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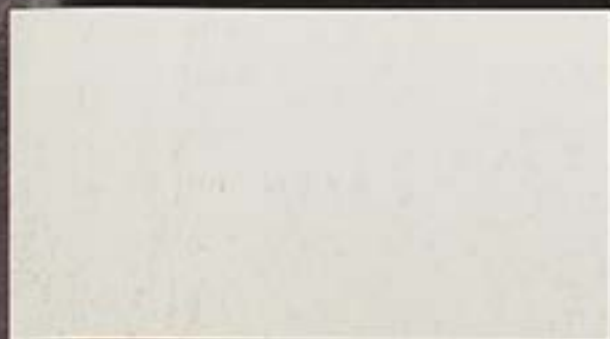
# AIR FORCE

JOURNAL OF THE AIR FORCE ASSOCIATION

MAGAZINE

## Bets Down on Lightning II

The Gates Firings  
Counterinsurgency From Above  
Pacific Choke Point





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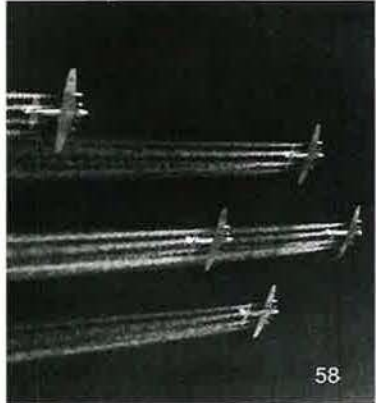
# AIR FORCE

JOURNAL OF THE AIR FORCE ASSOCIATION MAGAZINE

July 2008, Vol. 91, No. 7



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## The Post-June 5 Air Force

WASHINGTON, D.C., JUNE 19, 2008

**A**s it was happening, the thunderous June 5 decapitation of the Air Force appeared likely to do severe and lasting damage. Events since then have raised hopes USAF will be able to avoid that fate.

First, Pentagon Chief Robert M. Gates, having sacked USAF's top leaders, moved fast to name their successors. Second, he selected men of great distinction. Michael B. Donley, Gates' pick to be Secretary of the Air Force, is a senior Pentagon aide who earlier served as Acting SECAF. The Chief of Staff-designate, Gen. Norton A. Schwartz, rates high not only as commander of US Transportation Command but also for his work as the Joint Staff director.

For all that, however, worries persist. Questions swirl around the forced resignations of Secretary Michael W. Wynne and Gen. T. Michael Moseley, Chief of Staff. Gates' move was wildly popular—"Absolutely necessary" (*New York Times*); "They had it coming" (columnist Ralph Peters)—but, the claims of the ignoramus press aside, the long-term impact is unknown.

Uncertainty flows from Gates' stated rationale: failure of the two to ensure control of nuclear weapons. (See "The Gates Case" p. 30.) Gates seemed most angered at USAF's alleged failure to do much of anything after a B-52 mistakenly flew across America with six nukes hanging underwing. Note, however, that Moseley, in a Feb. 28 meeting with reporters, said this about the B-52 fiasco:

"We had an immediate command-directed investigation from [Air Combat Command]. We had a list of about 15 to 20 things we did—inventory, stand-down, Chief-directed inspections, all of that. Then I asked for a blue-ribbon review headed by Maj. Gen. Polly Peyer. ... Then Gen. [Larry] Welch, a previous Air Force Chief, went out and did that for the Defense Science Board. ... There's 128 things, I believe, that were proposed. Four of those are not within the Air Force authority to do, so 124 of those things. Fifty-three of them are done; 71 of them are coming to closure."

Was he lying? If you want an opinion from someone who was there—me—the Chief was as serious as a stroke. We note that Gates has yet to release the

investigative report that found such serious fault with Air Force actions. He should do so, and soon.

As Gates acknowledges, many are skeptical that these political executions were really—or only—about nukes. Retired USAF Lt. Gen. Michael M. Dunn, President-CEO of the Air Force Association, spoke for many when he said, "We believe there is more to the firings than meets the eye."

**You may change names on E-ring doors in the Pentagon, but the problems don't just go away.**

Dunn went on, "Secretary Wynne and General Moseley have been outspoken in pointing out the Air Force needs to recapitalize and modernize the fleet. ... It is apparent to us that the Department of Defense did not appreciate the military advice nor the warnings they were getting."

This is hardly a military secret. Wynne and Moseley said USAF's budget needed to grow by \$20 billion per year. They argued for more F-22 fighters. They clashed with DOD over control of short-range airlift and unmanned aerial vehicles. Gates has repeatedly insisted that these sharp conflicts played no role in his decision to move against the two leaders. However, one must admit that, given such friction, the emergence of the nuclear weapon issue as a firing offense, at this precise moment, is one hell of a coincidence.

No one wants recriminations to drag on. What's done is done. Gates was well within his rights to do what he did, and Wynne and Moseley accepted responsibility for service shortcomings. Every transition is an opportunity, and the important thing is what happens now.

In that regard, we would note, with credit to Founding Father John Adams, that facts are stubborn things. You may change names on E-ring doors in the Pentagon, but the problems don't just go away. For example:

■ Today's USAF fleet of fighters, bombers, airlifters, tankers, and other

airplanes is the smallest ever and getting smaller. In the past two decades, it has shrunk by 40 percent.

■ The average age of Air Force aircraft, just eight years in 1973, has risen to 24 years today and is headed to 26.5 years in 2012. USAF has not been allowed to buy enough new ones.

■ Today, more than 800 aircraft—14 percent of the USAF fleet—are grounded or operating under flight restrictions, mostly due to age problems.

■ USAF is headed toward a shortage of 800 fighters, if current trends continue. The gap will begin to open in a few years, even if USAF buys every fighter in its program.

■ The C-17 production line, the only remaining source of new strategic airlift, is in danger of closing.

These problems, and more, now pass to Donley and Schwartz. In this, the Air Force is lucky, given their skill and demonstrated integrity.

Many have called attention to the fact that Schwartz is a non-fighter pilot—the first such Chief since 1982—and has spent his career in airlift and special operations. The implication—that he will de-emphasize fighters—is pernicious. The general, more than anyone, understands that he represents the entire Air Force, not a faction or factions.

In months to come, the burden of proof should fall not on the service's new Secretary and Chief of Staff, but on Gates. He has shown he can tear up a service leadership. He has yet to show that he can help that service cope with its many and serious problems.

In one of his more memorable statements, Wynne warned that, unless certain negative trends were reversed, the Air Force would be "going out of business" before long. We are sure this infuriated the clique around Gates. Too bad. It was true.

In a farewell to Wynne and Moseley, AFA Chairman of the Board Robert E. Largent lauded them for "articulating legitimate Air Force requirements." He went on to say that such candor "is precisely what our Air Force needs during these challenging times."

Note Largent's use, in that final phrase, of the words "is" and "needs." Both are in the present tense, and that was not by accident. ■





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## Let's Ask Them

[In reference to "Editorial: Questions for the Candidates," May, p. 2]: I recommend posing those questions to each candidate and asking for their written responses, which would then be published in *Air Force Magazine*.

MSgt. Boyd A. Hemphill Jr.,  
USAF (Ret.)  
Montgomery, Ala.

## The Draft

In the article on the history of the draft, contributing editor John T. Correll writes, "Young men are required to register with their draft boards within 30 days of turning 18" ["When the Draft Calls Ended," April, p. 68].

Draft boards are no longer in existence. We do maintain local boards that are activated in a national draft to adjudicate appeals—however, young men now register online at [www.sss.gov](http://www.sss.gov), or they can pick up a registration card at the post office, or they can register by telephone (if they have received a pin number from SSS).

