for KC-135 pilots. He is returning to a squadron that has seen half its assets deployed at all times.

There is "no other place to work like this," added Capt. Megan Luka, a graduate of the 08A command and control course. Luka was headed to Robins AFB, Ga., to serve as an E-8 Joint STARS weapons officer.

The graduates are expected to be humble, approachable, and credible—traits that sound self-serving but are actually instrumental to the school's success.

"You bring in the best of the best, and teach them to do things others only read about," said Kindsvater. "Over time, if left unattended, it could develop into a roving motorcycle gang because these are all meat-eating warriors."

Being humble, approachable, and credible makes the graduates valuable to both superiors and junior officers. Squadron and group commanders trust their input to solve complex tactical issues, and young lieutenants turn to them for advice and assistance.

By the time graduates earn their Weapons School patch, "they get it," said Kindsvater—they think in terms of integrated effects and no longer view their system in isolation.

This expertise, dispersed throughout the Air Force, helps keep the force constantly at the cutting edge of combat capability. ■

be to develop Predator and Reaper experts who will be the "best on the base." Nearly all WIC sorties will be "directly applicable to today's fight," he said.

While the Predator and Reaper are distinct and require different training, they are not as different as an F-15C and F-15E, Campo said. Therefore, all the weapons instructors will be dual-qualified.

Current UAV combat missions are fully integrated with other attack and intelligence-surveillance-reconnaissance aircraft, the combined air operations centers, and joint terminal attack controllers and other forces on the ground, so integration will be no novelty for Predator and Reaper students. For many WUGs, however, the chance to work closely with other platforms is what stands out most about the Weapons School.

USAF photo by Lance Cheung



The Weapons School plans to open courses for the MQ-9 Reaper, such as this one at Creech AFB, Nev., as well as for the MQ-1 Predator UAV.



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The 21st Secretary of the Air Force talks about the F-22, joint basing, next-war-itis, and what really caused Robert Gates to act.

By Michael C. Sirak, Senior Editor

The Wynne Outbrief

Leadership fired. Nuclear stewardship in question. Tanker replacement effort in limbo. Noxious charges of “next-war-itis” washing over the service. ... Surely, this is a bad time to be part of the US Air Force, right?

No, not right, says former Air Force Secretary Michael W. Wynne. Quite the contrary, actually.

Despite the negativity of political and media reports generated inside the Washington, D.C., beltway, the Air Force is, in fact, accomplishing great feats, making a difference in the Global War on Terror, and even winning converts on Capitol Hill, Wynne said in an extensive late July interview.

He spoke at length with *Air Force Magazine* five weeks after formally stepping down from the service’s top civilian post.

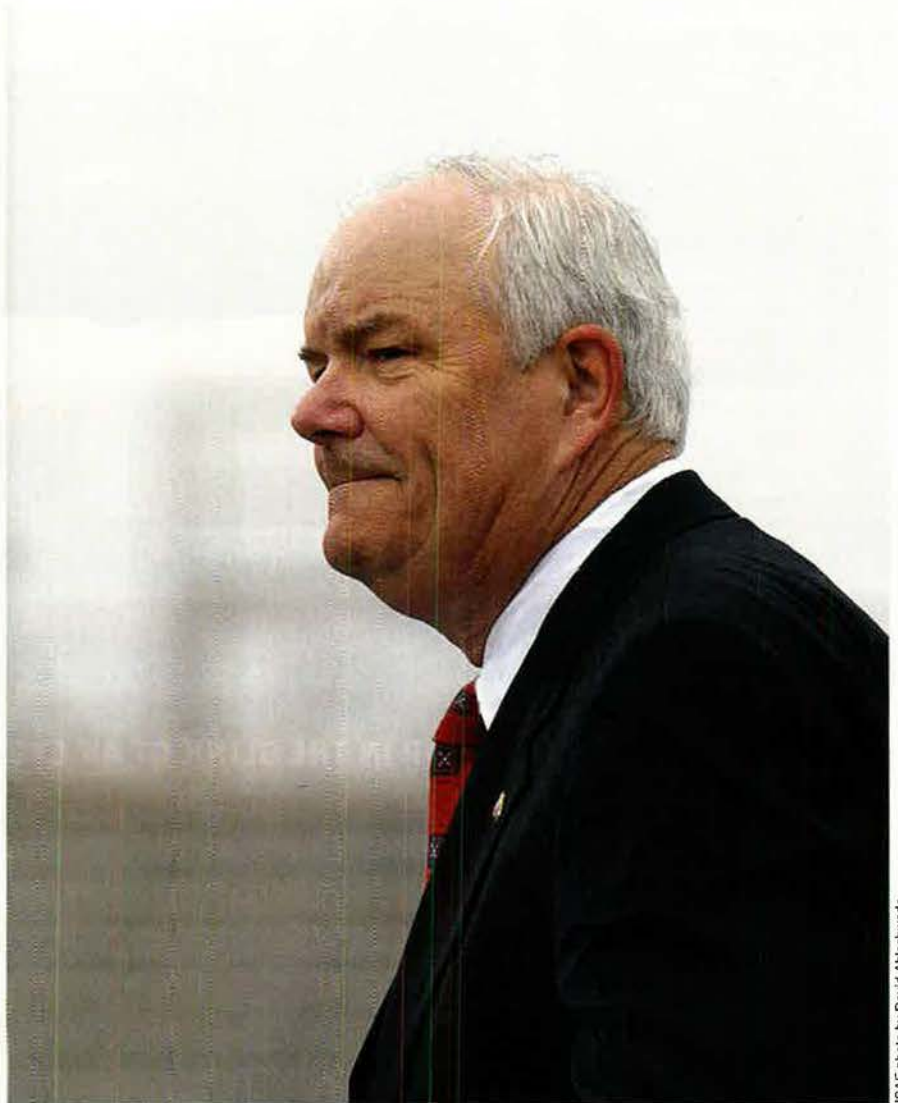
“The Air Force was being heard” in the halls of Congress, says Wynne of his final months in office. “Our arguments were resonating.”

Just Point at It

Wynne served for some two-and-a-half years as the 21st Air Force civilian leader before Secretary of Defense Robert M. Gates ousted him on June 5 in a leadership shake-up that also brought down the Chief of Staff, Gen. T. Michael Moseley.

Turning aside criticisms, Wynne emphasizes that the Air Force is “really good” at what it does. The service is “envied” by the other military branches and by the nation for the quality of its people, its bases, and how well it executes its mission, he observes.

Case in point: USAF’s ability to support ground forces in Afghanistan



Then-Secretary of the Air Force Michael Wynne.

and Iraq with precision air strikes, something for which Wynne thinks the service still does not get enough credit. “The command element can point to a building and it will come down,” he explains. “They can point

to an intersection and it will blow up. We can almost dial destruction.”

With strong emphasis from the Air Force Research Laboratory, Wynne says, the service has excelled at pushing the state of the art of critical technology

areas such as advanced stealth and alternative energy sources. He adds that there has been “a phenomenal spread” of Air Force technology into the commercial sector.

“I’m pretty proud that we were really flowing out there in the edge of the envelope,” Wynne says, noting that “there was nobody in [the Department of Energy] who was even thinking about alternative fuels” for the military when he first broached the topic with DOE officials.

Wynne points out that the Air Force continues to churn out scores of airmen with advanced degrees, many in science and engineering fields. When it comes to management, the Air Force has been innovative, incorporating “transparent” processes, handling data as an asset, and, under Air Force Smart Operations 21 initiatives, conserving resources, Wynne says.

Sure, the Air Force faces challenges. Wynne, for example, opposed the Pentagon’s joint basing plans and still thinks there are better alternatives. Plus, the Air Force desperately needs new tankers to replace its Eisenhower-era KC-135s, and is still hard-pressed for dollars to buy new aircraft across the board to replace its aging fleet, the oldest in its history.

Even on these fronts, though, the service has been making marked progress, Wynne says. He points out that the strong stance that he made together with Moseley for maintaining air dominance



USAF photo by TSgt. Cohen A. Young

Wynne and then-Chief of Staff Gen. T. Michael Moseley answer questions from Congress in February.

in the future and for recapitalization and modernization was making headway with key lawmakers.

Winning In Congress

Congress, in both its deliberations on the Fiscal 2009 service budget and the recently passed war supplemental, provided support for more C-17s, additional unmanned aerial vehicles such as the MQ-9 Reaper, quality of life enhancements for airmen, and better air-to-ground connectivity, Wynne says.

That is by no means all, says the former Secretary.

“I can tell you that we fought hard for an increase in bomber money” and Congress responded by boosting the service’s accounts, he explains, referring to the new long-range strike platform that the service wants to field in 2018. “We’re back on a good track on that, to make sure we can foster competition down the road.”

In another major irritant to Gates, lawmakers even considered amending implementation of DOD’s so-called joint basing initiative during deliberations on the 2008 war supplemental. The change would have made moving forward contingent on the service Secretaries certifying that the new base set-ups would save DOD money and have no impact on morale. Although ultimately not adopted, the proposed measure showed that lawmakers were hearing the Air Force’s concerns.

Moreover, says Wynne, the Air Force “may still win the F-22 argument” on Capitol Hill.

The Office of the Secretary of Defense did not add money in Fiscal 2009 to fund the procurement of the materials and long-lead-time components necessary to pay for an additional lot of F-22 stealth fighters. It chose to leave the F-22 at the current 183-aircraft program of record.

However, Congress has thus far added money that could be applied to cover those advanced procurement activities and, as a result, keep the F-22 production line flowing smoothly into the next Administration, something that Wynne wants to see happen.

Wynne says successes on Capitol

USAF photo by TSgt. Justin D. Pyle



An F-22 hurtles through the sky at an air show. Struggles over the F-22 and other programs contributed to the downfall of Wynne and Moseley.

Hill such as these are likely to have contributed to the downfall of Moseley and himself at the hands of Gates. As Wynne puts it: "I always felt like one of the reasons we became a highly sensitive subject is we were winning in Congress."

Gates announced the firings on June 5. Wynne officially exited on June 20. Moseley's retirement took effect on Aug. 1. Gen. Norton A. Schwartz became Chief of Staff on Aug. 12. Wynne's putative successor, Michael B. Donley, has gone through hearings on his nomination but was not confirmed before Congress went on summer recess in early August.

Wynne and Moseley ostensibly were sacked for failure to address systemic shortcomings in the service's stewardship of nuclear weapons. This charge was leveled after the occurrence of two incidents, one involving the unauthorized transfer of cruise missile nuclear warheads across the Midwest and one dealing with the mistaken shipment of ICBM components to Taiwan.

Gates said he acted after receiving a deep investigative report from Adm. Kirkland H. Donald—the Navy's top nuclear weapons and propulsion officer—on the Taiwan incident. Gates cited the classified report's purported harsh findings. (Other than a timeline, Gates has failed to release a sanitized version to the public.) Wynne, however, says he believes that there was much more to his dismissal.

"I believe that I had a very big difference of philosophy with my boss, and that he chose this moment to relieve me."

Wynne says he doesn't know why Gates chose to push out Moseley as well, other than the general was locked in a true partnership with Wynne, and Gates may well have wanted to make a clean break with the past.

Wynne points out that he and Gates differed over issues ranging from how many F-22s to acquire to the wisdom of the joint basing initiative that came out of the recent Base Realignment and Closure process.

F-22 force structure emerged as one of the most contentious topics between the Air Force and OSD during Wynne's tenure. OSD's leadership has argued that the F-35 Lightning II stealth fighter will have essentially the same capability as the F-22, and so more Raptors aren't needed. Wynne vehemently contests the claim.

He argues that it is too early to halt F-22 production and rely on the F-35

as the sole fifth-generation fighter in production, mainly because "I'm afraid the F-35 will fail a test," he says. Instead, Wynne said, he favors keeping F-22 production going until the middle of next decade, and then conducting a flyoff between the F-22 and the F-35 around 2014. With such a contest, the world could see, once and for all, how well the F-35 compares to the F-22. Thereafter, a fact-based decision can be made whether to keep building F-22s or not, he says. "The nation can afford F-22s," he says.

The F-22 is really symbolic of the broader issue that drove apart Gates and Wynne: whether the US should focus most of its energies and effort on today's fighting in Iraq and Afghanistan even at the expense of tomorrow's combat prowess.

Next-War-Itis

Wynne maintains that the nation "should sustain its air dominance into the future and should not erode a strategic margin." Allowing the nation's edge to go dull could place the United States in the undesirable position of having to fight wars not of its choice, he says.

Pentagon officials, with Gates cheering them on, were pressing the Air Force to commit more of its investment effort and resources to the current wars, especially in the realm of overhead intelligence-surveillance-reconnaissance capability, where Gates allegedly believes that the Air Force wasn't doing enough.

"There were a lot of people who thought that the Air Force was simply distracted by the look to the future," Wynne says. Gates, in fact, coined the phrase "next-war-itis" to disparagingly refer to an obsession with the future at the cost of the present.

Wynne, for his part, says the Air Force was doing all it could to support the current fight, including surging UAVs to the combat theater and training new unmanned aircraft operators as quickly as possible. In fact, he says, his concern was and remains that OSD may be leaning too heavily toward the current fight at the expense of tomorrow.

That, he says, is "where we parted in strategic philosophy." He noted, "I worry that that, if taken to the limit, would result in America losing its strategic margin relative to the bad guys," a condition that could eventually cascade into military weakness that could threaten the nation's survival, Wynne says.

Looking ahead, Wynne thinks the

service's new leaders—Schwartz and Donley—need to continue pressing for an additional \$20 billion on average annually for recapitalization and modernization, push for more F-22s, resist the joint basing plan, advocate USAF leadership in the cyber realm, and continue research in alternative fuels and sources of energy.

The leadership, Wynne said, should also voice how imperative it is to maintain a "strategic margin" over potential adversaries and ensure that the nation is capable of fighting wars of its choice.

In the case of joint basing, Wynne says he favored agreements at the local levels with the base tenants rather than outright transfers of total obligation authority for Air Force assets such as Hickam AFB, Hawaii, and Andersen AFB, Guam, to the Navy, as is planned.

"The Air Force has a very different concept of operations," he says. Placing Air Force bases under another service's control could impact airmen's ability to execute the mission at those installations, he says. "I'd probably get fired again over my objection to the way the joint basing is happening."

Improvements to USAF's nuclear stewardship—which the Air Force has acknowledged are in need—will require the military and government as a whole to pay more attention to the issue. Wynne emphatically includes the Department of Energy in that "on-the-hook" list. As far as the Air Force's stewardship is concerned, Wynne says, the key is to "take every opportunity" to train as you fight. "That's the best way" to improve.

Wynne argues that the Air Force's future hinges on the quality of its airmen, and the service, accordingly, needs to keep promoting its airmen and enriching their educations.

It is an irony, says Wynne, that the departure of Moseley and himself produced an unintended benefit. Possibly to soothe Air Force anger and uncertainty, Gates quickly halted a planned drawdown of active duty end strength to 316,000, choosing to let it settle in at around 330,000—close to what it is today. That was a goal of Wynne's, so in essence, the Air Force won that battle, too.

As Wynne sees it, the nation's airmen will continue to function as the nation's "strategic shield" and its swift sword, holding targets at risk around the world. The nation has come to expect nothing less. "They better be ready to execute on that," Wynne notes. ■

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With a career spanning six decades, Keith Ferris has become an illustrious American aviation artist.



Airpower on

Keith Ferris was no stranger to the grass airfields of the 1930s. The son of an Army pilot, he grew up in the modified 1917 officer barracks at what was then Kelly Field in Texas. Airplanes would taxi along the old strips and park almost directly across the street from his house.

When he was just five, Ferris started drawing airplanes. That way, he could show his father, a flight instructor, what had landed while he was gone. Ferris spent most of his childhood watching the airplanes. In August 1947, just before the Air Force became a separate service, came an event that

would change the teenaged Ferris' life forever.

Aug. 1 was Air Force Day, and airmen at nearby Randolph Field were gearing up for a major air show. All week before, B-29 Superfortresses, P-51 Mustangs, and A-26 Invaders arrived at the base, and Ferris had the perfect view from his summer job at a small art studio on base.

"I was sitting there on the second floor of this World War II barracks, right on the flight line at Randolph when all of a sudden the barracks just went WOOOOOMP. ... It was the shock of something I had never heard before," said Ferris. "I ran out on the little porch

of those World War II barracks and there were two planes effortlessly arching off across the sky. They were jets. I'd never seen a jet before."

As the jet aircraft taxied down to a parking space in front of the barracks, Ferris ran off to find a lifelong family friend—the flight surgeon at the School of Aviation Medicine. With just one roar of the engines, Ferris had decided he

Above: "Farmer's Nightmare," 1930s era; pilot of P-12B No. 2 (on 1932 training mission) is artist's late father, Lt. Carlisle Ferris. Right: "Fortresses Under Fire," World War II era; B-17s fly 1944 mission over Germany while under Luftwaffe attack.



Canvas

By Amy McCullough



Courtesy Smithsonian National Air and Space Museum



Above: "Pursuit Section Instructors," 1930s era; Lieutenant Ferris is in lead P-12B. **Below:** "Sunrise Encounter," Cold War era; F-16 is shown in mock 1980 dogfight with "Soviet" Aggressor F-5 over Nellis AFB, Nev.

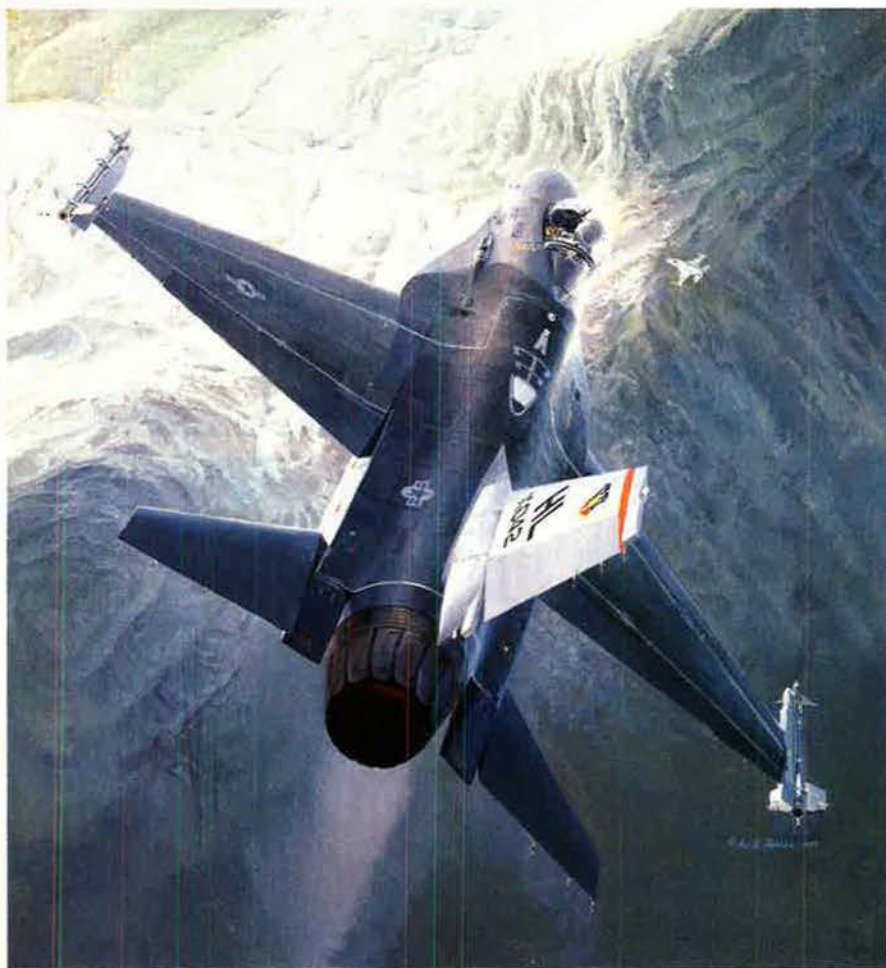
wanted to learn to fly those jet aircraft as soon as possible—he couldn't wait another three years to graduate from college and get a commission. He therefore decided to join the Air Force flight cadet program, which would allow him to fly without getting a college degree.