Pat Schuback  
Public Affairs Specialist  
Selective Service System  
National Headquarters, Public  
and Intergovernmental Affairs  
Arlington, Va.

John T. Correll's notion that the creation of the All Volunteer Force (AVF) was a return to a historic tradition of service is valid to a point.

However, not until the current conflict has the AVF been tested in terms of sustaining a force engaged in long-term combat operations.

With the end of World War II in 1945, America found herself at the dawn of the Cold War. In fact, an argument could be made that the seeds of the Cold War were sown before the end of World War II during the Yalta Conference and later at Potsdam.

The Cold War drove American foreign and defense policy for the better part of 46 years. As a result, the need to garrison huge numbers of troops on European soil as a deterrent to Soviet aggression became a resource-draining reality.

The draft which was in place from 1940 to 1973 (with the exception of a brief period from 1947 to 1948) was critical to supplying the manpower needed not only for the face-off with the Soviets, but also during the Korean and Vietnam Wars. While the fairness of the draft was certainly an issue, its primary mission of supplying sufficient numbers of men for military service cannot be dismissed.

It is possible, then, to disagree with Correll and suggest that the draft, and not some tradition of national service, was responsible for keeping the military—in particular the Army—sufficiently staffed during the long Cold War. Since the draft was in place, it is impossible to know whether or not sufficient numbers of personnel would have volunteered to enlist without the urgency of a "hot" war providing the motivation.

Although it got off to a shaky start, the AVF did establish itself and has served the nation well through several conflicts, most notably the first Gulf War in 1991. But that is not the case with Operations Enduring and Iraqi Freedom, collectively known as the Global War on Terrorism (GWOT).

This is not to say that the service member is in any way less capable, but that not until the GWOT has the AVF been tested—particularly ground combat units—in the kind of sustained conflict they have been experiencing since October 2001.

To attain combat ready status, the AVF relies heavily on Guard and Re-

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serve forces. This "Total Force" concept also permitted the post-Soviet draw-down of active forces while providing more meaningful and integral roles for the Guard and Reserve. However, the Guard and Reserve were never intended to be front-line battle forces for the duration they are experiencing in the GWOT.

The impact of multiple activations and long deployments will undoubtedly come to light as research and analysis of the GWOT's impact on the nation is conducted. But for now, it is clear that families and local communities are strained by the absence of their "citizen soldiers," many of whom hold critical positions in their civilian lives.

Moreover, more than one Pentagon official and high-ranking military officer has made public statements describing the erosion of the force as a result of the GWOT. Our ability to sustain the current operations tempo is causing military planners to involuntarily extend combat deployments, shorten the time between deployments, and involuntarily extend service obligations under Stop-Loss authorizations. And when the President makes comments that suggest yet another front in the GWOT—with Iran—military planners must be quietly apoplectic.

At a hearing before the Senate Armed Services personnel subcommittee on Jan. 31, 2008, Brig. Gen. Suzanne M. Vautrinot, commander of Air Force Recruiting Service, had this to say: "The propensity for young Americans to serve their country, coupled with a drop in key influencers—such as teachers, coaches, and family members—recommending service, is at its lowest point in 35 years. Moreover, nearly three-quarters of America's youth do not meet eligibility standards to serve in our nation's military." This is hardly an assessment that supports imagery of duty, honor, and country.

A tenet of the AVF was the filter through which volunteers could be screened, meaning no more recruits would be allowed to serve if they were ever convicted of certain crimes. That's not a bad policy. But recruits aren't signing up these days in numbers needed to meet recruiting goals, so the Pentagon has been quietly granting waivers to allow recruits with felony convictions to serve.

In 2007, 511 recruits with prior felony convictions were allowed to enlist in the Army; 350 in the Marines; 42 in the Navy. There were none in the Air Force. This may not be a significant factor but it is an indicator of just how slim the pickings are getting when you do not have a draft but you do have a prolonged shooting war on two fronts.

Finally, in dismissing Rep. Charles B. Rangel's (D-N.Y.) 2003 effort to return to the draft, Correll says, "The circumstances under which the nation would accept a revival of conscription after a hiatus of 35 years are unknown. What is clear, however, is that recent circumstances have not been sufficient." Maybe, but the mere mention of a draft in political circles only a few short years ago would have been unthinkable.

But the strain under which the services are struggling could spark a few more members of Congress to take another look at the draft—especially when the Administration continues to poke Iran in its political eye.

How ironic that the Vietnam War, our nation's last protracted war, caused the demise of the draft, and our only long-term war since, the Global War on Terrorism, may give rise to its return.

Frank G. Scafidi  
Sacramento, Calif.

In 1952, Hq. USAF unexpectedly extended all earlier (1948) enlistee terms in Germany from three to the four years we others had signed up for just before Korea started in 1950.

No problem for most, but not for my friend—a buck sergeant (not yet A1C)—who was clearing our 6910th Security Service Group in Darmstadt, Germany, for his discharge back to Texas. In the process, he visited the NCO Club once too often and proceeded to tell everyone there, including our first sergeant, "where to go."

He departed our base by train for Bremerhaven on his way home aboard the USS *Alexander M. Patch*. Unfortunately, the extension caught up with him there before the ship sailed, and he was ordered to return for another wonderful year with us.

Guess who was waiting for him at the post gate? Yes, sir, and my friend drew nearly every detail imaginable that last year.

USAF may not have drafted anyone that year, but there are always alternatives!

Col. Samuel Morthland,  
USAF (Ret.)  
Houston

### Why Airmen Don't Command

I want to join the furor about "Why Airmen Don't Command" [*March*, p. 46]. It used to be that the main qualifications for success as an officer were to be able to ride a horse, know the manual of the saber, and be a good ballroom dancer. In today's Air Force, flying a plane has about the same relevance to leadership as riding a horse. Scorning paperwork by going out and flipping switches and turning knobs in an air-

plane is often just a way for an officer to escape from command responsibilities. You can't correlate being a good pilot (combat or peacetime) with being a good leader, but some keep trying to do that. And as an instructor pilot giving proficiency checks for many years, I found that having high rank did not correlate well with being a good pilot. Wearing a pilot's badge is about image, not competence as a leader.

Lorrin C. Peterson  
Kerrville, Tex.

### Extra Duty Is Your Duty

I was quite taken aback by the letter [*Letters: Ground Force Taskings*, p. 11] by CMSgt. Ken Witkin, USAF (Ret.), in the May 2008 issue. As a retired USAF master sergeant (first sergeant), I find it offensive that Chief Master Sergeant Witkin believes that just because he was an aircrew member, he was above doing additional duties. As an aircrew member, radio operator on C-47 and C-54 aircraft in Goose Bay, Labrador, in 1948-49, I was required to pull "KP" kitchen police [duty] on several occasions. I at no time felt that I was better than anyone else.

MSgt. Jimmie W. Greene,  
USAF (Ret.)  
Parkers Lake, Ky.

### Still Best: Chief

If I may respond to "A Study in Stripes," "Letters," May 2008 [p. 12]: I can attest to the pride in my voice when I was able to answer the telephone, "Sergeant Schmidt speaking," but then, I cannot agree with Colonel Edwards regarding the time periods of the changes in rank structure, titles, and rank. I enlisted in April 1951. Three months later, according to Special Order 9, July 11, 1951, I was promoted to private first class (single AF chevron). On April 19, 1952, Special Order 7 promoted me to airman second class (two AF chevrons). I was not called corporal; it was airman.

A year had passed, rank had changed, and the Army designations did not exist in USAF anymore. I fail to see how the colonel could still be a corporal after [completing] basic training and tech school, [first] as a student [and then] as an instructor at the school at Lowry Air Force Base.

On Oct. 9, 1952, Special Order 129 promoted me to A1C, airman first class, [with] three chevrons, at Headquarters, Caribbean Air Command, Albrook AFB, Canal Zone. I was not called sergeant. It was airman.

Better yet was when you got called chief.

CMSgt. John E. Schmidt Jr.,  
USAF (Ret.)  
Tallahassee, Fla.





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## Letters

### What's That Airplane?

I believe that the caption for the photograph on p. 114 of the current Almanac issue [May 2008] is incorrect. The referenced aircraft is a WC-130H from the 403rd Reserve Wing, Keesler AFB, Miss. I was assigned to Headquarters, Air Weather Service from 1972 to 1974. During that time, I participated in the transfer of 14 HC-130H aircraft from Air Rescue Service to Air Weather Service. It is my recollection that 65-0977 was the first aircraft to cycle through WRAMA for modification to the weather reconnaissance configuration.

MSgt. William E. Alt,  
USAF (Ret.)  
Indianapolis

### Tanker Concerns

[Regarding the tanker competition, "Air Force World: Boeing Protests KC-X Award, Northrop Calls it 'Fair,'" May, p. 20]: I am an American citizen first and a loyal Air Force alumnus second. Loyalty, however, does not translate into blind acquiescence. While the need for replacement tankers is recognized, I do not understand why the Air Force

would contract with a government-subsidized European consortium to replace the venerable KC-135, clearly at the expense of American economic and national security interests. The entire tanker acquisition process has been tainted from the start. I thought at the time that leasing tanker aircraft from Boeing was a dumb idea, and there is no doubt that senior Air Force managers and Boeing executives were jointly responsible, largely because of inadequate oversight, political manipulation, greed, and what appears to have been unadulterated arrogance.

It is my personal view that Boeing is now paying an extraordinarily high price for their collusion in the discredited KC-767 lease proposal. It seems as though the Air Force went out of its way to ensure that Boeing was not awarded the contract. Given the recent—and embarrassing—negative publicity to which the Air Force has been subjected, largely as a result of its own ineptitude, it seems apparent to me that the entire acquisition and contracting processes must be overhauled.

Notwithstanding the red faces produced by the entire tanker acquisition

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fiasco, we need to procure an American-designed and -built aircraft for a wide variety of reasons. With regard to the unholy alliance that now exists between EADS and Northrop Grumman, the latter is hardly more than a front organization for EADS and essentially functions as the European company's lackey in the United States, carrying out its master's bidding. Northrop Grumman's shameful profit motive trumps our country's national interest. I shudder at the thought of what might happen in the future, should EADS-Northrop Grumman ultimately win the contract battle and build the 179 tankers. My impression is that EADS, while trumpeting its multinational composition, is clearly dominated by European nations in general and France in particular. Must we be reminded that France—and several other European nations to a lesser degree—have manifested a not-so-subtle anti-American tone in recent decades? I believe that various European governments, particularly the French, would not hesitate to exert influence on any American policy with which they disagree. For example, what would happen to logistics support for Airbus 330 tankers if the French took strong exception to a future American government decision to engage in a particular combat operation or full-scale war and decided to implement a parts embargo on the USAF tanker fleet of Airbus 330s to express their disapproval?

There are other issues that I find very troubling. Foremost among these issues is the shameful and brazen practice in which EADS is subsidized by various European governments to subdue the competition. This clearly gave the European consortium an unfair advantage. It is no secret that EADS would like to eliminate Boeing from the scene and displace that company as the world's foremost commercial aircraft manufacturer. Finally, Northrop Grumman claims that the Airbus 330 tanker will be built in the southeastern United States. What this really means is that component parts will be manufactured in Europe and shipped to the United States for assembly. It will take years to construct the necessary physical plant, whereas Boeing has already produced and sold KC-767 tankers to Italy and Japan! We need replacement aircraft now, and Boeing stands as the recognized expert in aerial refueling. Certainly, the best example is the venerable KC-135, an aircraft that has stood the test of time. We need to stop the Europeanization of the United States Air Force. Our national interest is at stake.

CMSgt. Robert D. Hudson,  
USAF (Ret.)  
Sheridan, Wyo.



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### Classics

Here are three comments on your excellent portrait of the F-101 [*"Airpower Classics, F/RF-101 Voodoo," May, p. 168*]:

I think there were 16 DFCs awarded to pilots of the 363rd TRW for their part in the Cuban Missile Crisis. But I could be wrong about that.

There were no A Model 101s at MacDill. In fact, I don't think the 363rd had any. I'm pretty sure about that.

Add to your paragraph about Famous (RF-101C) Fliers, Lt. Col. (then Capt.) Clyde B. East, World War II ace with 12 victories. [And] Lt. Col. Ed Atterbury, shot down over North Vietnam, captured, escaped, recaptured and killed.

I have framed that page and hung it on the wall in my den.

SMSgt. Joe Hodder,  
USAF (Ret.)  
Westfield, Mass.



# Washington Watch

By John A. Tirpak, Executive Editor

## Wynne, Moseley out; Donley, Schwartz in; Schlesinger on deck ....

WASHINGTON, D.C., JUNE 19, 2008

### Wynne, Moseley Step Down

The Air Force's top two leaders resigned suddenly and under pressure on June 5, after a Pentagon review found the service had "lost focus" on its nuclear mission, that there has been an "erosion" of its nuclear competency, and that USAF leaders didn't move aggressively enough to fix the situation, once it became apparent.

Secretary of Defense Robert M. Gates accepted the resignations of Secretary of the Air Force Michael W. Wynne and the Air Force Chief of Staff, Gen. T. Michael Moseley, saying in a press conference that he felt "strong action" was needed to underscore the need for accountability in performance of the service's most sensitive mission.

Gates added that he had discussed the matter with President Bush and Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff.

Michael B. Donley, DOD's director of administration and management, was nominated on June 9 to step into Wynne's job. Donley earlier had served as acting Secretary of the Air Force, filling in during 1993 between the terms of Donald B. Rice and Sheila E. Widnall.

Gates nominated Gen. Norton A. Schwartz, head of US Transportation Command, to replace Moseley. Schwartz had already announced his intention to retire by Jan. 1, 2009. Gates announced the nomination of Gen. Duncan J. McNabb, USAF vice chief of staff, to replace Schwartz, and Lt. Gen. William M. Fraser III, assistant to Joint Chiefs Chairman, as McNabb's replacement.

The unprecedented double resignation, Gates said, was the result of an investigation which revealed "systemic issues associated with ... declining Air Force nuclear mission focus and performance." The service, he said, lacks "a clear, dedicated authority responsible for the nuclear enterprise," and that "a lack of effective Air Force leadership oversight" had contributed to "two embarrassing errors involving nuclear weapons or related equipment."

The first blunder took place in August 2007, when a B-52 flew from Minot AFB, N.D., to Barksdale AFB, La., with six live AGM-129 nuclear missiles aboard. The missiles weren't supposed to have warheads. The error was not caught at Minot, and continued to go undetected for many hours at Barksdale.