Speaking Air Force

The Air Force wouldn't let him in. Ferris was allergic to eggs, which meant he could not receive the required vaccinations. He was instead forced into a different career. It has spanned six decades and has sent him to virtually every continent and onto flights aboard most of the Air Force's bombers, fighters, and trainers—so that he could later document the missions on canvas.

At 22, Ferris was working for an art studio with some Air Force contracts for artwork illustrating weapons manuals. He was the only one there who could "speak Air Force," he said, so the Air Force work came to him. Now 79, Ferris' paintings hang in the Pentagon and many prominent museums, including the Smithsonian's National Air and Space Museum in Washington, D.C. Ferris became perhaps the most illustrious aviation artist in America.

Tens of millions have viewed his most famous work, "Fortresses Under Fire," a 75-foot-by-25-foot mural that covers an entire wall in the NASM's World War II Aviation Gallery. A B-17G Flying Fortress, one of several attacked by German fighters, looks as if it's going





Above: "Air Superiority, Blue," Cold War era; F-15 performs barrel roll in fictional 1970s fight with Soviet Su-15. **Below:** "Bad News for Uncle Ho," Vietnam War era; eight F-4Es deploying to Korat RTAB, Thailand and their assigned KC-135 tankers begin 1968 mission.



to blast through the wall. The mural lets thousands of people experience the awe Ferris felt as a child.

Ferris has mastered the art: Some of his paintings are so exact that museum visitors have actually identified loved ones lost in combat.

His paintings document aviation history ranging from World War I ace Capt. Eddie Rickenbacker flying his famous SPAD, to the FW 190A-8/R8 Sturmbock flown by Luftwaffe pilots in World War II, to today's C-17, as seen in "Waikiki Sunrise."

"I think my father would be amazed and... very pleased," with this unique version of a military career, Ferris said.

Father Figure

He included his father in several of his paintings, such as in "Pursuit Section Instructors," which depicts eight P-12Bs of the 43rd Pursuit Squadron in flight from Kelly Field in 1932. In the No. 2 aircraft is Lt. Carlisle I. Ferris, who was the commandant of cadets.

"I place my dad in the same position as everybody else that I've flown with," said Ferris. "It's what has built my character. All the people that I've grown up and been associated with believe in getting the job done and doing it in the best possible way. It's all in fulfilling the mission."

Ferris' contribution has gone beyond



Force to abandon various multicolor, dark, and camouflage paint schemes of the Vietnam era. He knew that the schemes, though popular, produced highly visible silhouettes. His painting of the first F-15, prior to flight, helped persuade the Air Force to abandon its planned blue paint; the painting, "Air Superiority, Blue," showed exactly how dark the supposedly sky-blue aircraft could appear in flight.

Ferris noted that a scheme optimized for one condition "can become a high visibility system under different lighting." Matte-gray paint with counter-shading is now the norm. Visual "hot spots" are reduced by giving lighter paint to the portions of an aircraft likely to remain in shade.

In 1976—ironically, the nation's Bicentennial Year—Ferris persuaded the authorities to eliminate red, white,

Above: "Miracle at Kham Duc," Vietnam War era; recreates 1968 C-123 rescue of three airmen, for which Lt. Col. Joe Jackson, the pilot, received the Medal of Honor. Below: "Inspection Party," Cold War era; portrays C-141 airlifter (and curious penguins) after a 1988 landing at McMurdo Station in Antarctica.



and blue from the national insignia. Ferris later told the *New York Times*, "If you're going to camouflage a plane in the first place, it makes sense to avoid conspicuous insignia and unit emblems." Deception is a key interest. One of Ferris' patents covers the false canopies painted on the underside of A-10s and Canadian CF-18 fighters, which make it difficult for opponents to know what these airplanes are actually doing in flight.

Ferris' most famous works feel more emotional than technical, and depict much more than a machine moving through the sky. With fluid brush strokes and detailed precision, he captures motion, and what it feels like to fly.

Ferris has donated 60 paintings to the Air Force Art Program and logged about 300 hours of jet fighter time. The art program joined forces with the Society of Illustrators in New York after the Air Force separated from the Army. The idea was to find artists to donate their time and paintings to the Air Force Art Collection.

"My first painting was 30 inches by 40 inches," Ferris noted. "It was framed, and it did get into the Air Force Art Collection, but when I [saw it] in the Pentagon it looked like a postage stamp" on the wall. As a result, he went on, "the next painting I did was two feet by eight feet. I figured it would stay in the hallway rather than go into the office. It worked like a charm."

Before starting each piece, Ferris considers where the painting will hang and how it will be perceived by viewers. The ultimate goal is always the same—recreating the feeling of flight on canvas. "I try to place the viewer so the viewer feels like he or she is in the picture. In other words, you're in the air with my airplanes," said Ferris.

The cluttered walls of his studio are barely visible through the rows of Air Force memorabilia: a fragment of a shot-up MiG, tiny blue airplane salt and pepper shakers, helmets, flight suits, and other equipment he's used in a half-century of flying with the Air Force.

Several thousand reference books fill his shelves and file cabinets. He has 55,000 slides of photos taken during flights with the Air Force and 27 file drawers brimming with detailed information on each mission he has flown.

Though often asked to describe his favorite Air Force memory or to pick the painting he most cherishes, Ferris just laughs and says, "Impossible." He



Keith Ferris displays a just completed painting, "Waikiki Sunrise," modern era; it commemorates the 2006 basing of C-17s at Hickam AFB, Hawaii.

goes on, "It's like someone asking you to pick which kid is your favorite."

Flying No. 4

Still, he does note a vivid memory of one standout event: His 1963 cross-country flight in an F-100 Super Sabre with the Thunderbirds—the Air Force's elite aerial demonstration group. On that trip he even flew slot—the No. 4 position in a diamond flying formation—during a practice demonstration.

The opportunity came about when he was representing the Society of Illustrators at a presentation of Air Force art in Los Angeles. "I was looking at a gorgeous painting of the Thunderbirds off the top of the mountains and there was an Air Force officer standing next to me," Ferris recalled. "This voice said, 'What do you think of that painting?'"

"I said, 'Well, it's a wonderful painting, but the way to paint the Thunderbirds is from inside that formation.'"

"The airman said, 'You would do that?'"

"I said, 'Yes, sir.'"

"He said, 'When can you do that?'"

Ferris looked at the stranger wearing the Air Force officer's uniform and thought, "It had better be before the end of this flying demonstration season, because they are changing from F-100s to F-105s, and they won't have a two-seat F-105."

He got his chance about two months later.

Armed with his \$29 Ricoh fixed lens camera, Ferris reported to Craig AFB, Ala., in December 1963, where he met up with the Thunderbirds narrator. The next day he flew with the Thunderbirds to Las Vegas, arriving at Nellis AFB, Nev., that night.

"I spent a week with this team, and played handball with them, picnicked with their families, and flew in the slot in a practice demonstration," Ferris said. He even spent the weekend with the team's engine specialist—whom he still talks to today—changing out the J57 engine so the two-seat airplane would be available to fly during the week.

From the coveted slot position, Ferris was able to record the Thunderbirds from inside the flying formation, as planned.

Though his role in each mission is to fly as an artist, he is not thinking of the next painting while in the air.

"I want to soak up everything I can about what this is like, what the Air Force experience is, ... and [master] the technological things I need to know," he said. "On the way home I'm thinking of everything I saw and I say, 'What is the most important thing that everyone involved in this would remember?' It has to tell their story." ■

Amy McCullough, formerly a US Air Force staff sergeant, is a staff writer for Military Times. This is her first article for Air Force Magazine.

Ten unified commands are backed by new “capability portfolio management” teams.

The Services — Meet the Warlords

By Jason Sherman

Who should exert the greatest influence over the defense budget—the four services, which actually prepare American forces for battle, or the nation’s 10 warlords, combatant commanders who lead them in operations?

It’s a big question in Washington, where the Pentagon has recently adopted new rules favoring the warlords. The result will go a long way toward determining how much the nation will devote to immediate needs in Iraq and Afghanistan and how much to the development of future combat capabilities.

Six commanders deal with regions (Europe, Pacific, Africa, Mideast, Latin America, North America), and four with functions (transportation, global strike, joint-force preparation, special operations). They and their staffs are preoccupied with “warlord” issues—readiness, training, sustainment, and so forth, all of which are vital to today’s fight.

The four services also are obviously interested in all of these factors, but they have another preoccupation—preparing the forces to be strong tomorrow. Long-term investment of this type, of course, pays no dividends in the short term. Secretary of Defense Robert M. Gates calls it “next-war-itis.”

Few disagree that the United States needs both. The real question is one of emphasis. However, it is unavoidable that the power of one increases at the expense of the other.

Today, in a series of budget struggles, the services are squaring off against the



DOD photo by Petty Officer 1st Class Chad J. McNeely

warlords, which are represented by new “capability portfolio management” teams. These CPM teams are led by civilians from the Office of the Secretary of Defense and officers representing the unified combatant commanders.

The CPM teams look to shift funds across the entire defense establishment, and not just within a service’s budget.

Advocates of portfolio management would like to give future Pentagon leaders the tools to make bold—heretofore unimaginable—changes, allowing major trade-offs in spending. This might allow future leaders to eliminate, say, a fighter wing to pay for new infantry brigades, or to cut a portion of the submarine fleet to fund intelligence-surveillance-reconnaissance capability.

The CPMs, thus, are the new focus of a long-running debate over whether the services shortchange present needs for future capabilities, or if wartime commanders are dangerously obsessed with here-and-now problems and indolent in preparing for larger dangers of the future. The changes could upset the balance of spending in which each service has received a relatively constant share of each year’s annual base defense budget.

This summer, the Pentagon’s civilian leaders prepared to lock in new rules that shift the balance of power between the combatant commands and the military services. By formally endowing select COCOMs with responsibility to be “capability portfolio managers,” Deputy Defense Secretary Gordon England would advance



Lockheed Martin photo by Eric J. Sollinger

Left: Adm. Michael Mullen, Chairman of the Joint Chiefs of Staff (I) and Army Gen. David Petraeus, then commander of Multinational Force-Iraq (r), leave a Baghdad meeting. Above: Lockheed Martin's F-22 assembly line. Some CPMs want to shift resources from building forces capable of high-end warfare toward dealing with irregular operations and training foreign militaries.

a long-standing OSD goal of giving greater voice to the Pentagon's ultimate customer: the combatant.

The ramifications are uncertain but potentially severe.

This could be one of the biggest institutional reforms the Bush Pentagon leaves to its successor, said Ryan Henry, DOD deputy policy chief. Henry ranked it alongside the decision to convert the Army from a division-based to a brigade-based structure as among the Administration's most significant organizational changes.

"I think we put a real good idea on the launchpad," said Henry. "I think it will take some fresh perspective in a new Administration coming in to see how to apply this tool. I would really encourage them not to discard it out of hand but to see how they can make it work."

The Pentagon's move is not universally acclaimed. The services fear that

a more-muscular set of combatant commanders—with their focus on near-term challenges—could hamper the services' effectiveness in organizing, training, and equipping the force. These are the statutory responsibilities of the services. They entail balancing today's needs with those of the next decade or two.

Trade-Offs

The grand goal of portfolio management is cross-service assessments of weapon systems and force structure. This, as Pentagon leaders explain, would let DOD balance strategic risks and make capability trade-offs between services.

OSD has therefore worked this year to formally engrave the responsibilities of capability portfolio managers in official policies and directives.

In February, England made permanent four teams established in 2006 as pilot projects. Each is headed by a senior Pentagon civilian and combatant commander and strives to identify so-called "seams" between service investment plans and to advocate budget decisions that would fill those seams.

The four permanent CPM teams are:

- Command and control, led by the assistant secretary of defense for networks and information integration and the head of US Joint Forces Command.
- Battlespace awareness, led by the undersecretary of defense for intelligence and the commander of US Strategic Command.
- Net-centric operations, led by the assistant secretary of defense for net activities and, again, the commander of US Strategic Command.
- Logistics, led by the undersecretary of defense for acquisition, technology, and

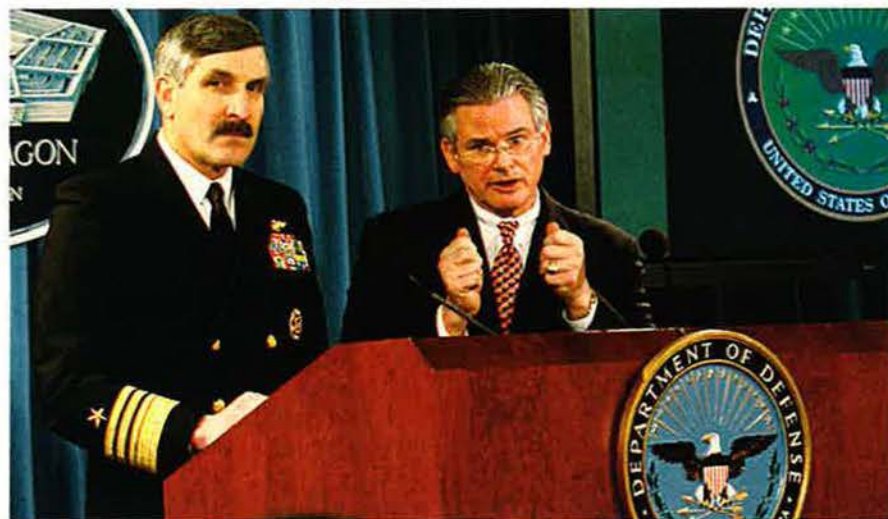
logistics and the head of US Transportation Command.

These capabilities—command and control, battlespace awareness, net-centricity, and logistics—are judged by some to be insufficiently backed by the Army, Navy, Air Force, and Marine Corps, to the frustration of the operational commanders.

England also launched five new capability portfolio management pilot programs, expanding this initiative to encompass all other capabilities. These teams have a slightly different personnel leadership arrangement. The interests of the combatant commanders are represented by members of the Joint Staff.

The five experimental portfolios are:

- Building partnerships, led by the undersecretary of defense for policy and the Joint Staff director of strategic plans and policy (J-5).
 - Force protection, led by the Pentagon acquisition executive and the Joint Staff director for force structure, resources, and assessment (J-8).
 - Force support, led by the undersecretary for personnel and readiness and the J-8.
 - Corporate management and support, led by the Pentagon's director for administration and management and the director of the Joint Staff.
 - Force application, whose leadership comprises DOD's undersecretaries for policy and for acquisition, along with the entire Joint Requirements Oversight Council. That council includes the vice chairman of the Joint Chiefs and the vice chiefs of the four military services.
- While all five of these CPMs are potentially significant, the one attracting the most attention is the fifth one—force application. This would entail control of



DOD photo by USAF TSgt. Sean P. Houlihan

Vice Adm. Evan Chanik, then head of force structure, resources, and assessment on the Joint Staff, and Ryan Henry, deputy undersecretary of defense for policy, address reporters at a 2006 Pentagon briefing.



A B-1B takes off from Andersen AFB, Guam. Some are concerned that COCOMs will neglect the future needs of the services.

major weapon systems such as aircraft carriers, fighter aircraft, ground vehicles, satellites, missiles, and the like. It covers all domains of warfare.

England has assigned these CPM teams a central and influential role in developing the Fiscal Years 2010 to 2015 program objective memorandum, allowing the new portfolio managers to influence the service programs in three ways.

First, the portfolio managers helped Henry's policy office draft the relevant capability chapter of the Guidance for Development of the Force—a key strategic planning document that is essentially a scorecard for grading the service six-year investment plans.

Second, portfolio managers were invited to make recommendations on what programs the services should include in the FY10 budget proposals and accompanying five-year investment blueprint.

Third, portfolio managers were given an opportunity to critique service-designed investment plans.

The services, for their part, privately regard the CPM concept as the latest in a long string of bad ideas promulgated by England. They hope and expect that portfolio management will sink beneath the waves with a change of power in Washington following the 2008 Presidential election.

"The general feeling of the services is that capability portfolio management will die with the next Administration, very quickly," said one service representative.

The services are concerned that capability portfolio management overly empowers COCOMs who are obsessed with immediate combat needs but not ultimately responsible for the results of their investment decisions. Should COCOM-influenced investment decisions have a poor result, goes the argument, it will be the services—not the command-

ers—that are left holding the bag when Congress asks what went wrong.

The big question hanging over the shift toward giving COCOMs more influence in shaping the defense budget is to what degree immediate requirements pushed by the combat forces will siphon resources from investments the services believe are needed for future capabilities. Until recently, combatant commanders have had little influence on what weapons DOD procures.

Budget Influence

That's changing. A recently updated Pentagon directive, No. 7045, gives capability portfolio managers numerous opportunities to influence the Pentagon budget by giving them access to senior leaders at every stage of the planning, programming, and budgeting process to advocate for investments in their respective portfolios.

"While we haven't given them new authorities, we have given them access to key decision-making forums where they can present that view and it can make a big difference," said Henry.

This access is not trivial. It provides an opportunity for the portfolio managers, if they are unable to directly persuade the services to fund a key capability, to appeal, in hopes of prevailing on England to order the services to support the program. "That means sometimes the component is going to win the argument and sometimes the capability portfolio manager is going to win the argument," said a Pentagon official.

Last fall, during a trial run in which capability portfolio managers advocated for specific programs in the FY09 budget

proposal, the services squared off against combatant commands on a number of key issues.

USAF Maj. Gen. David M. Edgington, who handles the day-to-day C2 portfolio management for Joint Forces Command, said JFCOM prevailed in securing \$500 million over five years for its high-priority Net-Enabled Combat Capability program. This is a long-term effort to put in place an architecture enabling continuous cross-service C2 enhancements.

In preparing the Fiscal Year 2010 budget this summer, England asked the four permanent capability portfolio managers—as well as five experimental portfolio managers—to draw up a list of programs they want the services to fund.