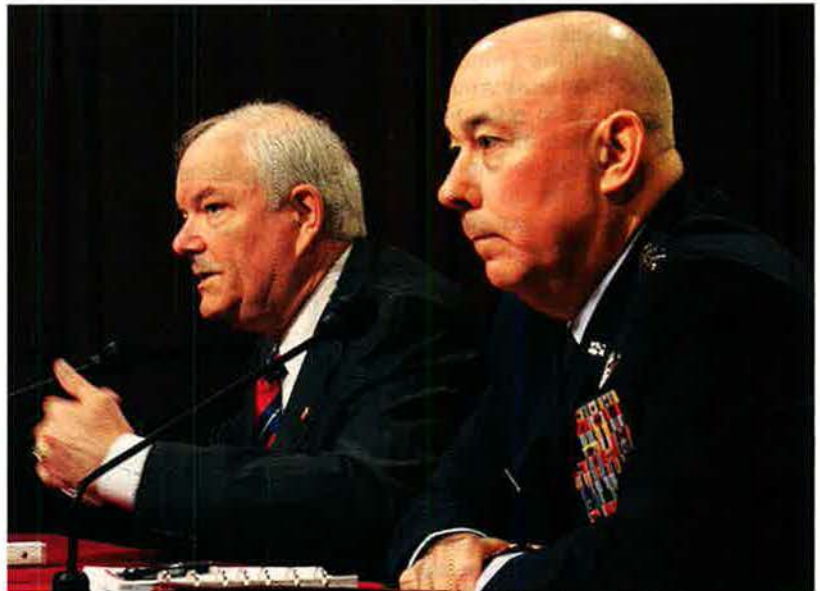
The second was the mistaken 2006 shipment to Taiwan of Minuteman III ICBM parts, which only came to light in March. The components weren't dangerous, but they were classified, and it took the Air Force and Defense Logistics Agency months to recognize and correct the mistake after Taiwan informed the US of the foul-up. The DLA shipped the parts to Taiwan thinking they were helicopter batteries.

It was Gates' contention that the Air Force paid attention and acted "only after the two internationally sensitive

incidents." He added that, "even then," righting the situation required "my intervention," because the service didn't undertake a thorough investigation.

The second incident, Gates said, "clearly was the trigger" for the Air Force shake-up. He said it indicated that the B-52 snafu might not be an isolated case of USAF carelessness with nuclear systems.

In March, Gates ordered Adm. Kirkland H. Donald, the Navy's top nuclear officer, to assess what happened in the Taiwan transfer specifically, and to consider the status of the overall military nuclear enterprise. Gates said Donald found that no one was ever in any danger as a result of the parts transfer; they were fuses that contained no fissile material or explosives.



Wynne (l) and Moseley at a March hearing.

However, Gates said, the incident marked a "significant failure to ensure the security of sensitive military components, and, more troubling, it depicts a pattern of poor performance" first revealed in the Minot-Barksdale incident. Existing procedures that might have averted the error weren't followed, and more stringent procedures were warranted in any case, Gates said.

The Taiwan episode represented a "symptom" of bigger problems, Gates asserted, such as "degradation of the authority, standards of excellence, and technical competence within the nation's ICBM force."

Moreover, he said the Air Force is suffering from a "declining ... nuclear expertise," brought about by the abandonment of a career path in the nuclear mission that used to be "well-established and prestigious." Because the service's mission focus has "shifted away" from the nuclear role, it hasn't been retaining its best people in the field.

The two nuclear weapon errors "have their roots in decisions

AP photo by Susan Walsh



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made over a period of at least 10 years," Gates reported, but still, the problems that led to the mistakes "have been known, or should have been known," by service leaders.

### Schlesinger Steps In

Gates announced that he had appointed James R. Schlesinger, a former Defense Secretary, Energy Secretary, and CIA director, to lead a task force that will consider the US military's nuclear situation and make recommendations on how to ensure complete accountability and control over the nuclear enterprise. He said he had requested an assessment specific to Air Force procedures and policies in early August. By early October, Schlesinger will make recommendations that pertain to the rest of the military. Task force members will come from the defense policy and science boards.

There was plenty of blame to go around for the two nuclear mistakes, Gates observed.

"A substantial number of Air Force general officers and colonels have been identified as potentially subject to disciplinary measures, ranging from removal from command to letters of reprimand," Gates noted. While punishment handed out by him or the Air Force "might help address immediate problems," he said such action wouldn't fix "the broader issues involved." He said he would leave it up to Donley and Schwartz to decide whether to punish individuals.

He also noted that problems have been identified with the Defense Logistics Agency, and "there are a couple of disciplinary recommendations that have been made to the Secretary of the Army."

Gates thanked Wynne and Moseley for their service, calling Wynne a "dedicated and honorable public servant" and noting Moseley's "decades of courageous and devoted service."

Asked if other areas of friction with USAF leaders contributed to the ouster of Wynne and Moseley, Gates said he based his actions "entirely on Admiral Donald's report." Senior USAF officers have clashed with the Pentagon leadership in several areas—notably, USAF's advocacy for continuing production of the F-22, which Gates and his senior deputies believe isn't needed, and Gates' dissatisfaction that the Air Force hasn't sought more creative ways to multiply intelligence-surveillance-reconnaissance assets in the ongoing Southwest Asia wars. Moreover, Moseley has been under a cloud since the chairman and ranking member of the Senate Armed Services Committee asked the Pentagon's inspector general to more closely review Moseley's role in the Thunderbirds Air Show Production Services contract.

In a speech at Langley AFB, Va., on June 9, Gates insisted that the nuclear findings were "not 'the last straw'" with regard to Wynne and Moseley, and that he understood the need for his policies to be challenged by underlings if the situation warrants.

### Moseley: War for a Decade

The Air Force will probably have a job to do in the Middle East for another 10 years or more, conducting the same kinds of missions it is performing there now, and increasingly providing air support to Iraqi forces.

These are among the observations of Gen. T. Michael Moseley, outgoing Air Force Chief of Staff, given in an interview about two weeks before his June 5 resignation.

With respect to Middle East operations, Moseley said that the Air Force, or a broader US air component of US Central Command, "is going to be active and engaged out there for at least a decade." The Air Force will be involved in "assisting Iraqi ground forces," and ISR missions, providing theater airlift, and performing strike operations.

"I think that's just the reality of the way we're going to be doing business for the next decade," Moseley said.

He said he'd not been in any meetings "where we've addressed ... no-fly zones [or] exclusion zones," which would be a kind of inversion of the Southern and Northern Watch missions of 1991-2003, this time keeping invaders out rather than containing Iraq's own army. However, such a possibility has factored into USAF planning for basing, composite force training, "strategic partnering, footprint, [and] expeditionary airfield operations."

It still makes sense for USAF to be the executive agent for unmanned aerial vehicles that operate well above 3,500 feet, Moseley said, and Defense Secretary Robert M. Gates' orders to the services to be more creative and less bureaucracy-bound in fielding ISR assets echoes USAF's own thinking on the subject. Moseley attended a couple of summits with Army Chief of Staff Gen. George W. Casey Jr., along with Army Training and Doctrine Command chief Gen. William S. Wallace and Air Combat Command chief Gen. John D. W. Corley, to work out UAV coordination issues. Moseley said there's also "no question" that UAVs operating "at the tactical level, from the lower altitudes" are "Army business." Still to be ironed out is who runs the show at "the medium-altitude regimes," where both the Army and Air Force operate Predator-like aircraft. He expected something to emerge in June from the discussions.

The availability of the Joint Precision Airdrop System (JPADS), which allows paratroop of supplies within a few feet of desired coordinates, illustrates that there is a diminishing case to be made that the Army must perform the "last tactical mile, ... yard, or inch" of transport, Moseley said. He thought the two services would soon "come to closure" on the issue of who has responsibility for the role of fixed-wing airlift.

The Army and USAF are partnered on the C-27J Joint Cargo Aircraft, but Moseley said the Army has become aware that it can save money by letting the Air Force do the tactical resupply mission. It is an issue to be hashed out in roles and missions debates this summer.

However, Moseley made no Air Force claim to primacy in the realm of cyber warfare. US Strategic Command has the mission, he said, and the Air Force will be a provider of cyber forces to STRATCOM. Just because the Air Force has a cyber command doesn't mean it has sole competency in the domain, he said.

The Air and Space Expeditionary Force as a concept still works, despite recent moves to make some deployments above 120 days routine, Moseley said. He argued that about 60 percent of those deployed do so in the "normal" 120-day cycle, and the others are mostly in jobs requiring longer stays, for continuity. For fighters and bombers, the 120-day cycle is essential, he said, and the overall concept is doing what it was meant to do: Give USAF people "predictability" about when they'll be gone, and for how long.

The expected emergence of fifth generation fighters in Russia and China's air forces within 10 years prompted him to put Air Force Materiel Command to work planning a sixth generation fighter, he said. It isn't clear whether the technological leap will be as huge as it was from fourth to fifth gen—which incorporated agile, round-the-clock stealth and sensor fusion—but AFMC is looking at hypersonics, extreme stealth, and advanced network operations as possible attributes. It may be an unmanned system, Moseley said. In any case, the adversary threat means a program must get under way soon.

"You can't get behind, because there's no recovery," Moseley said.

Before his resignation, he had also put AFMC to work defining capabilities needed in a future strategic airlifter to replace the C-17 and C-5, and the trade space was left open to consider options as diverse as dirigibles to conventional aircraft. A blended wing body, like Boeing's X-48, or a stealth transport are also in the realm of candidates, Moseley said. ■





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## Airman Dies in Afghanistan

SrA. Jonathan A. V. Yelner, 24, of Lafayette, Calif., died April 29 near Bagram AB, Afghanistan, from wounds he received when his vehicle struck an improvised explosive device.

Yelner, a weapons load crew member assigned to the 28th Aircraft Maintenance Squadron at Ellsworth AFB, S.D., was

posthumously awarded a Bronze Star medal on May 8.

## Sheppard Crash Claims Two

Maj. Brad Funk, 35, an instructor pilot, and 2nd Lt. Alec Littler, 23, a student pilot, were killed May 1 when their T-38C aircraft crashed on approach during a training flight at Sheppard AFB, Tex. Funk was with

## Federal Auditors Side With Protest of KC-X Award

WASHINGTON, D.C., JUNE 19, 2008

The Government Accountability Office, a congressional watchdog agency, upheld on June 18 Boeing's protest of USAF's KC-X tanker award to Northrop Grumman. The GAO auditors recommended that the Air Force "obtain revised proposals" from the two companies and "make a new source-selection decision."

Experts estimate the contract's overall value at some \$35 billion.

GAO reported that its review showed that the Air Force had made "a number of significant errors"—miscues that could have affected the outcome of the "close competition" between Boeing's KC-767 and Northrop Grumman's KC-30. The latter is based on the A330 airliner from European Airbus, Boeing's archrival.

Sue C. Payton, assistant secretary of the Air Force for acquisition, responded shortly after the GAO ruling, saying, "As soon as possible, we will provide the Air Force's way ahead."

Mark McGraw, Boeing vice president for tanker programs, welcomed the GAO's ruling, saying the company looked forward to working with the Air Force on the "next steps."

Randy Belote, Northrop Grumman's vice president of corporate and international communications, said his company continues to believe that it "offered the most modern and capable tanker."

GAO found merit in seven of Boeing's complaints, but it also rejected some of the company's challenges.

By law, USAF has 60 days to answer GAO's ruling. GAO recommendations are not binding. However, they carry much weight on Capitol Hill, where some lawmakers have been clamoring to overturn the original decision.

GAO found that USAF:

- Failed to stick to the evaluation criteria in assessing the tanker bids.
- Unfairly gave credit to KC-30 attributes that went beyond objective requirements.
- Conducted "misleading and unequal discussions" with Boeing in one performance area.
- "Improperly" increased Boeing's estimated nonrecurring engineering costs.
- Failed to convincingly show that the KC-30 could refuel all of the fixed-wing aircraft in the fleet.
- "Unreasonably" dismissed as an administrative oversight Northrop Grumman's refusal to agree to a maintenance requirement.
- Made "unreasonable" estimates of military construction costs that incorrectly made Boeing appear to be the higher cost offeror.

Payton reaffirmed USAF's desire to field the "urgently needed" tankers as soon as possible. The service wants up to 179 of them to begin replacing Eisenhower-era KC-135s.

USAF photo by TSgt. Jeremy T. Lock





the base's 90th Flying Training Squadron, while Littler was enrolled in the 80th Flying Training Wing's Euro-NATO joint jet pilot training program.

The mishap was the second fatal accident involving a T-38C, following a crash April 23 at Columbus AFB, Miss., which similarly claimed two lives. The incidents led Air Education and Training Command to suspend flight operations of all T-38Cs from May 1 to May 6 and

to order a one-day safety stand-down of all of its flying training operations on May 5. Both crashes remained under investigation as of mid-May.

#### Reaper Tests GPS Munition

An Air Force-led team began the first live drops of a Global Positioning System-guided weapon from the MQ-9 Reaper unmanned aerial vehicle in May at the Navy test range at China Lake, Calif.,

achieving direct hits on targets.

USAF is integrating the Reaper with the GBU-49 munition, a 500-pound bomb that features both laser guidance and an on-board GPS kit for all-weather, precision-delivery capability. The Air Force has been flying MQ-9s in combat in Afghanistan since September 2007, employing 500-pound laser guided bombs in combat as well as Hellfire surface-attack missiles.



**06.03.2008**

*Standing on the ramp of their HC-130, three USAF loadmasters observe the plume of a smoke grenade over the Gulf of Aden, near Djibouti. The HC-130 is an extended-range combat search and rescue aircraft, the only dedicated, fixed-wing CSAR aircraft in the Air Force inventory. The three crew members are deployed to Combined Joint Task Force-Horn of Africa, based at Camp Lemonier, Djibouti, but are permanently assigned to the 71st Search and Rescue Squadron, Moody AFB, Ga.*



## Defense Leaders Outline New Roles and Missions Review

Senior Department of Defense officials in May laid out the parameters of the Congressionally mandated quadrennial roles and missions review now under way inside the Pentagon. In addition to the stipulation by Congress that the review address unnecessary duplication of capabilities and effort across the department's components, DOD added six more areas of focus: unmanned aircraft/intelligence-surveillance-reconnaissance systems; intra-theater lift (including the Joint Cargo Aircraft); the cyber domain; irregular warfare; internal DOD governance roles and responsibilities; and supporting interagency roles and missions capabilities.

The officials said the review will be a leadership-driven process, including participation by the Secretary of Defense and Chairman of the Joint Chiefs of Staff to avoid "parochial stovepipes." The combatant commanders and their staffs will also be heavily involved, they said.

The review is due to Congress no later than the Pentagon's submission of its Fiscal 2010 budget request (i.e., by the first week of February 2009). The officials said DOD anticipates wrapping up the study in late November. How it is packaged and delivered to Congress likely will be the work of the next Administration, but that is yet to be determined.

### Airmen Awarded Bronze Stars

MSGT. Clarence Barry Jr., Maj. Erik Bruce, and SMSgt. Gregory Williams received Bronze Star medals April 16 for their actions while deployed to Iraq. All are members of the 28th Security Forces Squadron at Ellsworth AFB, S.D.