In mid-April, Marine Corps Lt. Gen. Emerson N. Gardner Jr., deputy director of program analysis and evaluation, delivered a lengthy memo containing the portfolio managers' recommendations for programs the services should consider funding in their FY10-15 budgets.

The military services ignored these "requests" at their own peril. To ensure recommendations are given serious consideration, England is providing each portfolio manager opportunity to critique how the services treat the funding requests.

"What we hope to have happen is the services will work with portfolio managers during the budget build and program build so that we don't have a shoot-out at the end," said Marine Corps Brig. Gen. Raymond C. Fox, who last fall was in the Joint Staff J-8. "The services can't ignore them and the portfolios can't work in their own little vacuum—it really helps if they come together."

To head off any perceived surprise and unexpected battles during the budget endgame, Marine Corps Gen. James N. Mattis, JFCOM commander and command and control capability portfolio manager, worked this spring to make clear to the military services the programs he planned to fight for. "There will be no surprises," Edgington said.

Could capability portfolio management be a vehicle for fundamentally refocusing the shape of the military to deal with irregular operations and training foreign military? These are top priorities for combatant commanders, but shifting investment toward them could diminish service efforts to build forces optimized for high-end combat. ■

Jason Sherman is senior correspondent for InsideDefense.com, part of the Inside the Pentagon family of newsletters, based in Arlington, Va. His most recent article for Air Force Magazine, "The Two-War Strategy Begins To Fade Away," appeared in the September 2005 issue.

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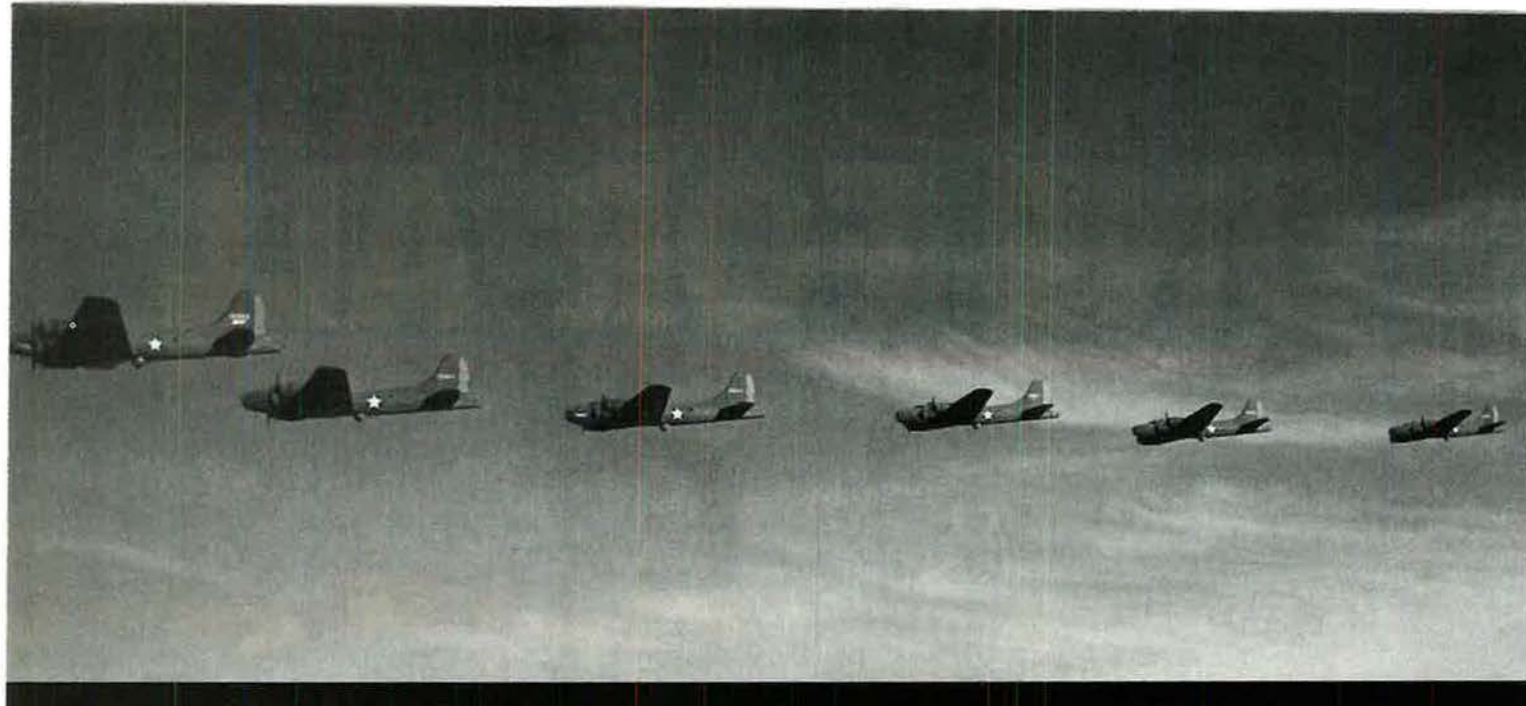
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GHQ Air Force

This strange arrangement in 1935 split the Air Corps into two camps—but it led the way to an independent Air Force.

By John T. Correll

In the years following World War I, the Army had a hard time keeping a lid on its rambunctious air arm. The aviators, convinced that airpower had revolutionized warfare, rallied to the call of the firebrand Brig. Gen. Billy Mitchell for a separate aeronautical department, co-equal with the Army and the Navy.

They were further inspired by the example of the Royal Air Force, formed in 1918, by the merger of the Royal Flying Corps and the Royal Naval Air Service. Britain had established the world's first independent air force after experiencing the bombardment of London during the war by German zeppelins and airplanes.

US airmen were impatient with their role and status, but independence for



them was not to be. The Army Air Service—part of the Signal Corps until May 1918—gave a good account of itself in the war, but it was in combat for only nine months. Its contributions were not central to the outcome.

Aviation was popular with the public and Congress, and between 1916 and 1920, eight separate bills seeking to create a separate air service were introduced. That made little impression on the War Department, which regarded airpower, at best, as a supporting capability for the ground forces.

Demobilization of the Army began within hours of the Armistice in 1918, and the air arm took its share of the reductions. The Air Service was cut back 95 percent from its wartime strength and all but 22 of its 185 aero squadrons were disbanded. A spirit of isolation-

That did not mean that the branches of the Army were equal. The Infantry was first in the pecking order. The Air Service was last, and by a wide margin. Many of the airmen were young and brash, which did not help their case with the Army elders.

The Chief of the Air Service was a major general in charge of schools, depots, and acquisition of airplanes and other equipment. Tactical aeronautical units—like infantry, cavalry, and artillery units—were parceled out to the nine Army corps area commanders.

With the drastic drawdown in effect, most of the Army's infrastructure existed only on paper or in skeleton form. Plans for fleshing out the force in wartime were extensive and complicated.

When Ulysses S. Grant had become head of the Union Army during the Civil

report to the GHQ, which would then lead them in battle. In 1924, the Army specifically authorized a GHQ Air Force to be headed by an air officer and to be the air component of the GHQ.

The Army continued to insist that the Air Service had no mission other than support of the ground forces, despite growing evidence of other kinds of capabilities. Mitchell's airmen sank a battleship in 1921, and Army aviators flew around the world in 1924. Agitation for a separate air service continued. In 1925, the Army court-martialed Mitchell for his criticism of the War Department and the armed forces, but it failed to silence him.

Standby Mode

The Air Corps Act of 1926 changed the name of the air arm, making it sound more important but leaving its role and status unchanged. By the 1930s, the Army had largely overcome its early prejudice that aviation had little or no military value. Even so, the Air Corps was regarded as no more than a branch of the Army, like the artillery and the cavalry, and was expected to behave as such. The mission was to support the ground forces. Maj. Gen. Hugh A. Drum, the deputy chief of staff and second ranking officer in the Army, declared that there was no requirement for airplanes to fly farther than three days' march ahead of the infantry.

A provisional GHQ Air Force was formed for Army maneuvers in 1933. With a wary eye on the revolution and continuing unrest in Cuba, the Army kept the headquarters element of the GHQ Air Force in a standby mode after the maneuvers.

To the chagrin of the old guard, the prospects for airpower kept expanding. For example, bigger and better Army bombers challenged the Navy for the coastal defense mission. Proposals kept bubbling up for a separate service. In February 1934, two bills introduced in Congress proposed a separate promotion list and budget for the Air Corps, along with increases in personnel and aircraft.

Between 1919 and 1934, no fewer than 15 special boards, commissions, and committees had pondered the question of what to do about Army aviation. The most significant of these was the Baker Board of 1934, chaired by former Secretary of War Newton D. Baker. It suggested setting up a GHQ Air Force for regular peacetime operations. Such a measure would not only head off



An early B-17C in flight. Whether to develop the B-17 was the biggest issue between Andrews and the Army.

ism dominated US political opinion and defense policy. It was a poor time for the newest part of the Army to be looking to expand.

The War Department understood that aviation had introduced something new into warfare. The Army Reorganization Act of 1920 recognized the Air Service as a combatant branch of the Army, on an organizational par with the Infantry, the Artillery, and the Quartermaster Corps.

Opposite top: B-17s in formation flight. Left: Lt. Gen. Frank Andrews in the cockpit of a Flying Fortress. Andrews was a leading advocate of the development of a long-range bomber.

War, he left a subordinate in charge of affairs in Washington and made his headquarters with the Army of the Potomac in the field, chasing Robert E. Lee back toward Richmond. The Army's war mobilization plan in the 1920s was based on a similar idea.

The concept of a "General Headquarters" had its specific origins with Gen. John J. Pershing, who established such an organization for his American Expeditionary Force in France in World War I. The Army mobilization plan in the 1920s assumed that the Chief of Staff, like Grant in the Civil War, would leave Washington and take command of a Pershing-style GHQ in the field. All land and air combat forces would



In 1935 (l-r), Maj. Jimmy Doolittle (Air Corps Reserves), Brig. Gen. Hap Arnold, and Brig. Gen. Oscar Westover stand next to the Mackay Trophy that Arnold received for a record-setting flight. Arnold was at this time GHQ Air Force's 1st Wing commander. Westover became Chief of the Air Corps later that year.

the demand for a separate air service but would also provide a way to take advantage of the growing capabilities of airpower.

With great fanfare, the GHQ Air Force was set up March 1, 1935, with headquarters at Langley Field, Va. The Chief of the Air Corps, Maj. Gen. Benjamin D. Foulois, wanted command of GHQ Air Force for himself, but the Army leaders did not want him to have any more power than he already did.

The commander chosen was Frank M. Andrews—described by *Time* magazine as “a hitherto obscure field officer”—who was jumped in grade from lieutenant colonel to temporary brigadier general. Andrews was a seasoned airman who had begun his Army career in the horse cavalry. No US airman had held such a command since the days of Billy Mitchell in France. No overall General Headquarters had been mobilized, so Andrews reported directly to the Chief of Staff, Gen. Douglas MacArthur, through the Army General Staff.

Air Corps tactical units were taken away from individual field commands and assigned to GHQ Air Force. That meant about 40 percent of the Air Corps was now in GHQ Air Force. Foulois held control of the rest for training, procurement, supply, and other functions. Foulois reported to MacArthur, just as Andrews did.

Thus, the air arm was split into two camps. Organizational competitiveness was inevitable and grew sharper when

Andrews was within the year promoted to temporary major general.

Intramural Arguments

Air Corps cohesion weakened temporarily, but the real significance of the GHQ Air Force was not yet fully apparent. It was a unique force, like nothing else in the Army, with all of the field units of a combat branch assigned to one organization and commanded by an officer of that branch. It was the closest thing so far to an independent air force.

GHQ Air Force had three wings, encompassing 30 tactical squadrons. These squadrons comprised 12 bom-

bardment, 10 pursuit, six attack, and two reconnaissance units. The 1st Wing at March Field, Calif., was commanded by Henry H. “Hap” Arnold, promoted to brigadier general in his new assignment. Brig. Gen. Henry Conger Pratt commanded the 2nd Wing at Langley, and Col. Gerald C. Brant had the 3rd Wing at Barksdale Field, La.

Maj. Gen. Oscar Westover, who succeeded Foulois as Chief of the Air Corps, in December 1935, clashed regularly with Andrews. Westover wanted GHQ Air Force transferred to his control. Andrews opposed this. More fundamentally, Westover was not a boat rocker whereas Andrews flung one challenge after another at the Army.

Westover brought Arnold to Washington as his assistant. Arnold did not want the job, but he got along well with everybody and he was a stabilizing influence. In his memoirs, Arnold said he had previously sided with GHQ Air Force in the “intramural argument” dividing the air arm but that he soon developed “a new kind of sympathy” for Air Corps headquarters.

In 1936, Arnold and Maj. Ira C. Eaker published the first edition of their book, *The Flying Game*, in which they described GHQ Air Force as “the first recognition in the United States of the need for an air force designed, equipped, and trained to operate beyond the sphere of influence of either armies or navies.”

The biggest issue in the running battle between Andrews and the Army was the B-17 bomber. MacArthur, who had chosen Andrews to command GHQ



Maj. Gen. Malin Craig (l) became Army Chief of Staff in 1935. Arnold (r) was appointed assistant chief of the Air Corps in 1936.



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Air Force, backed development of an experimental long-range bomber. When GHQ Air Force was activated in 1935, several prototype bombers were flying, among them the four-engine Boeing XB-17, forerunner of the B-17 Flying Fortress. Andrews was the leading advocate of the B-17 and wanted it designated as the standard bomber for the Air Corps.

However, Gen. Malin Craig, who replaced MacArthur as Chief of Staff in October 1935, was ill-disposed toward such bombers or airpower in general. Speaking for the General Staff, Craig's deputy, Maj. Gen. Stanley D. Embrick, said that "the military superiority of ... a B-17 over two or three smaller planes that could be procured with the same funds remains to be established."

Andrews had an extra burden in making the case for the B-17. The public was staunchly isolationist, and strategic bombardment was not an approved Air Corps mission. Thus the purpose of the heavy bomber was initially pitched as coastal defense. As a demonstration of capability, GHQ Air Force B-17s intercepted the Italian ocean liner *Rex* 725 miles east of New York in 1938. The Navy was outraged and so was Craig.

Secretary of War Harry H. Woodring, a strong isolationist, shared Craig's lack of enthusiasm for the B-17. The Army bought only a few B-17s, instead buying cheaper, two-engine bombers.

Westover was killed in an airplane crash in September 1938. Craig offered to nominate Andrews to be Chief of the Air Corps on condition that Andrews stop pushing the B-17. Andrews declined and Arnold was chosen instead. In January 1939, Andrews further antagonized the War Department with a speech to the National Aeronautic Association. In it, he said the US was a sixth-rate airpower. That contradicted Woodring, who was assuring the public of the nation's air strength.

Retribution came swiftly when Andrews' tour at GHQ Air Force ended in March 1939. He reverted from major general to his permanent grade of colonel and was assigned as air officer for the VIII Corps Area in San Antonio—the same backwater to which Mitchell had been exiled in 1925 for similar outspokenness.

The logjam finally was broken by the active intervention in military affairs of President Franklin D. Roosevelt. In previous times, he had been assistant secretary of the Navy and as offended as anyone by Billy Mitchell. As war

Shifting Lines of Authority

Old Army, 1926. Chief of Air Corps reports to Army General Staff, as do chiefs of Infantry, Artillery, Quartermaster Corps, etc. Flying units in the field controlled by individual corps area commanders.

GHQ Air Force, 1935. Flying units taken away from corps commanders, put into single organization headed by an airman and reporting to the General Staff. Leadership of air arm divided, with Chief of Air Corps also reporting to General Staff but having no control of GHQ Air Force.

Air Corps Control, 1939. Chief of Air Corps—rather than General Staff—designated to "supervise" GHQ Air Force. Nominal change, as General Staff continued to exercise control.

GHQ Army Activation, 1940. All Army field units, including aviation units in GHQ Air Force, assigned to the newly activated GHQ Army.

Army Air Forces, 1941. Both the Chief of the Air Corps and the commander of Air Force Combat Command (formerly GHQ Air Force) report to the Chief of the new Army Air Forces. However, various organizational issues cloud the lines of control.

The Army Triad, 1942. Army divided into three autonomous commands: Army Air Forces, Army Ground Forces (replacing GHQ Army), and Army Service Forces. Office of Chief of Air Corps and Air Force Combat Command dissolved.

clouds gathered in Europe and Asia, though, Roosevelt became a supporter of airpower.

Alarmed by German militarism and the growing capability of the Luftwaffe, President Roosevelt launched a rearmament program. At a White House meeting in November 1938, he called for an Army air force of 20,000 airplanes. He said he did not want to talk about ground forces, that "a new barracks at some post in Wyoming" would not "scare Hitler one goddamned bit." That put aircraft production, including production of the B-17 bomber, on a faster track.

Nothing More Important

At the end of 1938, the Air Corps had only 13 B-17s. When the US entered the war in December 1941, the newly named Army Air Forces had 198, with thousands more on the way. "No single item of our defense today is more important than a large four-engine bomber capacity," Roosevelt said as he cranked up production.

Meanwhile, a number of other important changes took place. Maj. Gen. George C. Marshall replaced Embrick as deputy chief of staff of the Army in 1938. He was a strong supporter of airpower, and he thought highly of Andrews. In July 1939, Craig was on final leave prior to retirement and Marshall, chosen to replace him, was acting Chief of Staff. Risking the displeasure of Craig and Woodring, Marshall re-

called Andrews—in his fourth month of exile in San Antonio—to Washington, promoted him to brigadier general, and made him assistant chief of staff for operations.

(In 1943, Andrews was killed in an air crash. He had advanced to the grade of lieutenant general and was commander of all US forces in the European Theater. It was widely believed that had he lived, he, rather than Dwight D. Eisenhower, would have been the Allied commander for the D-Day invasion.)

Roosevelt had never agreed with the isolationist views of Woodring but did not dismiss him because he could deliver votes at election time. Finally, in July 1940, Woodring was replaced with Henry L. Stimson, a fire-breathing interventionist.

With the departure of Andrews from GHQ Air Force in 1939, the Army entered a zigzag series of adjustments and redrew the organizational chart several times before hitting on a solution that worked.

In March 1939, Delos C. Emmons was promoted to major general and sent to GHQ Air Force to replace Andrews. Concurrently, the Army made another one of its cosmetic changes, switching control of GHQ Air Force—on paper, at least—from the General Staff to the Chief of the Air Corps. This gave the appearance that Hap Arnold, six months into his tour, had gained the control denied to Westover but in reality, Em-



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Andrews (front) and staff view an aerial demonstration at the new GHQ Air Force at Langley Field, Va.

mons continued to get his orders from the General Staff.

The Air Corps split widened the following year. With war approaching and mobilization looking more likely, the Army finally activated Army GHQ in July 1940, five years after GHQ Air Force had been activated. Its first task was to train tactical units for four field armies set up in a 1932 mobilization plan. In November 1940, GHQ Air Force assumed its wartime role and was assigned to Army GHQ. The three original wings of GHQ Air Force were soon reorganized as four air forces. Airmen braced themselves, expecting to hear that the four air forces had been placed under the four field armies, but that did not happen.

What did happen was Emmons was promoted to lieutenant general in November 1940, the first airman to achieve that grade. That put him on a par with the commanders of the field armies, who were three-star generals, but it made Emmons senior to Arnold, who was still a two-star. Arnold was deputy chief of staff for air as well as Chief of the Air Corps. This gave him a certain advantage in the decision-making process but, as Arnold said later, it was an "awkward situation."

(It was the last promotion for Emmons, who would finish World War II as commander of the Alaskan Department. By that time, Arnold was a five-star general commanding the Army Air Forces.)

The lashed-up organization with Army GHQ in charge of operational air and ground forces did not last long. It was becoming obvious that a two-

ocean war would be too complicated to run from a Pershing-style GHQ in the field. Marshall also saw for himself that the General Staff responded with particular slowness on matters affecting the air forces.

A reorganization in June 1941 created the Army Air Forces. It took GHQ Air Force away from Army GHQ, renamed it "Air Force Combat Command," and assigned it to the AAF. Arnold's new title was Chief of the Army Air Forces and he controlled both the Air Corps and Air Force Combat Command.

Spaatz Returns

Emmons once again reported to Arnold, who was junior to him by one star. Arnold was finally promoted to lieutenant general in December 1941. Later that month, Emmons was sent to command the Army's Hawaiian Department, replacing Lt. Gen. Walter C. Short, who was relieved following Japan's attack on US bases in Hawaii.

Air Force Combat Command had only a few months to go before its demise in the next round of reorganizing, but Arnold took the opportunity to bring in Carl A. Spaatz as commander and promote him to major general.

In February 1942, *Time* magazine predicted that, unless the Air Force got more autonomy, "the hue and cry for a separate air arm ... will go up again, louder and clearer than before."

Soon, the Army adopted its fourth

organizational scheme since 1939 and the configuration that would carry it through the war. In March 1942, War Department Circular 59 divided the Army into three autonomous commands—Army Air Forces, Army Ground Forces, and Services of Supply (later Army Service Forces).

Arnold's title was changed to Commanding General, Army Air Forces. The Office of the Chief of the Air Corps and Air Force Combat Command were abolished and their functions taken over by AAF headquarters. (The Air Corps formally existed until 1947.)

Army GHQ was dissolved and its training functions taken over by Army Ground Forces. That was the end of the last vestige of the 1920s mobilization plan. The GHQ concept had probably been obsolete even back then, but its continuation in the interwar years permitted the air arm to grow and develop.

Circular 59 contained one catch: It was to expire six months after the end of the war. Potentially, the AAF could revert to being no more than a component of the Army. As a practical matter, that was not going to happen. What had begun with the GHQ Air Force in 1935 might be slowed but not stopped.

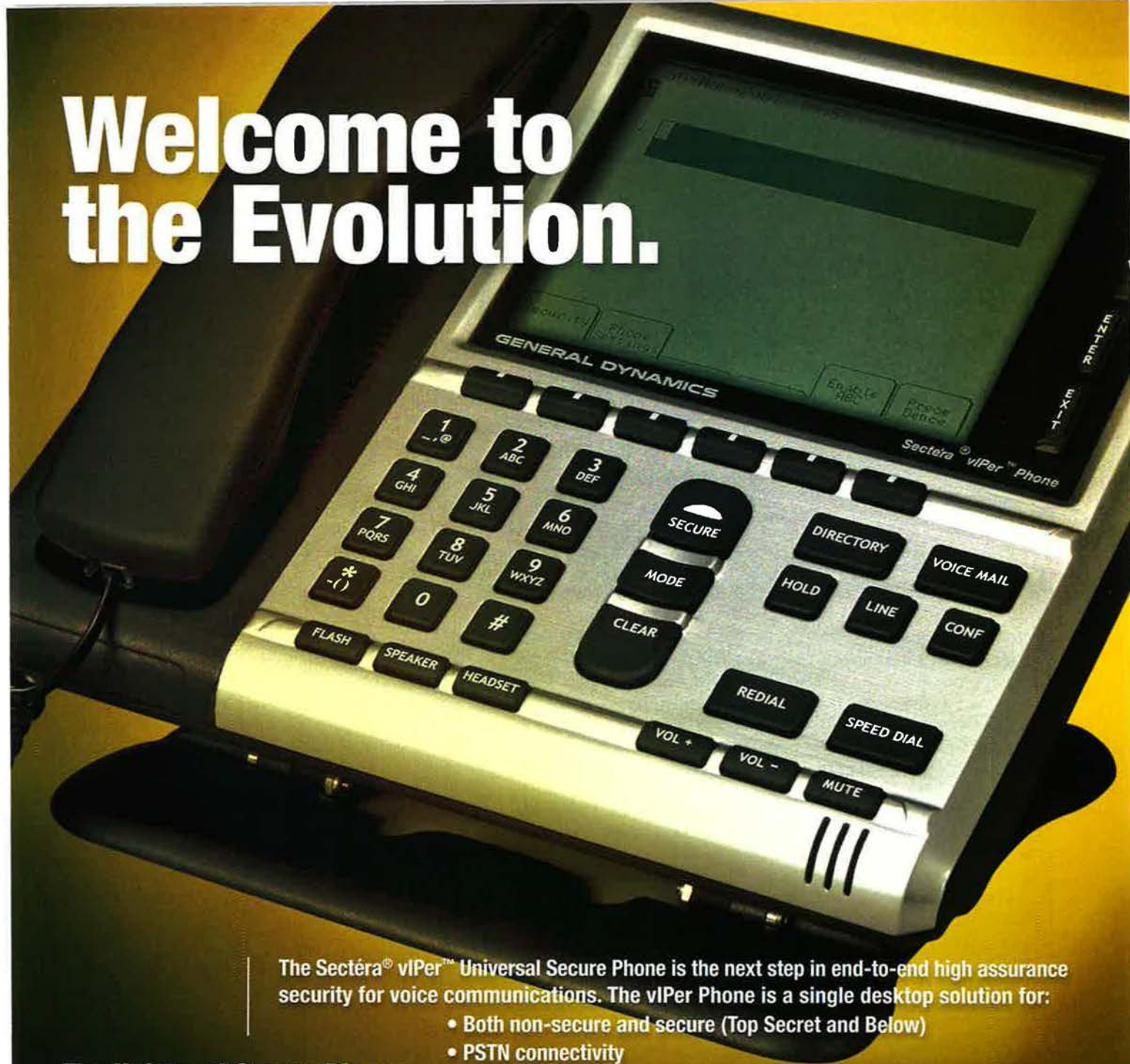
Arnold suppressed the clamor for Air Force independence until the war was over. From February 1942 on, he was a member of the Joint Chiefs of Staff, alongside Marshall and the Chief of Naval Operations, Adm. Ernest J. King.

The 1930s had begun with a small Air Corps flying open-cockpit biplanes as both bombers and pursuit aircraft. It was the most junior branch of the Army, popular with the public but lacking real influence inside the Army. The 1930s saw a great leap in aeronautical technology, and the aircraft of 1940 looked different, were different, and represented a new era. The B-17 bomber was operational and the P-38 fighter was in early stages of production.

Airpower was almost universally recognized as a likely significant force in the coming war. There was no longer any real question about the imperatives of strategic bombardment and other missions independent of the ground forces. During the formative years of GHQ Air Force, the air arm had developed a conceptual and operational cohesion. It had become an air force rather than an air corps. ■

John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributing editor. His most recent article, "How the Luftwaffe Lost the Battle of Britain," appeared in the August issue.

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The Outstanding Airmen

By Tamar A. Mehuron, Associate Editor



A1C (now SrA.) Mary C. Bullock. Full-Motion Video Analyst, 11th Intelligence Squadron (Air Force Special Operations Command), Hurlburt Field, Fla.—Aided early creation of intelligence squadron. ... Led FMV analysis on a downed Army helicopter, guiding forces that safely rescued troops and recovered classified material. ... Supported 76 coalition operations, analyzing 823 hours of full-motion video to develop al Qaeda target sets. ... Created “best practices” guide for analytical reports. ... Crafted more than 200 intelligence products for special operations forces direct-action missions that factored heavily in drop in violence in Iraq. ... Created database of 175 video products to aid first-time analysts at remote sites in developing “pattern of life” analyses for Southwest Asia operations.

TSgt. James B. Caughron. Fire Protection Craftsman, Station Chief, 22nd Civil Engineer Squadron (Air Mobility Command), McConnell AFB, Kan.—Led effort to quickly evacuate crew and passengers, including the Australian Prime Minister, from an aircraft in Iraq filled with smoke and fumes. ... Trained dozens of Iraqi civilian firefighters in techniques and equipment use. ... Helped 11 crew members aboard a P-3 to safely leave the aircraft after an in-flight emergency. ... Secured an F-16 after it engaged an airfield barrier, minimizing combat airfield damage and downtime. ... Spearheaded firefight against a second-story fire, limiting damage to Ali Air Base facility. ... Provided emergency medical care in numerous situations, including saving the lives of a soldier with a stab wound who was in shock and an individual with a partial amputation following an industrial accident. ... Honored as AMC’s Military Fire Officer of the Year.



TSgt. Earl I. Covel. Ranger Joint Terminal Attack Controller, 5th Air Support Operations Squadron (Air Combat Command), Ft. Lewis, Wash.—Received Silver Star for his actions with Army Special Forces unit. ... Executed more than 155 classified missions, supporting 57 assaults and 65 troops-in-contact actions. ... Called for close air support that led to capture of 300 insurgents and 200 enemies killed in action. ... Set up 170 combat landing zones, five while under intense hostile fire. ... Controlled airspace zones supporting some 150 intelligence-surveillance-reconnaissance platforms. ... Led eight-member team on 15 combat missions. ... Cleared tunnel system on hands and knees with grenades, killing three insurgents. ... Standardized concept-of-fires fallback plan for Special Forces units. ... Devised theater-wide procedures for conventional helicopters supporting Special Operations Forces. ... Integrated JTACs into USAF Weapons School close air support exercise. ... Instructed 90 Special Forces members on CAS operations.

The Air Force Outstanding Airman program annually recognizes 12 enlisted members for superior leadership, job performance, community involvement, and personal achievements.

The program was initiated at the Air Force Association's 10th annual National Convention, held in New Orleans in 1956. The selection board comprises the Chief Master Sergeant of the Air Force and the command chief master sergeants from each USAF major command. The selections are reviewed by the Air Force Chief of Staff.

The 12 selectees are awarded the Outstanding Airman ribbon with the bronze service star device and wear the Outstanding Airman badge for one year.



MSgt. Carla L. Curry. Superintendent, Enlisted Extended Deployment Branch (Air Force Personnel Center), Randolph AFB, Tex.—Served as a truck commander and driver in Afghanistan on year-long deployment, receiving a Bronze Star. ... Performed turret gunner duty on more than 20 convoy missions. ... Integrated airmen into observation-tower duty, devising a rotation plan to relieve soldiers. ... Led key Afghan artillery turn-in campaign. ... Carried out several humanitarian aid missions, distributing hygiene kits and food to Afghan civilians. ... Monitored and tracked nearly a thousand extended deployment actions. ... Authored brief for the Air Force's first Senior Enlisted Leader Summit. ... Created a Chiefs Group continuity book, writing a procedures guide on chief master sergeant assignments.

SSgt. Eric M. Eberhard. Explosive Ordnance Disposal Craftsman, 419th Civil Engineer Squadron (Air Force Reserve Command), Hill AFB, Utah—Volunteered for one of the most hazardous improvised explosive device areas in Southwest Asia Theater of operations. ... Applied life-saving emergency medical treatment to team leader wounded by an IED, clearing additional IEDs and enabling evacuation. ... Maneuvered vehicle and laid down suppressive fire during ambush, foiling some rocket-propelled grenade attacks and enabling Army quick reaction force to respond. ... Destroyed numerous IEDs on Army supply routes. ... Aided FBI and ATF agents in collection of blast fragments for analysis in deaths of two Afghan policemen, preparing intelligence reports on enemy tactics for use by other EOD teams in theater. ... Identified and destroyed two improvised rocket launchers being readied for attack on forward operating base.



SrA. Alicia A. Goetschel. Pass and Registration Clerk, 100th Security Forces Squadron (US Air Forces in Europe), RAF Mildenhall, Britain—Deployed for six months to Army Camp Bucca in Iraq. ... Ensured safe and smooth prisoner transfer of hundreds of detainees from Basra to Baghdad. ... Helped quell two prison riots and led security force response to 11 major prisoner uprisings. ... Countered mortar and sniper attacks with increased patrols and initiated prisoner lockdowns and head counts. ... Discovered an escape tunnel and took action to ensure no escapes. ... Prevented the escalation of three aggravated assault incidents, rescuing some detainees from life-threatening situations. ... Trained and certified several Iraqi corrections officers. ... Mentored several airmen in upgrade training. ... Received Army Achievement and Commendation Medals for service in Iraq.

2008 Outstanding Airmen

SMSgt. Donna J. Goodno. Mission Support Flight Superintendent, 147th Combat Communications Squadron (Air National Guard), San Diego—Managed a communications-computer team of 27 at Baghdad Airport. ... Obtained and applied more than \$1 million in funding to fix problems with air traffic control radios. ... Ensured daily ongoing communications despite dozens of base attacks and constant threat of mortar and rocket strikes. ... Secured nearly 100 percent up-time through skillful management of airfield navigational, radio, and support equipment. ... Built communications fly-away kit from scratch, a boon for forward deploying RED HORSE teams. ... Resolved long-standing problem with the sole airspace radar control system. ... Demonstrated effective command and control measures during an emergency repair of sabotaged perimeter fence.



TSgt. Jason D. Hughes. Flight Line Expediter, 3rd Aircraft Maintenance Squadron (Pacific Air Forces), Elmendorf AFB, Alaska—Spearheaded F-22 maintenance beddown at Elmendorf, directing more than 50 airmen and \$1 billion in assets. ... Designed Elmendorf's F-22 hot-pit capability. ... Directed F-22 fuel tank acceptance inspection, with 70 tanks finished months ahead of schedule. ... Expedited preparations for NORAD's first F-22 alert response, ensuring airspace security in the wake of grounded F-15s. ... Supervised launch of first F-22 intercept of Russian bomber near US airspace. ... Arranged final base F-15E live munitions sortie launches. ... Streamlined transfer of F-15s and equipment to new home. ... Achieved top-notch maintenance effectiveness rate for six straight months.

MSgt. George Price Jr. Chief, Explosive Ordnance Disposal Flight, 45th Civil Engineering Squadron (Air Force Space Command), Patrick AFB, Fla.—Earned Army Combat Action Badge for his actions while deployed to FOB McHenry near Kirkuk, Iraq. ... Detected and stopped a bomb-laden vehicle from entering the base. ... Defended his vehicle when attacked by insurgents, pursuing enemy forces and capturing IEDs and six terrorists. ... Pulled two soldiers from rocket-damaged vehicle and performed combat-life-saving treatment, saving one soldier. ... Instructed members of 10th Mountain Division and Iraqi Army on enemy tactics and IED identification. ... Supported more than a thousand combat missions, securing the safety of 16,000 soldiers. ... Honored as senior noncommissioned officer of the month for the Army's 25th Infantry Division. ... Instructed at FBI/Forensic Post Blast Course, attended by personnel from 11 counties and 54 civilian law enforcement and bomb squad personnel. ... Selected to work with Secret Service for Presidential EOD support.





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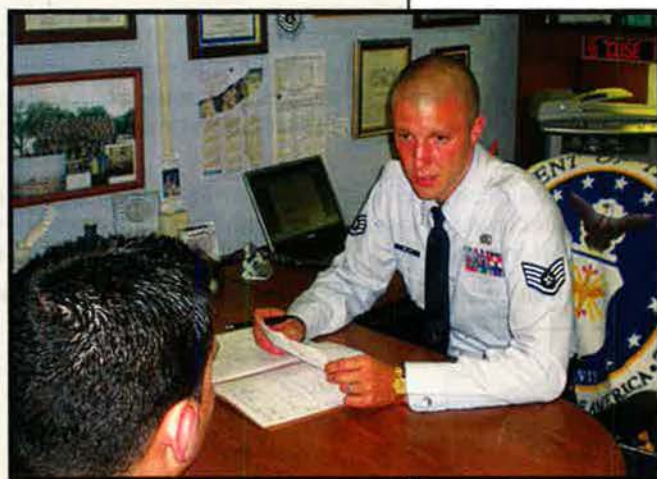
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SrA. Shawn A. Ryan. Security Forces Patrolman, 82nd Security Forces Squadron (Air Education and Training Command), Sheppard AFB, Tex.—Earned Army Commendation Medal and Combat Action Badge for his actions during voluntary year-long deployment to Camp Victory in Iraq. ... Continued to help repel enemy attack though wounded, receiving a Purple Heart. ... Provided life-saving buddy care to wounded team member. ... Stopped speeding vehicle-borne IED, killing terrorist. ... Instructed thousands of Iraqi policemen. ... Conducted nearly 200 combat patrols. ... Detected artillery round rigged to explode, preventing injury to troops and damage to assets. ... Shared his M-2 machine gun expertise with team members, providing gunner-down training and enhancing unit's combat capability.



TSgt. Tammy K. Shaw. Noncommissioned officer in charge of shipping, 88th Diagnostics and Therapeutics Squadron (Air Force Materiel Command), Wright-Patterson AFB, Ohio—Directed the Defense Department's largest DNA collection site, managing 38,000 samples per year and maintaining a 0.02 percent rejection rate. ... Synchronized tests from nine ANG and AFRC facilities, certifying eligibility of thousands of reservists to support the War on Terror. ... Revamped chemical inventory. ... Spearheaded medical group's first phlebotomy refresher course for 100 staff. ... Inaugurated three new point-of-collection sites, expediting test results for emergency room patients. ... Helped earn lab "Best in DOD" and AFMC lab team of year honors.

SSgt. (now TSgt.) James M. Weltin. Enlisted Accessions Recruiter, 333rd Recruiting Squadron (Air Education and Training Command), Rockledge, Fla.—Surpassed recruitment goal for 20 consecutive months. ... Took his recruiting squadron from last place performance to top rank. ... Recruited seven airmen for crucial high demand, hard-to-fill specialties in crypto-linguistics and pararescue. ... Stepped in as flight chief during superior's absence, handling daily operations. ... Hosted "Air Force Careers" radio show on the largest radio station in the recruiting zone. ... Orchestrated swearing-in ceremony for 75 enlistees conducted by a member of the Tuskegee Airmen, attracting regional press and Internet coverage. ... Named as NCO of the Quarter. ... Earned Senior Recruiter Badge.



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By June Lee, Editorial Associate

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Ronald A. Poussard



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Clarence R. Anderegg



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Heidi Shyu



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Gen. (sel.) William M. Fraser III
(nominated, confirmation pending)



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Director, Strategic Planning
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(selected)

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Vice Commander
Maj. Gen. R. Mike Worden



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Tyndall AFB, Fla.