Bruce is commander of the 28th SFS, while Williams is the unit's operations superintendent, and Barry its operations section chief. Williams' award was an oak leaf cluster to go with the Bronze Star that he received for valor during an earlier deployment to Iraq in 2005.

satellites will follow, bringing the projected future constellation to more than 30 satellites. All three increments will provide improved position, navigation, and timing services for civil and military users as well as increased resistance to hostile jamming for military users.

### USAF Aids Burma, China

Air Force C-130s operating from U Tapao, Thailand, had delivered more than 800,000 pounds of relief supplies as of May 20 in 36 flights into Yangon Airport in Rangoon, to help survivors of Tropical Cyclone Nargis that hit Burma May 2. The first C-130 touched down at Yangon May 12.

Meanwhile two C-17s landed May 18 at Shuangliu Airport in Chengdu, China, carrying nearly 200,000 pounds of food, water containers, blankets, generators, lanterns, and various hand tools to aid victims of the 7.9 magnitude earthquake that struck China's central Sichuan Province May 12.

A third C-17 delivered a nine-member US Agency for International Development team May 20 to Chengdu to help Chinese search and rescue efforts. The US was also providing satellite imagery to assist Chinese assessments of dam-



*This series of screen captures from an Air Force video shows a B-2 Spirit bomber crashing shortly after takeoff Feb. 23 at Andersen AFB, Guam. An equipment malfunction caused the crash. Both crew members survived (note the ejection in frame five), but the aircraft was a total loss. See "B-2 Crash Cause Identified," p. 16.*

### Lockheed Wins GPS III Bid

Lockheed Martin bested Boeing to win the Air Force's Global Positioning System Block III satellite contest, securing an initial \$1.46 billion contract May 15 to build the first of three planned increments of the next generation spacecraft.

Under the contract, Lockheed's team, which includes ITT and General Dynamics, will supply the first two GPS Block IIIA satellites, the first of which is projected for launch in 2014. The contract includes options for up to eight additional GPS IIIA production vehicles.

More capable Block IIIB and Block IIIC

age to key infrastructure such as dams, reservoirs, roads, and bridges in the province.

### Fighter Shortfall Looms

Senior Air Force officials told Congress in early April that the Air Force faces a looming fighter shortage of more than 800 aircraft starting in 2017 and running through 2024. But Lt. Gen. Craig R. McKinley, Air National Guard director, told lawmakers May 14 that the impact will be felt "as early as Fiscal 2015" for the Air Guard units flying F-15s and F-16s that protect the nation's airspace.



"We have determined that, at that early date, we'll start attriting aircraft out of this fleet, and we'll be leaving the combatant commander of [US Northern Command] unable to meet his requirements," McKinley said during a Senate oversight hearing.

The general said he is working closely with Army Lt. Gen. H. Steven Blum, chief of the National Guard Bureau, to mitigate this shortage. "But today as we look at it, there is a bathtub [in the trend line for fighters]," he said. Pouring money into the aging F-15s and F-16s will not solve the problem long-term, both Blum and McKinley said at the hearing.

Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, agreed on the latter point, telling the same panel May 20, "We actually don't have a very good history of upgrading [legacy] airplanes." Instead, he said he has faith in the F-35 program and is "comfortable" with the Bush Administration plan to punt the F-22 decision to the next Administration.

### Air Guardsman Dies in Africa

Lt. Col. Joseph A. Moore, 54, a chaplain with the Idaho Air National Guard's 124th Wing, died of natural causes on May 20 while deployed to Djibouti. He was on a seven-month tour for Operation Enduring Freedom.

## The Thundervision Probe Rolls On

The Pentagon inspector general's office agreed in early May to reopen its inquiry into the Air Force's Thunderbirds Air Show Production Services contract affair. The focus this time would be on the "conduct of senior officials" in the Air Force, an IG spokesman said May 8.

Sen. Carl Levin (D-Mich.) and Sen. John McCain (R-Ariz.), the chairman and ranking member of the Senate Armed Services Committee, respectively, wrote IG Claude M. Kicklighter April 21, seeking a deeper probe. (See "Washington Watch: L'Affaire Thunderbird," June, p. 8.)

The IG's original two-year investigation into the matter determined that Maj. Gen. Stephen M. Goldfein had improperly influenced the award of the \$50 million TAPS contract to a company called Strategic Message Solutions in 2005. The contract was canceled and then-Air Force Secretary Michael W. Wynne meted out administrative discipline to Goldfein and two other officers and referred two additional officers for discipline within their chains of command. The IG's findings were released publicly in April.

Levin and McCain wrote that the IG's original probe "raises serious questions about the role played by other more senior current and former Air Force officials." Yet, they continued, "neither the report of the investigation nor the [related] memorandum reaches any findings or recommendations with regard to the conduct of these senior officials." They did not mention any officials by name, but at least one lawmaker, Sen. Claire C. McCaskill (D-Mo.), criticized the role of then-Chief of Staff Gen. T. Michael Moseley in the affair.

Levin and McCain specifically asked Kicklighter to ensure that, during the course of the new probe, his office interviews anyone with "information pertinent to the case" and takes a second look at other generals named in its original investigation report "not only as to criminal conduct, but also for possible ethical violations and failures of leadership." The IG spokesman said there is no time limit on the new inquiry.



### Cruise Missile Recertified

Pentagon acquisition czar John J. Young Jr. approved the Air Force's Joint Air-to-Surface Standoff Missile program to move ahead after a Congressionally mandated Nunn-McCurdy review, the service announced May 2.

Young recertified to the Congress that the stealthy cruise missile remains vital to national security and, therefore, the program should continue despite the challenges that it has faced—in particular, a less-than-stellar record in test flights and programmatic cost growth due to changing requirements.

With the new certification in hand, the Air Force was poised to award Lockheed Martin the next JASSM production contract, Lot 7, in June for approximately 115 missiles. It said it also had negotiated a not-to-exceed price for Lot 8 with the company. Development and testing activities for JASSM-ER, the extended-range variant of the missile, were scheduled to resume in June, with a production decision scheduled for Fiscal 2010. Development of a JASSM variant for maritime interdiction is slated to start in 2010.

### Predator Strikes On Rise

The number of air strikes carried out by Predator MQ-1 unmanned aerial vehicles firing Hellfire missiles against insurgents in Iraq reached 11 in April, setting a new high mark. The previous one-month high of six was set both in November 2006 and July 2007.

Since July 2007, Predator missions have more than doubled in Iraq, the Air Force said May 6. The service is able to provide 24 simultaneous Predator combat air patrols in Southwest Asia, besting a Pentagon goal by some two years. The MQ-1 force now supplies "more than





USAF photo by MSgt. Andy Dunaway

**A USAF F-15E approaches a KC-135 refueling boom. The fighter was on a mission over the rugged mountains of Afghanistan on May 29.**

13,400 hours of full-motion video to ground forces every month," USAF said.

**NORAD Marks 50 Years**

Canada and the US celebrated the 50th anniversary of the signing of the NORAD agreement on May 12 with a golden jubilee ball in Colorado Springs, Colo. US Defense Secretary Robert M. Gates and Canadian Minister of National Defence Peter Gordon MacKay spoke at the event, which celebrated the partnership that has protected both nations from air and space threats for the past half-century.

Dignitaries from both nations participated the following day in the opening ceremony of the new NORAD-US Northern Command integrated command center at Peterson AFB, Colo.

**KC-X MILCON Questioned**

Two of the lawmakers intent on overturning the Air Force's selection of the Northrop Grumman-EADS tanker over the Boeing model wrote to USAF's acquisition czar Sue C. Payton May 19, asking her why, based on their understanding, the service did not consider the military construction costs of supporting each tanker platform as part of its source selection process. Further, they called for an independent cost estimate so that these figures could come to light.