8th Air Force
Lt. Gen. Robert J. Elder Jr.
Barksdale AFB, La.

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Lt. Gen. Gary L. North
Shaw AFB, S.C.

12th Air Force
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Davis-Monthan AFB, Ariz.

Air Force Warfare Center
Brig. Gen. Stephen L. Hoog
Nellis AFB, Nev.

Air Education and Training Command

Hq. Randolph AFB, Tex.



Commander
Gen. Stephen R. Lorenz



Vice Commander
Maj. Gen. Anthony F. Przybyslawski



**Command Chief
Master Sergeant**
CMSgt. Mark R. Luzader

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Keester AFB, Miss.

19th Air Force
Maj. Gen. Gregory A. Feest
Randolph AFB, Tex.

Air Force Recruiting Service
Brig. Gen. Alfred J. Stewart
Randolph AFB, Tex.

Air University
Lt. Gen. Allen G. Peck
Maxwell AFB, Ala.

**Wilford Hall USAF Medical Center
(59th Medical Wing)**
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Lackland AFB, Tex.

Air Force Materiel Command

Hq. Wright-Patterson AFB, Ohio



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Vice Commander
Lt. Gen. Terry L. Gabreski



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Aeronautical Systems Center
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Wright-Patterson AFB, Ohio

Air Armament Center
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Eglin AFB, Fla.

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Wright-Patterson AFB, Ohio

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Hq. Robins AFB, Ga.



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Vice Commander
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**Command Chief
Master Sergeant**
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NAS JRB Fort Worth, Tex.

22nd Air Force
Maj. Gen. Martin M. Mazick
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Hq. Peterson AFB, Colo.



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Vandenberg AFB, Calif.

20th Air Force
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Vice Commander
Maj. Gen. Kurt A. Cichowski



**Command Chief
Master Sergeant**
CMSgt. Michael P. Gilbert

1st Special Operations Wing
Col. Marshall B. Webb
Hurlburt Field, Fla.

27th Special Operations Wing
Col. Timothy J. Leahy
Cannon AFB, N.M.

352nd Special Operations Group
Col. Brian P. Cutts
RAF Mildenhall, UK

353rd Special Operations Group
Col. David Mullins
Kadena AB, Japan

720th Special Tactics Group
Col. Brad P. Thompson
Hurlburt Field, Fla.

USAF Special Operations School
Col. Paul R. Harmon
Hurlburt Field, Fla.

Air Mobility Command

Hq. Scott AFB, Ill.



Commander
Gen. Arthur J. Lichte



Vice Commander
Lt. Gen. Vern M. Findley II



**Command Chief
Master Sergeant**
CMSgt. Joseph E. Barron Jr.

18th Air Force
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Scott AFB, Ill.

Air Force Expeditionary Center
Maj. Gen. Kip L. Self
Ft. Dix, N.J.

Pacific Air Forces

Hq. Hickam AFB, Hawaii



Commander
Gen. Carrol H. Chandler



Vice Commander
Maj. Gen. Gilmory Michael Hostage III



**Command Chief
Master Sergeant**
CMSgt. Anthony L. Bishop

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Yokota AB, Japan

7th Air Force
Lt. Gen. Stephen G. Wood
Osan AB, South Korea

11th Air Force
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Elmendorf AFB, Alaska

13th Air Force
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Hickam AFB, Hawaii

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Commander
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Vice Commander
Maj. Gen. Marc E. Rogers



**Command Chief
Master Sergeant**
CMSgt. Pamela A. Darrow

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Col. James E. Dennis

Air Force Audit Agency

Washington, D.C.



Auditor General
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Air Force Center for Engineering & the Environment

Brooks City-Base, Tex.



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Action in Congress

By Tom Philpott, Contributing Editor

GI Bill for a new generation; Stages of implementation; Mortgage help on the way?

New GI Bill Becomes Law

Congress passed it. President Bush signed it. Now, the federal government has a year to get a landmark post-9/11 GI Bill functioning for the benefit of active duty members, frequently deployed Guard and Reserve members, and veterans who have had active duty service since Sept. 11, 2001.

The program will be set up jointly by the Department of Defense and Department of Veterans Affairs. It could affect 2.6 million uniformed military personnel and a chunk of the nation's 30 million veterans. The program nearly doubles the value of GI Bill education benefits for a new generation.

The Bush Administration had worried that the bill would adversely affect retention. However, President Bush came on board after Congress agreed to add a \$1 billion-a-year transferability feature as a new retention tool.

The Post-9/11 Veterans Education Assistance Act of 2008 got the Presidential signature on June 30.

The program could benefit anyone who served at least 90 consecutive days on active duty since Sept. 11, 2001. It will not take effect until Aug. 1, 2009, but the package included an immediate 20 percent increase in Montgomery GI Bill benefits to ensure that veterans and service members attending college or vocational training this fall see some instant relief from rising education costs.

The total package is projected to cost \$62 billion in its first 10 years. When the Senate refused to approve higher taxes to pay for the new GI Bill, the full Congress this election year simply decided to ignore a budget rule that new entitlements must be paid for, either through higher taxes or reductions in current entitlement spending.

Lead architects of the bill were Sen. James Webb (D-Va.) and Sen. Chuck Hagel (R-Neb.).

Opponents claimed a World War II-style benefit would cause sharp drops in re-enlistment rates. The two sponsors denied this, claiming departures would be offset by a boost in the number and quality of new recruits. Webb and Hagel argued that a generation fighting multiple tours to Iraq and Afghanistan



Hagel (l) and Webb pushed the GI Bill.

deserved their own education benefit like past wartime generations, whatever the cost in dollars or challenges posed to the volunteer force.

The transferability feature, pushed by Sen. John McCain (R-Ariz.) and Sen. Lindsay O. Graham (R-S.C.), would allow long-serving members to pass unused benefits to spouses or children.

Rundown on GI Bill Changes

■ **MGIB Improvements.** Effective Aug. 1, 2008, MGIB and Reserve MGIB benefits climbed by 20 percent. For full-time students, that meant monthly payments jumped from \$1,101 to \$1,321. After this, benefits will be adjusted automatically each year to match the national average increase in four-year public college costs.

A \$1,200 "buy-in" requirement remains for those who stay in the MGIB program. For those who transfer into the post-9/11 plan, the \$1,200 will be refunded in the form of an additional stipend after all post-9/11 benefits are used up. Individuals who don't use all of their post-9/11 benefits will not see their MGIB contribution refunded.

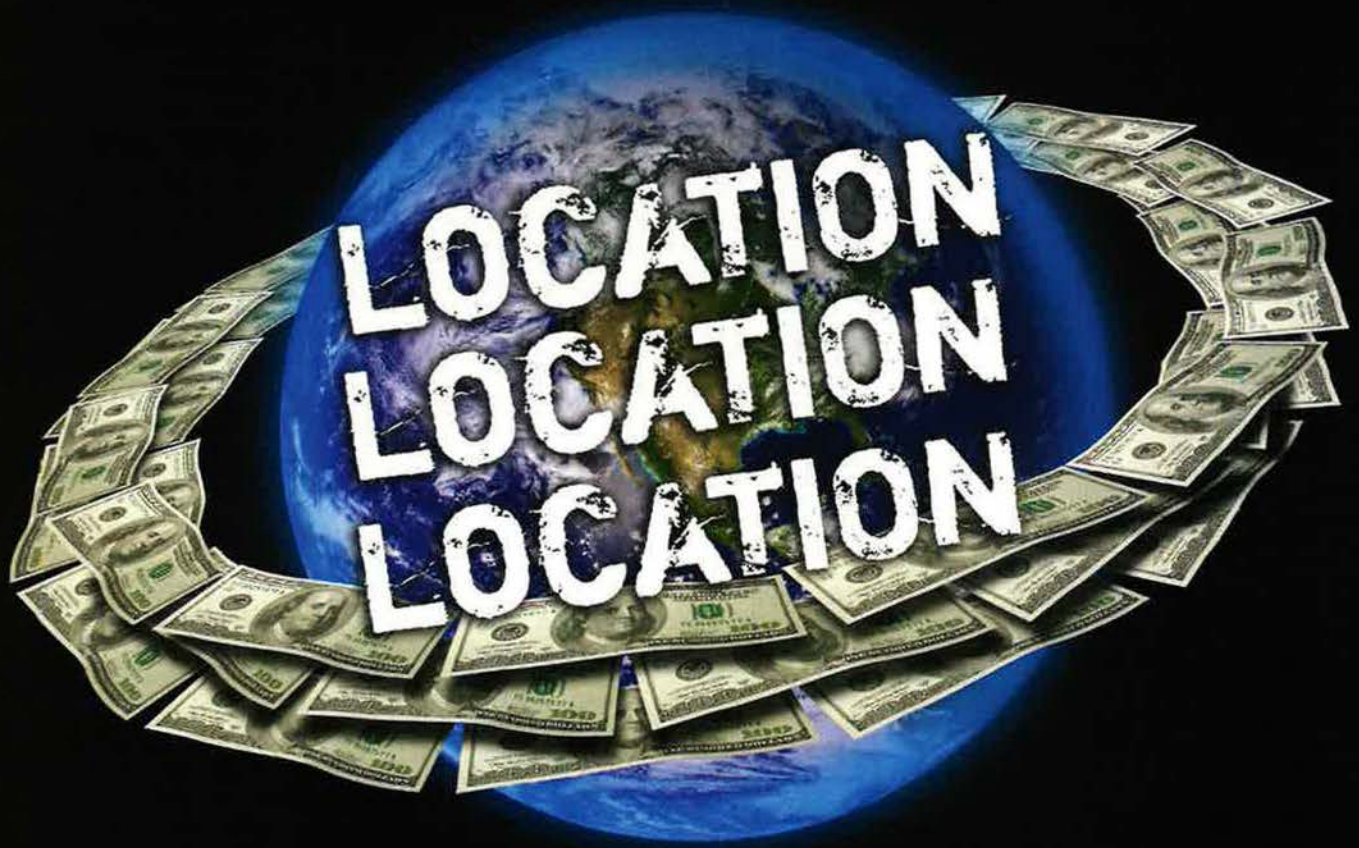
■ **Post-9/11 GI Bill.** On Aug. 1, 2009,

the alternative to MGIB becomes available to eligible persons. Active service since 9/11 from 90 days up to six months entitles a member to 40 percent of the new benefit. Longer active service delivers a higher percentage up to a maximum of 36 months' benefits (four years of college) in return for 36 months on active duty since 9/11.

Reserve and Guard members who have been mobilized multiple times will be able to earn the same education benefits as active duty peers. The full post-9/11 benefit also is payable to members separated for service-related disabilities after 30 consecutive days of active duty.

There are three payments: The first covers tuition and fees at any college up to a ceiling set to equal tuition and fees at the most expensive public college or university in the state. The second payment is a monthly living allowance equal to the local rate of Basic Allowance for Housing near the school for a married enlisted member in pay grade E-5. Students will get this money from the VA regardless of whether they live in a dorm or off campus. It will not be paid to active duty members, or for on-

AP photo by Lawrence Jackson



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line education programs, or to students enrolled in too few classes. They must be at least "half-time" students. The third payment will be a \$1,000 a year stipend for books and supplies.

Federal officials estimate the new post-9/11 benefits will have an average starting value of about \$2,100 a month, compared to \$1,329 under MGIB. The value could go significantly higher. To entice private colleges to participate, the Post-9/11 GI Bill includes a "yellow ribbon" provision. This authorizes the VA to pay half of tuition costs and fees charged by private schools, above the most costly public college yardstick, if the private college agrees to waive the other half of excess tuition and fees. This could make every college or university in the country financially affordable to veterans able to meet their academic standards.

MGIB, which will remain an alternative to the post-9/11 plan, could be the better deal for some, particularly students attending college where rents are low and tuition costs are modest or even waived entirely for in-state veterans. With MGIB, veterans are paid benefits directly and can pocket money in excess of tuition, fees, or training costs.

Also, post-9/11 benefits are intended primarily to cover the cost of earning a college degree. The MGIB will continue to cover a broader array of education and training programs.

The new GI Bill will be available to officers with post-9/11 service, including graduates of service academies and ROTC scholarship recipients who were ineligible for the MGIB.

■ **Transferability.** This retention tool will not be offered to any veteran already retired or separated. It will only be available to members on active duty or in drill status on or after Aug. 1, 2009. This date then will be the earliest that any post-9/11 benefits can be transferred to family members.

Transferability will be available only to members with at least six years of service who agree to serve at least four more years. The Secretary of Defense is given flexibility to change those requirements, or even to elect not to offer transferability if it proves to be an ineffective tool versus other measures that could be used to retain quality careerists.

There are still some loose ends, including how to handle the four-year added service commitment to win transferability for careerists bumping up against high-year tenure rules. Longer careers might not be desirable for managing overpopulated skills.

The new GI Bill represents a significant gain for eligible members and veterans, and a far more valuable educational benefit than previously envisioned for an all-volunteer force.



Akaka looks to raise the VA home loan ceiling.

Defense officials still predict lower retention rates as a result of the new GI Bill. However, they also sound increasingly excited about likely improvements to the number and quality of service recruits. "It is a very attractive incentive package, there's no question about that," said Curtis L. Gilroy, director of access on policy for the Department of Defense.

The VA posted an explanatory pamphlet at www.gibill.va.gov. It also has a toll-free number, 1-888-GIBILL1, for questions.

Help for Mortgage-Strapped Vets

Congress and Veterans Affairs are striving to help thousands of service members and veterans who face foreclosure on their homes as a result of the US credit crisis.

In the recent easy-credit years, VA's no-down-payment loans had lost favor with home-buying veterans who sought loans beyond what the VA would approve. Veterans were tempted by teaser loans and relaxed credit checks.

The VA Loan Guaranty program avoided the subprime loan debacle. However, said Rep. Bob Filner (D-Calif.), chairman of the House Veterans' Affairs Committee, the program just became "irrelevant," particularly in his home state where only 2,000 VA home loans were issued last year.

The ceiling on VA loans, now \$417,000, just didn't cover many new mortgages in California or other states with soaring housing markets. VA loan rates and fees often were seen as less competitive. Though that trend seems to have bottomed, Filner and fellow lawmakers want to see VA home loan reforms.

The Helping Our Veterans To Keep Their Homes Act, pushed by Filner, would raise the maximum VA loan from

today's \$417,000 to \$730,000; eliminate a requirement that veterans have 10 percent equity in a home to be able to refinance through a VA loan; and lower VA fees by moving to a flat fee of one percent.

Sen. Daniel K. Akaka (D-Hawaii), chairman of the Senate Veterans' Affairs Committee, also is moving a bill to raise the loan ceiling to \$730,000. He noted that veterans in February were left out of the Economic Stimulus Act of 2008, which raised ceilings identically for other federal home loan programs. Akaka proposes only lowering the equity requirement for a veteran to refinance a mortgage with a VA loan, from 10 percent down to five.

In 2004, when the VA loan maximum was \$240,000, Congress indexed that amount to rise automatically with the single family home loan limits used by Freddie Mac and Fannie Mae to fuel the broader mortgage market. Congress, however, failed to index VA loan guarantees for refinancing of non-VA-backed loans. This has left many veterans unable to use VA refinancing to retire subprime non-VA-backed mortgages larger than \$144,000.

Rep. Steve Buyer (R-Ind.), the top Republican on the Veterans Affairs' Committee, has a bill (HR 4539) to raise the ceiling for VA-backed loans for refinancing to \$417,000.

Until that becomes law, most veterans with shaky subprime loans aren't able to use VA refinancing. A \$144,000 loan ceiling, a 10 percent equity requirement, and falling home values, explained Judith A. Caden, director of the VA Loan Guaranty Service, means "we really can't help very many veterans in that position."

VA has a toll-free number (1-877-827-3702) that automatically directs callers to the nearest of nine VA regional loan centers for counseling. ■



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... And Then There's Jointness

"In Iraq, the Army has quietly decided to try going it alone for the important surveillance mission, organizing an all-Army surveillance unit that represents a new move by the service toward self-sufficiency, and away from joint operations. Senior aides to Defense Secretary Robert M. Gates say that he has shown keen interest in the Army initiative—much to the frustration of embattled Air Force leaders."—**Thom Shanker, New York Times, June 22.**

Just Riding Around

"That large squadron in the Navy that he commanded wasn't a wartime squadron. He hasn't been there and ordered the bombs to fall. ... I don't think riding in a fighter plane and getting shot down is a qualification to be President."—**Retired Army Gen. Wesley K. Clark on Presidential candidate Sen. John McCain (R-Ariz.), whose aircraft was shot down over North Vietnam in 1967 and who was held POW for almost six years, CBS "Face the Nation," June 29.**

Strategy Gap

"The United States suffers from the complete absence of a comprehensive strategy for advancing US interests. This strategic void detracts from almost every policy effort advanced by the United States government. As a result, major policies are inconsistent and contradictory in different areas of the world and across different policy realms. We find ourselves unable to agree upon and set national priorities for addressing the major challenges of our time. We suffer from a splintering of national power,

and an inability to coherently address threats and reassure and cooperate with allies."—**Rep. Ike Skelton (D-Mo.), chairman of the House Armed Services Committee, July 9.**

How You Tell

"Torture 'is basically subject to perception. If the detainee dies, you're doing it wrong.'"—**CIA counterterrorism lawyer Jonathan Fredman, minutes of a meeting with military and intelligence officials in 2002, in documents released by Congressional investigators, Washington Post, June 18.**

Objections Overruled

"When you have a difference of philosophy with your boss, he owns the philosophy and you own the difference. ... There were differences that accrued."—**Former Air Force Secretary Michael W. Wynne after being fired by Secretary of Defense Robert M. Gates, Associated Press, June 20.**

History Lesson

"The British were the best in the world at fighting 'irregular' wars at the close of the 19th century, policing an empire that encompassed a quarter of humanity. They employed large numbers of locally recruited colonial troops. But when war broke out in Europe in 1914, London could muster only a handful of divisions to help defend France against the German invasion. The larger British forces rapidly mobilized for the 1915 campaign suffered horrendous casualties due to a lack of training and a shortage of weapons and ammunition. Despite its wealth, Great Britain was unprepared for a decisive struggle against a major rival. America cannot afford to make the same mistake."—**William Hawkins, US Business and Industry Council, Washington Times, June 26.**

Slipping in Space

"We spent many tens of billions of dollars during the Apollo era to purchase a commanding lead in space over all nations on Earth. We've been living off the fruit of that purchase for 40 years and have not ... chosen to invest at a level that would preserve that com-

manding lead."—**NASA Administrator Michael D. Griffin on diminishing dominance of US in space, Washington Post, July 9.**

Airpower Lost, All By Itself

"Thirty years after the end of World War II, the hollow promises of airpower enthusiasts provided only a stalemate in Korea and a tragic defeat in Vietnam."—**Maj. Earl Tilford, USAF (Ret.), former editor of Air University Review, former director of research for the Army War College's Strategic Studies Institute, a professor at Grove City College, FrontPage Magazine, June 18.**

High-End Proliferation

"These advanced nuclear weapons designs may have long ago been sold off to some of the most treacherous regimes in the world."—**Report from former UN arms inspector David Albright on international traffic in plans for compact nuclear weapons, Washington Post, June 15.**

Short in Afghanistan

"I don't have troops I can reach for, brigades I can reach to send into Afghanistan until I have a reduced requirement in Iraq. ... Afghanistan has been and remains an economy of force campaign, which, by definition, means we need more forces there."—**Adm. Michael G. Mullen, Chairman, Joint Chiefs of Staff, Pentagon news briefing, July 2.**

Gays and Unit Cohesion

"Evidence shows that allowing gays and lesbians to serve openly is unlikely to pose any significant risk to morale, good order, discipline, or cohesion."—**Report by Lt. Gen. Robert M. Alexander, USAF (Ret.), Vice Adm. Jack Shanahan, USN (Ret.), Lt. Gen. Robert G. Gard Jr., USA (Ret.), and Brig. Gen. Hugh S. Aitken, USMC (Ret.), Associated Press, July 7.**

Like GPS, B-2, and Predator?