Rep. Todd Tiahrt (R-Kan.) and Rep. Norman D. Dicks (D-Wash.) stated that the Air Force KC-X tanker competition "failed to accurately assess the true

cost of the two proposals" in "at least one critical area—military construction." The winning Northrop Grumman KC-30 tanker (now designated the KC-45A) is 53 percent larger than Boeing's losing KC-767 design, they wrote. Accordingly, the MILCON needs for it "will clearly result in a higher cost to the Air Force."

The Government Accountability Office was slated to rule by June 19 on Boeing's

protest of the Air Force's award to Northrop Grumman.

**New Engine Type Flies**

The Air Force made history Jan. 31 at Mojave, Calif., by flying a manned aircraft powered by a pulse detonation engine for the first time ever, the Air Force Research Laboratory announced May 16.

The PDE propelled a modified Scaled Composites Long-EZ aircraft and test pilot Pete Siebold to speeds of more than 120 miles per hour and 60 feet to 100 feet in altitude, producing greater than 200 pounds of thrust.

Pulse detonation engines ignite fuel and air in controlled explosions inside open-ended tubes to generate thrust. The history-making aircraft will be displayed this summer at the National Museum of the US Air Force in Dayton, Ohio.

**B-2 Crash Cause Identified**

Water intrusion in air-data sensors caused a B-2 bomber to crash during takeoff Feb. 23 from Andersen AFB, Guam, a top Air Force official said in mid-May. The skin-flush sensors, which collect information about air pressure and density, much like a pitot tube on a conventional aircraft, provide angle-of-attack and yaw data to the B-2's computerized flight-control system.

After heavy, lashing rains, water got into the sensors and caused them to give faulty readings to the flight-control system, the official said. As a result, the aircraft's computers determined—based on the bogus data—that the aircraft was in an improper attitude and corrected automatically.

USAF photo by TSgt. Jerome Baysmore



**Members of the Iowa Air National Guard's 185th Air Refueling Wing disembark onto the flight line at Manas AB, Kyrgyzstan. The ANG crews and maintenance teams will work with active duty airmen at the base as part of a Total Force team.**



### Operation Iraqi Freedom—Iraq

#### Casualties

By June 12, a total of 4,097 Americans had died in Operation Iraqi Freedom. The total includes 4,086 troops and 11 Department of Defense civilians. Of these deaths, 3,338 were killed in action with the enemy while 759 died in noncombat incidents.

There have been 30,209 troops wounded in action during Operation Iraqi Freedom. This number includes 16,775 who were wounded and returned to duty within 72 hours and 13,434 who were unable to return to duty quickly.

#### In Diyala, Air Attack Sweeps Out Enemy Fighters, Weapons

US and Iraqi forces killed six enemy personnel and destroyed a weapons cache May 17 near Khan Bani Sa'ad in Diyala Province with an air strike, according to Multinational Force-Iraq officials.

While conducting operations to disarm an improvised explosive device, members of the 5th Iraqi Army Division took small-arms fire and rocket propelled grenades from a nearby building, killing one Iraqi soldier. Following the attack, coalition forces observed four enemy fighters with multiple weapons next to a house that was suspected of containing a weapons cache. An F-16 was called in and dropped GBU-38s on the building, destroying the cache and killing the four enemy fighters.

Another vehicle thought to have been involved in the attack was engaged by a coalition helicopter shortly thereafter, resulting in multiple secondary explosions and the death of two additional suspects.

### Operation Enduring Freedom—Afghanistan

#### Casualties

By June 7, a total of 513 Americans had died in Operation Enduring Freedom. The total includes 512 troops and one Department of Defense civilian. Of these deaths, 313 were killed in action with the enemy while 200 died in noncombat incidents.

There have been 2,071 troops wounded in action during OEF. This number includes 798 who were wounded and returned to duty within 72 hours and 1,273 who were unable to return to duty quickly.

#### Air Strikes Foil Taliban Ambush in Southern Afghanistan

US and coalition forces spotted Taliban elements attempting to set up an ambush May 12 in the vicinity of Garmsir, Afghanistan, and called in an air strike that killed about a dozen militants.

Troops in the area had been tracking a Taliban commander moving weapons when they discovered the attempted ambush. A-10s responded to the request, firing cannon rounds and dropping a general-purpose 500-pound bomb on enemy forces. F-15Es also dropped GBU-38s onto enemy forces in the same area, with the on-scene joint terminal attack controller reporting the strikes successful. Coalition troops also discovered weapons and ammunition in a search of compounds in the area.

Fighting in and around the southern Afghan province of Helmand had intensified since US marines pushed into the town of Garmsir in late April, attempting to cut off Taliban supply lines in a Taliban stronghold.

The B-2 made a sudden pitch-up and yaw that was not commanded by the pilot. The aircraft quickly stalled, became unrecoverable, and the crew of two ejected. The aircraft was a total loss.

#### Cyber Command Sites Eyed

The Air Force sent letters on May 16 to the governors of the 18 states in contention to host the permanent location for USAF's new Cyber Command, asking for more details on why their states should get the new unit. The governors' inputs were due by July 1.

In the letter, William C. Anderson, USAF's assistant secretary for installations, environment, and logistics, invited the governors to review the initial basing criteria provided and make the case for why the site that each champions would be an "ideal host location" for either the new command's headquarters or supporting organizations or both.

As the next step in the selection process, the Air Force planned to dispatch teams sometime this summer to visit each potential location. The service expects to issue its short list in mid-November, lead-

ing to the announcement of the winner by September 2009.

#### Missile Alerts Shortened

The Air Force in May began implementing two-person, 24-hour alerts for the crews of Minuteman III ICBM launch control centers in place of the three-person, 72-hour shifts that it instituted in 2007.

20th Air Force Commander Maj. Gen. Roger W. Burg, who oversees the nation's ICBM forces, said May 2 the change is "a step forward" for USAF since it learned that the benefits of the 72-hour model did not outweigh its risks.

The 72-hour construct allowed 20th Air Force to decrease the number of travel miles to the ICBM complexes by almost two million miles and reduce its vehicle fuel costs nearly by half, Burg said. But it did not achieve the anticipated manpower savings and placed a strain on training and evaluation, leaving 20th Air Force "undermanned to execute" that construct, he said, citing an independent assessment.

Further, the LCC crews require "a level of alertness and split-second decision making" that are difficult to meet under 72-hour alerts without increased manpower, he said.

#### Gunships Cleared for Cannon

The Air Force May 12 formally authorized the relocation of the 16th Special Operations Squadron and its eight AC-130H gunships from Hurlburt Field, Fla., to Cannon AFB, N.M. The 16th SOS, formerly a part of Hurlburt's 1st Special Operations Wing, will transfer to the 27th SOW at Cannon, Air Force Special Operation Command's western hub since October 2007.

The squadron's transfer is expected to be complete by November 2009. It will involve approximately 600 positions, with an initial cadre moving this year and the majority of the squadron in April 2009, AFSOC said.

AFSOC's presence at Cannon continues to expand. The command on May 16 activated the 318th SOS, its second operational squadron at Cannon, which will fly light and medium aircraft, including the PC-12. It follows Cannon's 73rd SOS, flying MC-130W Combat Spears.

#### Partnership Strategy Launched

Bruce S. Lemkin, the Air Force's deputy undersecretary for international affairs, on May 13 announced USAF's new global partnership strategy that supplants its security cooperation strategy.

The new plan will be a more expansive and improved means of building relationships, interoperable capabilities, and partnership capacity with international friends and allies, Lemkin said.