"The Air Force has a fondness for fancy toys of questionable necessity."—**Foreign Policy online, July 2008.**



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AFA Almanac

By Frances McKenney, Assistant Managing Editor

Chapters of the Year

Year	Recipient(s)
1953	San Francisco Chapter
1954	Santa Monica Area Chapter (Calif.)
1955	San Fernando Valley Chapter (Calif.)
1956	Utah State AFA
1957	H. H. Arnold Chapter (N.Y.)
1958	San Diego Chapter
1959	Cleveland Chapter
1960	San Diego Chapter
1961	Chico Chapter (Calif.)
1962	Fort Worth Chapter (Tex.)
1963	Colin P. Kelly Chapter (N.Y.)
1964	Utah State AFA
1965	Idaho State AFA
1966	New York State AFA
1967	Utah State AFA
1968	Utah State AFA
1969	(no presentation)
1970	Georgia State AFA
1971	Middle Georgia Chapter
1972	Utah State AFA
1973	Langley Chapter (Va.)
1974	Texas State AFA
1975	Alamo Chapter (Tex.) and San Bernardino Area Chapter (Calif.)
1976	Scott Memorial Chapter (Ill.)
1977	Thomas B. McGuire Jr. Chapter (N.J.)
1978	Thomas B. McGuire Jr. Chapter (N.J.)
1979	Brig. Gen. Robert F. Travis Chapter (Calif.)
1980	Central Oklahoma (Gerrity) Chapter
1981	Alamo Chapter (Tex.)
1982	Chicagoland-O'Hare Chapter (Ill.)
1983	Charles A. Lindbergh Chapter (Conn.)
1984	Scott Memorial Chapter (Ill.) and Colorado Springs/Lance Sijan Chapter (Colo.)
1985	Cape Canaveral Chapter (Fla.)
1986	Charles A. Lindbergh Chapter (Conn.)
1987	Carl Vinson Memorial Chapter (Ga.)
1988	Gen. David C. Jones Chapter (N.D.)
1989	Thomas B. McGuire Jr. Chapter (N.J.)
1990	Gen. E. W. Rawlings Chapter (Minn.)
1991	Paul Revere Chapter (Mass.)
1992	Central Florida Chapter and Langley Chapter (Va.)
1993	Green Valley Chapter (Ariz.)
1994	Langley Chapter (Va.)
1995	Baton Rouge Chapter (La.)
1996	Montgomery Chapter (Ala.)
1997	Central Florida Chapter
1998	Ark-La-Tex Chapter (La.)
1999	Hurlburt Chapter (Fla.)
2000	Wright Memorial Chapter (Ohio)
2001	Lance P. Sijan Chapter (Colo.)
2002	Eglin Chapter (Fla.)
2003	Hurlburt Chapter (Fla.)
2004	Carl Vinson Memorial Chapter (Ga.)
2005	Central Florida Chapter
2006	Enid Chapter (Okla.)
2007	Central Oklahoma (Gerrity) Chapter
2008	Lance P. Sijan Chapter (Colo.)

Gold Life Member Card Recipients

Awarded to members whose AFA record, production, and accomplishment on a national level have been outstanding over a period of years.

Name	Year	Card No.
Gill Robb Wilson	1957	1
Jimmy Doolittle	1959	2
Arthur C. Storz Sr.	1961	3
Julian B. Rosenthal	1962	4
Jack B. Gross	1964	5
George D. Hardy	1965	6
Jess Larson	1967	7
Robert W. Smart	1968	8
Martin M. Ostrow	1973	9
James H. Straubel	1980	10
Martin H. Harris	1988	11
Sam E. Keith Jr.	1990	12
Edward A. Stearn	1992	13
Dorothy L. Flanagan	1994	14
John O. Gray	1996	15
Jack C. Price	1997	16
Nathan H. Mazer	2002	17
John R. Aliscn	2004	18

AFA Member of the Year Award Recipients

State names refer to recipient's home state at the time of the award.

Year	Recipient(s)	Year	Recipient(s)
1953	Julian B. Rosenthal (N.Y.)	1980	David C. Noerr (Calif.)
1954	George A. Anderl (Ill.)	1981	Daniel F. Callahan (Fla.)
1955	Arthur C. Storz (Neb.)	1982	Thomas W. Anthony (Md.)
1956	Thos. F. Stack (Calif.)	1983	Richard H. Becker (Ill.)
1957	George D. Hardy (Md.)	1984	Earl D. Clark Jr. (Kan.)
1958	Jack B. Gross (Pa.)	1985	George H. Chabbot (Del.) and Hugh L. Enyart (Ill.)
1959	Carl J. Long (Pa.)	1986	John P. E. Kruse (N.J.)
1960	O. Donald Olson (Colo.)	1987	Jack K. Westbrook (Tenn.)
1961	Robert P. Stewart (Utah)	1988	Charles G. Durazo (Va.)
1962	(no presentation)	1989	Oliver R. Crawford (Tex.)
1963	N. W. DeBerardinis (La.) and Joe L. Shosid (Tex.)	1990	Cecil H. Hopper (Ohio)
1964	Maxwell A. Kriendler (N.Y.)	1991	George M. Douglas (Colo.)
1965	Milton Caniff (N.Y.)	1992	Jack C. Price (Utah)
1966	William W. Spruance (Del.)	1993	Lt. Col. James G. Clark (D.C.)
1967	Sam E. Keith Jr. (Tex.)	1994	William A. Lafferty (Ariz.)
1968	Marjorie O. Hunt (Mich.)	1995	William N. Webb (Okla.)
1969	(no presentation)	1996	Tommy G. Harrison (Fla.)
1970	Lester C. Curl (Fla.)	1997	James M. McCoy (Neb.)
1971	Paul W. Gaillard (Neb.)	1998	Ivan L. McKinney (La.)
1972	J. Raymond Bell (N.Y.) and Martin H. Harris (Fla.)	1999	Jack H. Steed (Ga.)
1973	Joe Higgins (Calif.)	2000	Mary Anne Thompson (Va.)
1974	Howard T. Markey (D.C.)	2001	Charles H. Church Jr. (Kan.)
1975	Martin M. Ostrow (Calif.)	2002	Thomas J. Kemp (Tex.)
1976	Victor F. Kregel (Tex.)	2003	W. Ron Georges (Ohio)
1977	Edward A. Stearn (Calif.)	2004	Doyle E. Larson (Minn.)
1978	William J. Demas (N.J.)	2005	Charles A. Nelson (S.D.)
1979	Alexander C. Field Jr. (Ill.)	2006	Craig E. Allen (Utah)
		2007	William D. Croom Jr. (Tex.)
		2008	John J. Politi (Tex.)

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H. H. Arnold Award Recipients

Until 1986, AFA's highest aerospace award was the H. H. Arnold Award. Named for the World War II leader of the Army Air Forces, it was presented annually in recognition of the most outstanding contributions in the field of aerospace activity. In 1986, the Arnold Award was redesignated AFA's highest honor to a member of the armed forces in the field of national security. It continues to be presented annually.

Year	Recipient(s)
1948	W. Stuart Symington, Secretary of the Air Force
1949	Maj. Gen. William H. Tunner and the men of the Berlin Airlift
1950	Airmen of the United Nations in the Far East
1951	Gen. Curtis E. LeMay and the personnel of Strategic Air Command
1952	Sens. Lyndon B. Johnson and Joseph C. O'Mahoney
1953	Gen. Hoyt S. Vandenberg, former Chief of Staff, USAF
1954	John Foster Dulles, Secretary of State
1955	Gen. Nathan F. Twining, Chief of Staff, USAF
1956	Sen. W. Stuart Symington
1957	Edward P. Curtis, special assistant to the President
1958	Maj. Gen. Bernard A. Schriever, Cmdr., Ballistic Missile Div., ARDC
1959	Gen. Thomas S. Power, CINC, SAC
1960	Gen. Thomas D. White, Chief of Staff, USAF
1961	Lyle S. Garlock, Assistant Secretary of the Air Force
1962	A. C. Dickieson and John R. Pierce, Bell Telephone Laboratories
1963	The 363rd Tactical Recon. Wing and the 4080th Strategic Wing
1964	Gen. Curtis E. LeMay, Chief of Staff, USAF
1965	The 2nd Air Division, PACAF
1966	The 8th, 12th, 355th, 366th, and 388th Tactical Fighter Wings and the 432nd and 460th TRWs
1967	Gen. William W. Momyer, Cmdr., 7th Air Force, PACAF
1968	Col. Frank Borman, USAF; Capt. James Lovell, USN; and Lt. Col. William Anders, USAF, Apollo 8 crew
1969	(No presentation)
1970	Apollo 11 team (J.L. Atwood; Lt. Gen. S. C. Phillips, USAF; and astronauts Neil Armstrong and USAF Cols. Buzz Aldrin and Michael Collins)
1971	John S. Foster Jr., Dir. of Defense Research and Engineering
1972	Air units of the Allied Forces in Southeast Asia (Air Force, Navy, Army, Marine Corps, and the Vietnamese Air Force)
1973	Gen. John D. Ryan (Ret.), former Chief of Staff, USAF
1974	Gen. George S. Brown, USAF, Chm., Joint Chiefs of Staff
1975	James R. Schlesinger, Secretary of Defense
1976	Sen. Barry M. Goldwater
1977	Sen. Howard W. Cannon
1978	Gen. Alexander M. Haig Jr., USA, Supreme Allied Commander, Europe
1979	Sen. John C. Stennis
1980	Gen. Richard H. Ellis, USAF, CINC, SAC
1981	Gen. David C. Jones, USAF, Chm., Joint Chiefs of Staff
1982	Gen. Lew Allen Jr. (Ret.), former Chief of Staff, USAF
1983	Ronald W. Reagan, President of the United States
1984	The President's Commission on Strategic Forces (the Scowcroft Commission)
1985	Gen. Bernard W. Rogers, USA, SACEUR
1986	Gen. Charles A. Gabriel (Ret.), former Chief of Staff, USAF
1987	Adm. William J. Crowe Jr., USN, Chm., Joint Chiefs of Staff
1988	Men and women of the Ground-Launched Cruise Missile team
1989	Gen. Larry D. Welch, Chief of Staff, USAF
1990	Gen. John T. Chain, CINC, SAC
1991	Lt. Gen. Charles A. Horner, Cmdr., CENTCOM Air Forces and 9th Air Force
1992	Gen. Colin L. Powell, USA, Chm., Joint Chiefs of Staff
1993	Gen. Merrill A. McPeak, Chief of Staff, USAF
1994	Gen. John Michael Loh, Cmdr., Air Combat Command
1995	World War II Army Air Forces veterans
1996	Gen. Ronald R. Fogleman, Chief of Staff, USAF
1997	Men and women of the United States Air Force
1998	Gen. Richard E. Hawley, Cmdr., ACC
1999	Lt. Gen. Michael C. Short, Cmdr., Allied Air Forces Southern Europe
2000	Gen. Michael E. Ryan, Chief of Staff, USAF
2001	Gen. Joseph W. Ralston, CINC, EUCOM
2002	Gen. Richard B. Myers, USAF, Chm., Joint Chiefs of Staff
2003	Lt. Gen. T. Michael Moseley, Cmdr., air component, CENTCOM, and 9th Air Force
2004	Gen. John P. Jumper, Chief of Staff, USAF
2005	Gen. Gregory S. Martin, Cmdr., AFMC
2006	Gen. Lance W. Lord, Cmdr., AFSPC
2007	Gen. Ronald E. Keys, Cmdr., ACC
2008	Gen. Bruce Carlson, Cmdr., AFMC

John R. Alison Award Recipients

Established in 1992, the John R. Alison Award is AFA's highest honor for industrial leadership.

1992	Norman R. Augustine, Chairman, Martin Marietta
1993	Daniel M. Tellep, Chm. and CEO, Lockheed
1994	Kent Kresa, CEO, Northrop Grumman
1995	C. Michael Armstrong, Chm. and CEO, Hughes Aircraft
1996	Harry Stonecipher, Pres. and CEO, McDonnell Douglas
1997	Dennis J. Picard, Chm. and CEO, Raytheon
1998	Philip M. Condit, Chm. and CEO, Boeing
1999	Sam B. Williams, Chm. and CEO, Williams International
2000	Simon Ramo and Dean E. Wooldridge, missile pioneers
2001	George David, Chm. and CEO, United Technologies
2002	Sydney Gillibrand, Chm., AMEC; and Jerry Morgensen, Pres. and CEO, Hensel Phelps Construction
2003	Joint Direct Attack Munition Industry Team, Boeing
2004	Thomas J. Cassidy Jr., Pres. and CEO, General Atomics Aeronautical Systems
2005	Richard Branson, Chm., Virgin Atlantic Airways and Virgin Galactic
2006	Ronald D. Sugar, Chm. and CEO, Northrop Grumman
2007	Boeing and Lockheed Martin
2008	Bell Boeing CV-22 Team, Bell Helicopter Textron and Boeing

W. Stuart Symington Award Recipients

Since 1986, AFA's highest honor to a civilian in the field of national security has been the W. Stuart Symington Award. The award, presented annually, is named for the first Secretary of the Air Force.

Year	Recipient(s)
1986	Caspar W. Weinberger, Secretary of Defense
1987	Edward C. Aldridge Jr., Secretary of the Air Force
1988	George P. Schultz, Secretary of State
1989	Ronald W. Reagan, former President of the United States
1990	John J. Welch, Asst. SECAF (Acquisition)
1991	George Bush, President of the United States
1992	Donald B. Rice, Secretary of the Air Force
1993	Sen. John McCain (R-Ariz.)
1994	Rep. Ike Skelton (D-Mo.)
1995	Sheila E. Widnall, Secretary of the Air Force
1996	Sen. Ted Stevens (R-Alaska)
1997	William Perry, former Secretary of Defense
1998	Rep. Saxby Chambliss (R-Ga.) and Rep. Norman D. Dicks (D-Wash.)
1999	F. Whitten Peters, Secretary of the Air Force
2000	Rep. Floyd Spence (R-S.C.)
2001	Sen. Michael Enzi (R-Wyo.) and Rep. Cliff Stearns (R-Fla.)
2002	Rep. James V. Hansen (R-Utah)
2003	James G. Roche, Secretary of the Air Force
2004	Peter B. Teets, Undersecretary of the Air Force
2005	Rep. Duncan Hunter (R-Calif.)
2007	Michael W. Wynne, Secretary of the Air Force
2008	Gen. Barry R. McCaffrey, USA (Ret.)

AFA Lifetime Achievement Award Recipients

First presented in 2003, the award recognizes a lifetime of work in the advancement of aerospace.

Year	Recipient(s)
2003	Maj. Gen. John R. Alison, USAF (Ret.); Sen. John H. Glenn Jr.; Maj. Gen. Jeanne M. Holm, USAF (Ret.); Col. Charles E. McGee, USAF (Ret.); and Gen. Bernard A. Schriever, USAF (Ret.)
2004	Gen. Russell E. Dougherty, USAF (Ret.), and Florene Miller Watson
2005	Sen. Daniel K. Inouye, William J. Perry, and Patty Wagstaff
2007	CMSAF Paul W. Airey, USAF (Ret.)
2008	Col. George E. Day, USAF (Ret.); Gen. David C. Jones, USAF (Ret.); and Harold Brown



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Chairman, 1947-49



Edward P. Curtis
Chairman, 1946-47



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President, 1947-48
Chairman, 1951-52



C. R. Smith
President, 1948-49
Chairman, 1949-50



Robert S. Johnson
President, 1949-51



Carl A. Spaatz
Chairman, 1950-51



Harold C. Stuart
President, 1951-52
Chairman, 1952-53



Arthur F. Kelly
President, 1952-53
Chairman, 1953-54



George C. Kenney
President, 1953-54
Chairman, 1954-55



John R. Alison
President, 1954-55
Chairman, 1955-56



Gill Robb Wilson
President, 1955-56
Chairman, 1956-57



John P. Henebry
President, 1956-57
Chairman, 1957-58



Peter J. Schenk
President, 1957-59



James M. Trail
Chairman, 1958-59



Howard T. Markey
President, 1959-60
Chairman, 1960-61



Julian B. Rosenthal
Chairman, 1959-60



Thos. F. Stack
President, 1960-61
Chairman, 1961-62



Joe Foss
President, 1961-62
Chairman, 1962-63



John B. Montgomery
President, 1962-63



W. Randolph Lovelace II
President, 1963-64
Chairman, 1964-65



Jack B. Gross
Chairman, 1963-64



Jess Larson
President, 1964-67
Chairman, 1967-71



Robert W. Smart
President, 1967-69



George D. Hardy
President, 1969-71
Chairman, 1966-67
Chairman, 1971-72



Martin M. Ostrow
President, 1971-73
Chairman, 1973-75



Joe L. Shosid
President, 1973-75
Chairman, 1972-73
Chairman, 1975-76



George M. Douglas
President, 1975-77
Chairman, 1977-79



Gerald V. Hasler
President, 1977-79
Chairman, 1976-77



Victor R. Kregel
President, 1979-81
Chairman, 1981-82



Daniel F. Callahan
Chairman, 1979-81



John G. Brosky
President, 1981-82
Chairman, 1982-84



David L. Blankenship
President, 1982-84
Chairman, 1984-85



Edward A. Stearn
Chairman, 1985-86



Martin H. Harris
President, 1984-86
Chairman, 1986-88



Sam E. Keith Jr.
President, 1986-88
Chairman, 1988-90



Jack C. Price
President, 1988-90
Chairman, 1990-92



Oliver R. Crawford
President, 1990-92
Chairman, 1992-94



James M. McCoy
President, 1992-94
Chairman, 1994-96



Gene Smith
President, 1994-96
Chairman, 1996-98



Doyle E. Larson
President, 1996-98
Chairman, 1998-2000



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President, 1998-2000
Chairman, 2000-02



John J. Politi
President, 2000-02
Chairman, 2002-04



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AFA Chairmen of the Board and National Presidents (cont.)



Stephen P. Condon
President, 2002-04
Chairman, 2004-06



Robert E. Largent
President, 2004-06^a
Chairman, 2006-08^b

^a The office of National President, an elected position, was disestablished in 2006.

^b AFA's Chairman of the Board also serves as Chairman of both AFA affiliates, the AFA Veteran Benefits Association and the Air Force Memorial Foundation.

^c The position of Executive Director was replaced in 2006 by President-CEO.

Vice Chairman for Field Operations

Joseph E. Sutter 2006-08

Vice Chairman for Aerospace Education

L. Boyd Anderson 2006-07
S. Sanford Schlitt 2007-

AFA National Treasurers

W. Deering Howe	1946-47
G. Warfield Hobbs	1947-49
Benjamin Brinton	1949-52
George H. Haddock	1952-53
Samuel M. Hecht	1953-57
Jack B. Gross	1957-62
Paul S. Zuckerman	1962-66
Jack B. Gross	1966-81
George H. Chabbott	1981-87
William N. Webb	1987-95
Charles H. Church Jr.	1995-2000
Charles A. Nelson	2000-05
Steven R. Lundgren	2005-

AFA National Secretaries

Sol A. Rosenblatt	1946-47
Julian B. Rosenthal	1947-59
George D. Hardy	1959-66
Joseph L. Hodges	1966-68
Glenn D. Mishler	1968-70
Nathan H. Mazer	1970-72
Martin H. Harris	1972-76
Jack C. Price	1976-79
Earl D. Clark Jr.	1979-82
Sherman W. Wilkins	1982-85
A. A. "Bud" West	1985-87
Thomas J. McKee	1987-90
Thomas W. Henderson	1990-91
Mary Ann Seibel	1991-94
Mary Anne Thompson	1994-97
William D. Croom Jr.	1997-2000
Daniel C. Hendrickson	2000-03
Thomas J. Kemp	2003-06
Judy K. Church	2006-

AFA Executive Directors/President-CEOs



Willis S. Fitch
Executive Director
1946-47



James H. Straubel
Executive Director
1948-80



Russell E. Dougherty
Executive Director
1980-86



David L. Gray
Executive Director
1986-87



John O. Gray
Executive Director
1987-88



Charles L. Donnelly Jr.
Executive Director
1988-89



John O. Gray
Executive Director
1989-90



Monroe W. Hatch Jr.
Executive Director
1990-95



John A. Shaud
Executive Director
1995-2002



Donald L. Peterson
Executive Director, 2002-06^c
President-CEO, 2006-07



Michael M. Dunn
President-CEO
2007-

Aerospace Education Foundation Chairmen of the Board

W. Randolph Lovelace II	1963-64
Laurence S. Kuter	1964-66
Walter J. Hesse	1966-69
J. Gilbert Nettleton Jr.	1969-73
George D. Hardy	1973-75
Barry M. Goldwater	1975-86
George D. Hardy	1986-89
James M. Keck	1989-94
Walter E. Scott	1994-96
Thomas J. McKee	1996-98
Michael J. Dugan	1998-2000
Jack C. Price	2000-02
Richard B. Goetze Jr.	2002-03
L. Boyd Anderson	2003-06*

Aerospace Education Foundation Presidents

John B. Montgomery	1963-64
Lindley J. Stiles	1964-66
B. Frank Brown	1966-67
Leon M. Lessinger	1967-68
L. V. Rasmussen	1968-71
Leon M. Lessinger	1971-73
Wayne O. Reed	1973-74
William L. Ramsey	1975-81
Don C. Garrison	1981-84
George D. Hardy	1984-86
Eleanor P. Wynne	1986-87
James M. Keck	1988-89
Gerald V. Hasler	1989-94
Thomas J. McKee	1994-96
Walter E. Scott	1996-98
Jack C. Price	1998-2000
Richard B. Goetze Jr.	2000-02
L. Boyd Anderson	2002-03
Mary Anne Thompson	2003-06*

* On April 1, 2006, the Air Force Association and the Aerospace Education Foundation combined their activities under the title AFA. L. Boyd Anderson, the last AEF Chairman, became Vice Chairman of AFA for a transitional period.

The Twelve Founders

John S. Allard , Bronxville, N.Y.	Sol A. Rosenblatt , New York
Everett R. Cook , Memphis, Tenn.	Julian B. Rosenthal , New York
Edward P. Curtis , Rochester, N.Y.	James M. Stewart , Beverly Hills, Calif.
Jimmy Doolittle , Los Angeles	Lowell P. Weicker , New York
W. Deering Howe , New York	Cornelius Vanderbilt Whitney , New York
Rufus Rand , Sarasota, Fla.	John Hay Whitney , New York

AFA's First National Officers and Board of Directors

This panel of officers and directors acted temporarily until a representative group was democratically elected by membership at the first national convention, in September 1947.

OFFICERS

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Dottie Flanagan Staff Award of the Year

A donation from the late Jack B. Gross, national director emeritus, enables AFA to honor staff members each quarter. Those members become eligible for the staff award of the year.

1992	Doreatha Major
1993	Jancy Bell
1994	Gilbert Burgess
1995	David Huynh
1996	Sherry Coombs
1997	Katherine DuGarm
1998	Suzann Chapman
1999	Frances McKenney
2000	Ed Cook
2001	Katie Doyle
2002	Jeneathia Wright
2003	Jim Brown
2004	Pearlie Draughn
2005	Ursula Smith
2006	Susan Rubel
2007	Ed Cook

AFA's Regions, States, and Chapters

These figures indicate the number of affiliated members as of June 30, 2008. Listed below the name of each region is the region president.

CENTRAL EAST REGION 11,337	Florida Highlands..... 316	NEW ENGLAND REGION 3,736	Pennsylvania..... 2,588
Mason S. Botts	Gen. Nathan F. Twining..... 629	Ronald M. Adams	Altoona..... 59
Delaware 590	Gold Coast..... 735	Connecticut 751	Eagle..... 52
Brig. Gen. Bill Spruance..... 144	Hurlburt..... 682	Flying Yankees/Gen. George C. Ken-	Greater Pittsburgh*..... 322
Delaware Galaxy..... 446	Jerry Waterman..... 1,120	ney..... 460	Joe Walker-Mon Valley..... 121
District of Columbia 515	John W. DeMilly Jr..... 225	Lindbergh/Sikorsky..... 291	Lehigh Valley..... 244
Nation's Capital..... 515	Miami..... 357	Massachusetts 1,792	Liberty Bell..... 649
Maryland 2,230	Pensacola..... 163	Minuteman..... 310	Lt. Col. B. D. "Buzz" Wagner..... 98
Baltimore*..... 700	Red Tail Memorial..... 443	Otis..... 273	Mifflin County*..... 106
Central Maryland..... 409	GREAT LAKES REGION 8,059	Paul Revere..... 742	Olmsted..... 298
Thomas W. Anthony..... 1,121	Ronald E. Thompson	Pioneer Valley..... 282	Pocono Northeast..... 194
Virginia 7,688	Indiana 1,465	Worcester*..... 185	Total Force..... 166
Danville..... 55	Central Indiana..... 427	New Hampshire 724	York-Lancaster..... 279
Donald W. Steele Sr.	Columbus-Bakalar..... 108	Brig. Gen. Harrison R. Thyng..... 724	NORTHWEST REGION 4,874
Memorial..... 3,099	Fort Wayne..... 235	Rhode Island 247	E. Laird Hansen
Gen. Charles A. Gabriel..... 1,218	Grissom Memorial..... 268	Metro Rhode Island..... 206	Alaska 795
Langley..... 1,456	Lawrence D. Bell Museum..... 193	Newport Blue & Gold..... 41	Edward J. Monaghan..... 560
Leigh Wade..... 141	Southern Indiana..... 234	Vermont 222	Fairbanks Midnight Sun..... 235
Northern Shenandoah Valley..... 241	Kentucky 704	Green Mountain..... 222	Idaho 121
Richmond..... 607	Gen. Russell E. Dougherty..... 430	North Central Region 3,441	Snake River Valley..... 121
Roanoke..... 328	Lexington..... 274	Ronald W. Mielke	Oregon 1,127
Tidewater..... 347	Michigan 1,759	Minnesota..... 1,168	Bill Harris..... 315
William A. Jones III..... 196	Battle Creek..... 108	Gen. E. W. Rawlings..... 947	Columbia Gorge*..... 812
West Virginia 314	Kalamazoo..... 427	Richard I. Bong..... 221	Washington 2,831
Brig. Gen. Pete Everest..... 49	Lake Superior Northland..... 134	Montana 308	Greater Seattle..... 964
Chuck Yeager..... 265	Lloyd R. Leavitt Jr..... 253	Big Sky..... 308	Inland Empire..... 672
FAR WEST REGION 11,462	Mount Clemens..... 837	North Dakota 442	McChord..... 1,195
Michael J. Peters	Ohio 4,131	Gen. David C. Jones..... 191	Rocky Mountain Region 6,361
California 10,696	Capt. Eddie Rickenbacker	Happy Hooligan..... 142	Joan Sell
Bob Hope..... 870	Memorial*..... 639	Red River Valley..... 109	Colorado 4,563
Brig. Gen. Robert F. Travis..... 748	Frank P. Lahm..... 490	South Dakota 485	Gen. Robert E. Huyser..... 161
C. Farinha Gold Rush..... 1,410	Gen. Joseph W. Ralston..... 291	Dacotah..... 238	Lance P. Sijan..... 2,702
Charles Hudson..... 151	North Coast*..... 281	Rushmore..... 247	Mel Harmon..... 149
David J. Price/Beale..... 399	Steel Valley..... 179	Wisconsin 1,038	Mile High..... 1,551
Fresno*..... 332	Wright Memorial*..... 2,251	Billy Mitchell..... 754	Utah 1,418
Gen. B. A. Schriever	MIDWEST REGION 7,299	Madison..... 284	Northern Utah..... 593
Los Angeles..... 532	Marvin L. Tooman	NORTHEAST REGION 6,456	Salt Lake..... 372
General Doolittle	Illinois 2,743	Maxine Rauch	Ute-Rocky Mountain..... 453
Los Angeles Area*..... 1,144	Chicagoland-O'Hare..... 1,111	New Jersey 1,684	Wyoming 380
Golden Gate*..... 586	Heart of Illinois..... 196	Brig. Gen. Frederick W. Castle..... 157	Cheyenne Cowboy..... 380
High Desert..... 180	Land of Lincoln..... 331	Hangar One..... 140	South Central Region 6,712
Maj. Gen. Charles I. Bennett Jr..... 295	Scott Memorial..... 1,105	Highpoint..... 117	Leonard R. Vernamonti
Monterey Bay Area..... 214	Iowa 743	Mercer County..... 174	Alabama 1,899
Orange County/Gen. Curtis	Fort Dodge..... 67	Sal Capriglione..... 274	Birmingham..... 380
E. LeMay..... 695	Gen. Charles A. Horner..... 275	Shooting Star..... 253	Montgomery..... 1,157
Palm Springs..... 410	Northeast Iowa..... 234	Thomas B. McGuire Jr..... 569	Tennessee Valley..... 362
Robert H. Goddard..... 594	Richard D. Kisling..... 167	New York 2,184	Arkansas 1,000
San Diego..... 809	Kansas 739	Albany-Hudson Valley*..... 359	David D. Terry Jr..... 664
San Gabriel Valley..... 321	Contrails..... 57	Chautauqua..... 64	Ouachita..... 129
Tennessee Ernie Ford..... 568	Lt. Erwin R. Bleckley..... 463	Gen. Carl A. "Tooe" Spatz..... 208	Razorback..... 207
William J. "Pete" Knight..... 438	Maj. Gen. Edward R. Fry..... 219	Gen. Daniel "Chappie"	Louisiana 1,048
Hawaii 766	Missouri 1,598	James Jr. Memorial..... 82	Ark-La-Tex..... 688
Hawaii*..... 766	Earl D. Clark Jr..... 290	Genesee Valley..... 228	Maj. Gen. Oris B. Johnson..... 360
FLORIDA REGION 10,186	Harry S. Truman..... 598	Iron Gate..... 138	Mississippi 1,006
John T. Brock	Spirit of St. Louis..... 710	L. D. Bell-Niagara Frontier..... 322	Golden Triangle..... 328
Florida 10,186	Nebraska 1,476	Long Island..... 783	Jackson..... 142
Brig. Gen. James R. McCarthy..... 394	Ak-Sar-Ben..... 1,212	Alaska 795	John C. Stennis..... 377
Cape Canaveral..... 1,066	Lincoln..... 264	Idaho 121	Meridian..... 159
Central Florida..... 1,402		Washington 2,831	
Col. H. M. "Bud" West..... 327		Greater Seattle 964	
Col. Loren D. Evenson..... 473		Inland Empire 672	
Eglin..... 1,357		McChord 1,195	
Falcon..... 497			

*These chapters were chartered prior to Dec. 31, 1948, and are considered original charter chapters; the North Coast Chapter of Ohio was formerly the Cleveland Chapter; and the Columbia Gorge Chapter of Oregon was formerly the Portland Chapter.



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Tennessee	1,759
Chattanooga.....	132
Everett R. Cook.....	397
Gen. Bruce K. Holloway.....	589
H. H. Arnold Memorial.....	160
Maj. Gen. Dan F. Callahan.....	481

SOUTHEAST REGION 7,511
Donald R. Michels

Georgia	3,368
Carl Vinson Memorial.....	1,216
Dobbins.....	1,560
Savannah.....	360
South Georgia.....	232

North Carolina	2,127
Blue Ridge.....	376
Cape Fear.....	246
Kitty Hawk.....	78
Pope.....	416
Scott Berkeley.....	387
Tarheel.....	624

South Carolina	2,016
Charleston.....	518
Columbia Palmetto.....	414
Ladewig-Shine Memorial.....	172
Strom Thurmond.....	455
Swamp Fox.....	457

SOUTHWEST REGION 6,803
James I. Wheeler

Arizona	3,979
Cochise.....	124
Frank Luke.....	2,168
Prescott/Goldwater.....	352
Tucson.....	1,335

Nevada	1,331
Thunderbird.....	1,331

New Mexico	1,493
Albuquerque.....	1,013
Fran Parker.....	322
Llano Estacado.....	158

TEXOMA REGION 12,675
Terry Cox

Oklahoma	2,411
Altus.....	241
Central Oklahoma (Gerrity).....	1,352
Enid.....	389
Tulsa.....	429

Texas	10,264
Abilene.....	413
Aggieland.....	193
Alamo.....	3,675
Austin.....	691
Concho.....	255
Del Rio.....	97
Denton.....	456
Fort Worth.....	1,685
Gen. Charles L. Donnelly Jr.....	310
Ghost Squadron.....	114
Northeast Texas.....	436
San Jacinto.....	1,064
Seidel-AFA Dallas.....	875

AFA Membership

Year	Total	Life Members	Year	Total	Life Members
1946	51,243	32	1978	148,711	1,541
1947	104,750	55	1979	147,136	1,869
1948	56,464	68	1980	156,394	2,477
1949	43,801	70	1981	170,240	3,515
1950	38,948	79	1982	179,149	7,381
1951	34,393	81	1983	198,563	13,763
1952	30,716	356	1984	218,512	18,012
1953	30,392	431	1985	228,621	23,234
1954	34,486	435	1986	232,722	27,985
1955	40,812	442	1987	237,279	30,099
1956	46,250	446	1988	219,195	32,234
1957	51,328	453	1989	204,309	34,182
1958	48,026	456	1990	199,851	35,952
1959	50,538	458	1991	194,312	37,561
1960	54,923	464	1992	191,588	37,869
1961	60,506	466	1993	181,624	38,604
1962	64,336	485	1994	175,122	39,593
1963	78,034	488	1995	170,881	39,286
1964	80,295	504	1996	161,384	39,896
1965	82,464	514	1997	157,862	41,179
1966	85,013	523	1998	152,330	41,673
1967	88,995	548	1999	148,534	42,237
1968	97,959	583	2000	147,336	42,434
1969	104,886	604	2001	143,407	42,865
1970	104,878	636	2002	141,117	43,389
1971	97,639	674	2003	137,035	42,730
1972	109,776	765	2004	133,812	42,767
1973	114,894	804	2005	131,481	43,094
1974	128,995	837	2006	127,749	43,266
1975	139,168	898	2007	125,076	43,256
1976	148,202	975	2008	123,304	43,557
1977	155,850	1,218			

AFA's Overseas Chapters

CHAPTER	LOCATION
United States Air Forces in Europe (USAFE)	
Charlemagne.....	Geilenkirchen, Germany
Dolomiti.....	Aviano AB, Italy
Lufbery-Campbell.....	Ramstein AB, Germany
Spangdahlem.....	Spangdahlem AB, Germany
United Kingdom.....	Lakenheath, UK
Pacific Air Forces (PACAF)	
Keystone.....	Kadena AB, Japan
MiG Alley.....	Osan AB, South Korea
Tokyo.....	Tokyo, Japan
Supreme Headquarters Allied Powers Europe (SHAPE)	
Gen. Lauris G. Norstad.....	Mons, Belgium

Profiles of AFA Membership

As of June 2008 (Total 123,304)

47% One-year members	Of AFA's service members:
17% Three-year members	72% are officers
35% Life members	28% are enlisted
15% Active duty military	Of AFA's retired military members:
52% Retired military	70% are retired officers
17% Former service	30% are retired enlisted
6% Guard and Reserve	
5% No military service	
3% Cadet	
2% Spouse/widow(er)	

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By Frances McKenney, Assistant Managing Editor

AFA as the Top Story

When Air Force Association Chairman of the Board Robert E. "Bob" Largent met with airmen at Pacific Air Forces bases in July, he garnered front-page headlines for AFA at every stop.

During Largent's two-week journey to Hickam, Andersen, Elmendorf, and Eielson Air Force Bases, he explained AFA's mission, addressed groups of airmen, and chatted with them individually to gather ideas on what the association can do for PACAF personnel. He also received command briefings and updates on Pacific region issues.

At his first stop, Hickam AFB, Hawaii, the base newspaper ran an extensive interview with Largent, covering everything from USAF's role in the War on Terror to the high operations tempo of Hickam's airmen. "I met two folks last night who had just returned [from Southwest Asia] less than three weeks ago and they're leaving again in just a few months. And these are airmen from all specialties—housing, maintenance, logistics," he told the reporter.

Hawaii Chapter members—led by Acting Chapter President Lance Bleakley and Nora Feuerstein—organized a joint services reception for Largent. Feuerstein pointed out that Hickam and Pearl Harbor could move toward consolidation of facilities and budgets under the Pentagon's proposed joint basing strategy, so an Air Force-Navy guest list seemed appropriate. Gen. Loyd S. Utterback, the 13th Air Force commander, and USAFLt. Gen. Douglas M. Fraser, the US Pacific Command deputy, were among the guests, as well as Navy Capt. Richard Kitchens, who commands Naval Station Pearl Harbor, and Navy Capt. Donald D. Hodge, the chief of staff for Navy Region Hawaii.

Largent later called on Gen. Carrol H. Chandler, PACAF commander, and visited 13th Air Force and the Kenney Air Operations Center; 15th Airlift Wing; and the Hawaii Air National Guard's 154th Wing.

The AFA Chairman met with groups of Hickam's active duty and ANG senior enlisted leaders—hosted by the command chief master sergeant CMSgt. Anthony L. Bishop—before heading to Guam.



USAF: photo by SrA. Joretian Steffan

During a PACAF tour in July, AFA Board Chairman Bob Largent addresses a breakfast meeting in downtown Anchorage, Alaska. His audience included local business leaders and airmen.

Media Spotlight in Guam

At Andersen Air Force Base, Largent warranted the headline on the base's Web site.

He told the Andersen reporter that the challenges USAF faces mirror AFA's mission to educate, advocate, and support the Air Force: "We educate about winning the [Global War on Terror], advocate recapitalization of an aging fleet, and support the Air Force and the Air Force family."

Largent met USAF's officer and enlisted leadership team at Andersen, including Brig. Gen. Douglas H. Owens, 36th Wing commander. As at Hickam, joint basing with the Navy was one of the main topics. Some 8,000 marines, plus Air Force personnel, families, and civilians are projected to move to Guam, and new construction and infrastructure improvement projects are under way. Largent said later that he saw "a stark positive change" in the quality of life for airmen since his visit to Andersen on his previous orientation to PACAF bases two years ago.

Introducing USAF's Best

By Day 9, Largent was at Elmendorf AFB, Alaska—outside Anchorage and

the home of the **Edward J. Monaghan Chapter**—where his visit with an AFA national-award winner was prominently featured with a photo on the base Web site.

Largent had stopped at Elmendorf's medical center to congratulate Capt. Becky M. Bautch, recently named the 2008 Juanita Redmond Award recipient for excellence in nursing. The award recognizes Bautch's work at an intensive care unit at Balad AB, Iraq.

Also in Anchorage, Largent received briefings and met officials from the 3rd Wing, 11th Air Force, Alaskan Command, and Kulis Air National Guard Base.

AFA's top elected official attended a "downtown breakfast" with the city's civilian leaders, who were introduced to three of USAF's finest from Elmendorf: Bautch, the Redmond awardee; TSgt. Jason Hughes from the 3rd Aircraft Maintenance Squadron, who had just been named a 2008 Outstanding Airman of the Year; and SrA. Matthew C. Hulsman, a 2007 OAY.

On to Eielson

Brig. Gen. Mark W. Graper, the 354th Fighter Wing commander at Eielson, and



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Col. Donald Scott Wenke, commander of the 168th Air Refueling Wing (ANG), were among the Total Force members that Largent met during two days in Fairbanks. A photo of his breakfast meeting with airmen on base merited the lead position on Eielson's Web site.

Information gathered on this trip by AFA's Board Chairman will help form the AFA Statement of Policy and the association's Top Issues for 2009. He explained in an interview at Elmendorf that he travels at the invitation of the Air Force Chief of Staff and PACAF commander and that when he addresses audiences—whether on Capitol Hill or at a local civic club—"I'm doing that with the knowledge that I've been to PACAF, I've talked about and seen joint basing issues. ... I've visited with young airmen at the NCO academy, I've visited with senior officers, I've visited with civilians, and I've visited with community leaders to [get] a real appreciation of what's happening out here in our Air Force."

Escorting Largent to the 49th state's Air Force facilities were AFA National Treasurer Steven R. Lundgren; David Gardner, **Fairbanks Midnight Sun Chapter** president; chapter member Fredrick A. "Butch" Stein; and Kara G. Moriarty, new president of the Monaghan Chapter.

Hawaii Chapter's Col. Marc A. Luiken, PACAF director of staff, was Largent's escort throughout the tour.

AFA at NASA

In Houston, the **San Jacinto Chapter** held an "AFA at NASA" afternoon at the Johnson Space Center in June.

Former astronaut and retired Air Force Col. Brewster H. Shaw Jr., now vice president, Boeing Space Exploration and a chapter member, delivered a presentation about the space shuttle during the segment of the event devoted to space. Shaw made three shuttle flights between 1983 and 1989.

During the awards portion of the gathering, the chapter honored its Educator of the Year: John J. Antel, the dean of the University of Houston's College of Liberal Arts and Social Sciences.

Chapter President Robert H. Kjar pointed out that Antel was selected because he has been a mentor to Air Force ROTC Det. 003 at the university, helping establish it in 2003. The unit was expecting to enroll 90 cadets by this past August. In 2007 it was selected as the best small detachment in the Southwest ROTC Region.

Antel, who is an economist—and the father of a Navy F/A-18 pilot—told his university's newspaper that AFROTC is unique in teaching leadership, "some-

Joe Sutter (right), AFA Vice Chairman of the Board, Field Operations, attended the Tennessee State Convention in May. He stopped for a photo with (l-r) Civil Air Patrol Capt. Bob Turpin, retired USAF Lt. Col. Martha Shaffer, and AFROTC cadet Channara Tep.



thing that is absent from most of the academic curriculum."

Antel was keynote speaker for the awards ceremony, where, among the military awardees, the 111th Fighter Squadron from Ellington Field received the chapter's Distinguished Unit Citation.

An Infantryman in WWII

For his presentation to the **Central Indiana Chapter** in June, retired Army Lt. Col. John R. Kerr brought maps—the better to illustrate his memories of fighting in some of the most famous battles of World War II Europe.

A 78th Infantry Division NCOIC during the war, Kerr fought in the Battle of the Bulge. This December 1944 fight in the Ardennes pushed back the Germans from their incursion into American lines—a situation that had created a "bulge" threatening to split Allied forces. The battle was the last German offensive of the war.

Kerr went on to battles on the Cologne Plain and, in spring 1945, in the Ruhr Pocket campaign, an Allied encirclement of German troops. During the war, Kerr's unit manned observation posts and conducted patrols, sometimes behind the lines, to scout the terrain and learn enemy locations.

Chapter President Michael Malast said that the former infantryman described to the chapter dinner meeting a particularly memorable sight: a German V-1 missile passing overhead.

Kerr is today a retired elementary school principal.

Banquet for a Trio

Three teachers shared the spotlight at the second annual Utah AFA Teacher

of the Year Banquet, held at Salt Lake City Community College in May.

Matthew Smith was named State Teacher of the Year. He taught science at Bountiful (Utah) Junior High School and had been Teacher of the Year for the **Ute-Rocky Mountain Chapter**. Bonnie Bourgeois, a biology teacher from Clearfield (Utah) High School, was the **Northern Utah Chapter's** Teacher of the Year. The **Salt Lake Chapter** chose Hailey Forsgren as its Teacher of the Year. She is a sixth-grade teacher at Meadowlark Elementary School in Salt Lake City.

Jake Garn, the first to fly in space while serving in Congress, was guest speaker for the banquet. Garn was a pilot in the Navy and Air National Guard and was a Republican Senator from 1974 to 1993. He went into space as a payload specialist on Discovery in 1985 and spoke to the AFA audience about his experiences on this mission. He also stressed the important role of science teachers.

The state's AFA Aerospace Education Foundation sponsored the event, with Dennis J. Guymon heading a group of Utah AEF Board members who organized it: Kit K. Workman, Wally Saeger, Andy Clark, and Laurie Steed.

Surprise—and Surprise

Joe Walker-Mon Valley Chapter officials in Monessen, Pa., had two surprises up their sleeves when they honored their Chapter Teacher of the Year during an informal presentation.

Thomas Thompson has taught astronomy and physics at Belle Vernon (Pa.) Area High School since 1988. Chapter President James M. Cain,

Chapter Secretary Thomas A. Hamer, and William Worthington showed up unannounced at Thompson's class one morning in May to present him with the award in front of his students.

The chapter members gave Thompson an AFA Certificate, a year's membership in the association, a check, and a tote bag. Then they surprised him again by announcing that he had just been chosen as State Teacher of the Year, as well.

The double award was featured on the school's Web page, along with a description of the Air Force Association and its teacher awards.

More Chapter News

■ The **Maj. Gen. Dan F. Callahan Chapter** in Nashville, Tenn., hosted the state convention in May, with retired Vice Adm. David C. Nichols as the awards banquet's keynote speaker. Some 75 guests listened to remarks by Nichols, who recently retired as US Central Command deputy commander. Earlier in his career, he had been deputy commander for the CENTCOM combined air force in Iraqi Freedom and for Joint Task Force Southwest Asia. He had also directed a combined air operations center during Enduring Freedom. At the AFA convention, Nichols spoke about the US military strategy in Iraq and Afghanistan. State President Winston J. Daws conducted the awards ceremonies, where James A. Van Eynde, president of the **Everett R. Cook Chapter** in Memphis, received the Volunteer of the Year award.

■ At the Virginia State Convention in Fairfax in June, Daniel R. Waters was recognized as the State Teacher of the Year. A career and technical education teacher at George Washington High School in Danville, he had been the Chapter Teacher of the Year for the **Danville Chapter**, headed by Gerald L. Hovatter. Waters had also received an AFA Chapter Matching Grant for a robotics project at his school. He brought his family—wife, Tammy, and children, Christopher and Kathryn—to the state convention, where he received the award from AFA's President and CEO Michael M. Dunn, National Director Mary Anne Thompson, and Virginia State President Scott P. Van Cleef.

■ In New Hampshire in May, Kevin M. Grady, who heads the **Brig. Gen. Harrison R. Thyng Chapter**, presented the State Teacher of the Year Award to Nancy Musey during the awards ceremony at an area science fair. Musey teaches at Indian River School in Canaan, N.H., and was nominated for the award by Daniel W. Caron. Caron is the chapter and state aerospace education VP and was at the science fair ceremony, too. Caron was AFA's 2004 National Teacher of the Year. ■



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19th Air Refueling Sq, Homestead and Otis AFBs. Oct. 12-15 at the Marriott Hotel in San Antonio. **Contact:** Charlie Fischer (830-367-5601) (cands@omniglobal.net).

40th BG (WWII). Oct. 16-20 in St. Louis. **Contact:** Jean Suitt (800-959-2582) (jsuitt@crscent.com).

40th FS/Flight Test Sq Assn. Oct. 15-18 at the Crowne Plaza Atlanta in Marietta, GA. **Contact:** Frank L. Hettlinger (812-877-4039) (mchett@verizon.net).

47th BW Assn (WWII), including all units. Nov. 5-9 at the Holiday Inn in Pooler, GA. **Contact:** Charlie Palmer, 652 Fischer Ave., Anchorage, AK 99518 (907-332-0296) (crpalmer@gci.net) (<http://members.cox.net/goodtennis3/47thbombwing.htm>).

91st Strategic Recon Wg Assn (1949-57). In 2009 in Gatlinburg, TN. **Contact:** Jim Bard (410-549-1094) (jimbardjr@comcast.net).

363rd FG & 161 Tac Recon Gp. Oct. 30-Nov. 2 at the Radisson Hotel in San Francisco. **Contact:** Art Mimler (209-966-2713).

Bartow AB pilot instructors/students. Oct. 15 at the Chalet Suzanne Restaurant & Inn, in Lake Wales, FL. **Contact:** The Chalet (800-433-6011) (info@chaletsuzanne.com).

Borinquen Field/Ramey AFB, all military and civilian units (1939-73). April 21-25, 2009 at Ramey, in Aguadilla, Puerto Rico. **Contact:** Ken Coombs, 412 A Depot St., Andover, NH 03216 (603-735-4291)

(ken-bon@msn.com).

OCS 56-C & D, and all OCS graduates. Oct. 22-26 in Charleston, SC. **Contact:** H. E. Saden, 26 Brummel Ln., Crossville, TN 38558 (931-456-6076) (downsizer@onemrain.com).

Pilot Class 49-A. Nov. 4-6 at Cape Canaveral, FL. **Contact:** Stephen Moore (813-839-4257) (stephen.moore41@verizon.net).

Society of Wild Weasels. Sept. 11-14 at the Holiday Inn in Fairborn, OH. **Contact:** Larry LeMieux (day: 937-320-7426, night: 937-320-3684) (larlemieux@aol.com).

Seeking **senior enlisted advisors** from 17th Air Force installations in Germany (1980-84) for a reunion. **Contact:** Frank Gregory, 1552 Donna Ave., Panama City, FL 32404 (850-871-0002) (chief frank@comcast.net). ■



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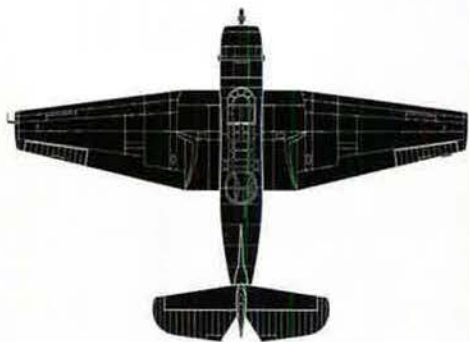
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Artwork by Zaur Eylanbekov

TBF/M Avenger



The TBF Avenger was the deadliest naval attack aircraft of World War II, despite a disastrous combat debut at the Battle of Midway in June 1942. Six were employed in that epic battle. Five were shot down and the sixth was badly damaged. Even so, the Avenger proved to be a tough bird, able to absorb massive damage that would bring down an ordinary aircraft, and it went on to star in all of its subsequent engagements.

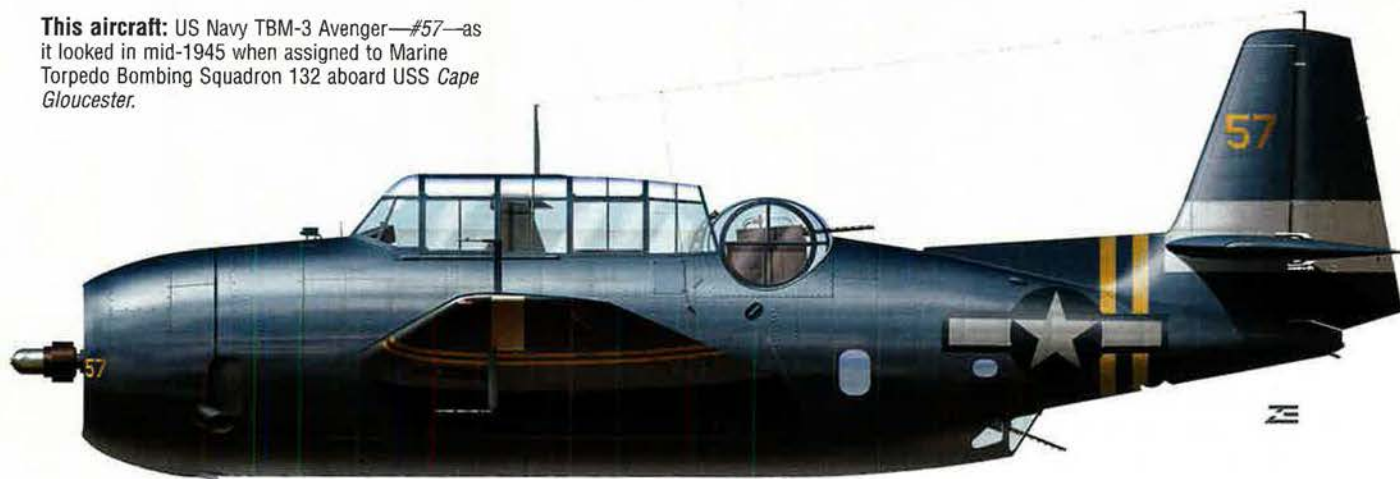
On April 8, 1940, Grumman won a Navy competition to replace the Douglas TBD Devastator. The Avenger's good flying characteristics and rugged structure maintained Grumman's "Iron Works" reputation. Also, it was the first design to feature a new wing-folding mechanism, highly useful in maximizing storage space on an aircraft carrier.

Mass orders followed—so many that, in 1942, General Motors set up its new Eastern Aircraft Division by combining the production facilities of five automobile plants. GM built the TBM Avenger, while the Grumman plant built the TBF Avenger.

Atlantic operation from escort carriers kept German U-boats submerged and away from the convoys. The Avenger sank numerous Japanese cargo vessels and warships, including carriers and cruisers. It was responsible for sending to the bottom two of the largest battleships ever sunk—the *Yamato* and the *Musashi*. More than 30 submarine kills were attributed to Avengers. Over time, the Avenger assumed other duties. The Avengers had a huge impact on the Japanese fleet and therefore play a major role in the US victory in the Pacific.

—Walter J. Boyne

This aircraft: US Navy TBM-3 Avenger—#57—as it looked in mid-1945 when assigned to Marine Torpedo Bombing Squadron 132 aboard USS *Cape Gloucester*.



In Brief

Designed by Grumman ★ built by Grumman, General Motors ★ first flight Aug. 1, 1941 ★ crew of three—pilot, lower gunner, turret gunner-radio operator/bombardier ★ one Wright R-2300 engine ★ number built 9,839 ★ **Specific to TBM-3:** max speed 276 mph ★ cruise speed 153 mph ★ max range 1,000 mi ★ armament, four .50 cal machine guns, one .30 cal machine gun ★ bomb load, up to 2,000 lb ★ weight (max) 18,250 lb ★ span 54 ft 2 in ★ length 40 ft 11.5 in ★ height 16 ft 5 in.

Famous Fliers

Military Notables: George P. Brown, Al Coffin, Albert Ernst, Langdon K. Fieberling, Edward Huxtable, Charles M. Jet, Harold Larsen, W. D. Luton, Warren Omark, Benjamin Tate, Jesse Taylor. **Other Notables:** George H. W. Bush (41st President), Richard Boone (actor), Paul Newman (actor).

Interesting Facts

Unveiled in public on Dec. 7, 1941, Pearl Harbor Day ★ built in 12 models, more than 30 variants ★ nicknamed Chuff, Pregnant Beast, Turkey, and (in Royal Navy) Tarpon ★ flown in World War II by US Navy, US Marine Corps, Royal Navy, Royal New Zealand Air Force ★ featured in 1944 Hollywood film, "Wing and a Prayer" and as Flight 19 in the 1979 film "Close Encounters of the Third Kind."



Quartet of Avengers over the Pacific.

COMBAT PROVEN.

Lynx SAR/GMTI



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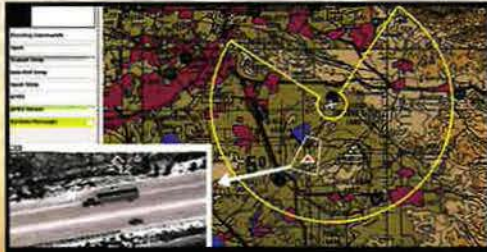
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SAR



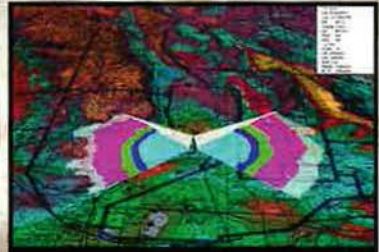
Broad Area Surveillance

GMTI



Real-time Vehicle Detection

CLAW



Situational Awareness



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