It will incorporate elements of irregular warfare, security force assistance (formerly



## Senior Staff Changes

**RETIREMENTS:** Maj. Gen. Charles C. **Baldwin**, Lt. Gen. Michael A. **Hamel**, Gen. Michael V. **Hayden**, Maj. Gen. James A. **Hawkins**.

**NOMINATION: To be Brigadier General:** Bruce A. **Litchfield**.

**CHANGES:** Brig. Gen. Arthur B. **Cameron III**, from Cmdr., 309th Maintenance Wg., Ogden ALC, AFMC, Hill AFB, Utah, to Dir., Resource Integration, DCS, Log., Instl., & Mission Spt., USAF, Pentagon ... Brig. Gen. Stanley E. **Clarke III**, from Dep. Dir., ANG, Natl. Guard Bureau, Arlington, Va., to Mil. Asst. to the DCS, Strat. Plans & Prgms., USAF, Pentagon ... Brig. Gen. (sel.) John B. **Cooper**, from Dir., Log., AFSOC, Hurlburt Field, Fla., to Cmdr., 309th Maintenance Wg., Ogden ALC, AFMC, Hill AFB, Utah ... Brig. Gen. Dwight D. **Creasy**, from Staff Judge Advocate, AETC, Randolph AFB, Tex., to Staff Judge Advocate, AFMC, Wright-Patterson AFB, Ohio ... Brig. Gen. (sel.) Teresa A. H. **Djuric**, from Cmdr., 50th Space Wg., AFSPC, Schriever AFB, Colo., to Cmdr., AF Officer Accession & Tng. Schools, Air University, AETC, Maxwell AFB, Ala. ... Brig. Gen. (sel.) Carlton D. **Everhart II**, from IG, AETC, Randolph AFB, Tex., to Dep. Dir., Intel. & Air, Space, & Info. Ops. for Flying Tng., AETC, Randolph AFB, Tex. ... Maj. Gen. (sel.) Gregory A. **Feest**, from Dep. Dir., Force Application, Jt. Staff, Pentagon, to Cmdr., 19th AF, AETC, Randolph AFB, Tex. ... Maj. Gen. (sel.) Burton M. **Field**, from Cmdr., 332nd AEW, ACC, Balad AB, Iraq, to Vice Dir., Strat. Plans & Policy, Jt. Staff, Pentagon ... Maj. Gen. Irving L. **Halter Jr.**, from Cmdr., 19th AF, AETC, Randolph AFB, Tex., to Vice Cmdr., AETC, Randolph AFB, Tex. ... Brig. Gen. (sel.) Scott M. **Hanson**, from Dep. Dir., Ops & Plans, TRANSCOM, Scott AFB, Ill., to Dep. Dir., LL, OSAF, Pentagon ... Maj. Gen. Ralph J. **Jodice II**, from Asst. Dep. Undersecretary of AF-Intl. Affairs, Office of the Undersecretary of the AF, Pentagon, to Cmdr., AF District of Washington, Andrews AFB, Md. ... Brig. Gen. Noel T. **Jones**, from Cmdr., 56th FW, AETC, Luke AFB, Ariz., to Dep. Chief, Central Security Svc., NSA, Ft. Meade, Md. ... Brig. Gen. Jan Marc **Jouas**, from Vice Cmdr., AF ISR Agency, DCS, ISR, USAF, Lackland AFB, Tex., to Spec. Asst. to the Cmdr., PACAF, Hickam AFB, Hawaii ... Maj. Gen. Kevin J. **Kennedy**, from Dir., Air Component Coordination Element, ACC, Kabul, Afghanistan, to Dir., Rqmts. & Integration, JFCOM, Norfolk, Va. ... Brig. Gen. Clyde D. **Moore II**, from Cmdr., 478th Aeronautical Sys. Wg., ASC, AFMC, Wright-Patterson AFB, Ohio, to Spec. Prgms., Office of the USD for Acq., Tech., & Log., Pentagon ... Brig. Gen. (sel.) Kurt F. **Neubauer**, from Cmdr., 11th Wg., AF District of Washington, Bolling AFB, D.C., to Cmdr., 56th FW, AETC, Luke AFB, Ariz. ... Brig. Gen. (sel.) Robert C. **Nolan II**, from Asst. Dep. Dir., Global Ops., Jt. Staff, Pentagon, to Dir., Standing Jt. Force Hq.-North, NORTHCOM, Peterson AFB, Colo. ... Maj. Gen. Thomas J. **Owen**, from Cmdr., Warner Robins ALC, AFMC, Robins AFB, Ga., to Dir., Log. & Sustainment, AFMC, Wright-Patterson AFB, Ohio ... Brig. Gen. Douglas H. **Owens**, from Cmdr., 36th Wg., PACAF, Andersen AFB, Guam, to Vice Cmdr., 13th AF, PACAF, Hickam AFB, Hawaii ... Maj. Gen. Richard E. **Perraut Jr.**, from Vice Cmdr., 13th AF, PACAF, Hickam AFB, Hawaii, to Asst. Dep. Undersecretary of the AF-Intl. Affairs, Office of the Undersecretary of the AF, Pentagon ... Maj. Gen. Polly A. **Peyer**, from Dir., Resource Integration, DCS, Log., Instl., & Mission Spt., USAF, Pentagon, to Cmdr., Warner Robins ALC, AFMC, Robins AFB, Ga. ... Brig. Gen. Bradley R. **Pray**, from Dir., Standing Jt. Force Hq.-North, NORTHCOM, Peterson AFB, Colo., to Spec. Asst. to the Cmdr., AMC, Scott AFB, Ill. ... Maj. Gen. Robertus C. N. **Remkes**, from Dir., Plans & Policy, EUCOM, Stuttgart-Vaihingen, Germany, to Dir., Air Component Coordination Element, ACC, Kabul, Afghanistan ... Brig. Gen. Philip M. **Ruhlman**, from C/S, Jt. Warfare Center, Supreme Allied Command for Transformation, Stavanger, Norway, to Cmdr., 36th Wg., PACAF, Andersen AFB, Guam ... Maj. Gen. (sel.) Paul G. **Schafer**, from Dir., Spec. Prgms., Office of the USD for Acq., Tech., & Log., Pentagon, to Dir., Plans & Policy, EUCOM, Stuttgart-Vaihingen, Germany ... Maj. Gen. Mark A. **Welsh III**, Vice Cmdr., AETC, Randolph AFB, Tex., to Assoc. Dir. for Mil. Affairs, CIA, Washington, D.C. ... Maj. Gen. F. C. **Williams**, from Mobilization Asst. to the C/S, USAF, Pentagon, to Chief, US Office of Mil. Cooperation-Cairo, CENTCOM, Cairo, Egypt. ■

train, test, and assist activities), and building partnership capacity portfolios. These will be in addition to the traditional counterinsurgency, foreign internal defense, security cooperation, security assistance, and international military education and training aspects of the former strategy, he said.

### New Fuel Powers Fighter Engine

The Air Force in late April began ground tests of Pratt & Whitney's F100 fighter engine running on the synthetic fuel blend that the service wants its entire fleet capable of using by 2011. The tests took place at the Arnold Engineering Development Center on the grounds of Arnold AFB, Tenn., in a test cell that simulates supersonic and high-altitude conditions.

The F100, which powers the F-15 and versions of the F-16, is the first fighter engine tested with the synthetic fuel mix, which is half traditional JP-8 aviation fuel and half synthetic paraffinic kerosene, or SPK. The latter is derived from natural gas

or coal via the Fischer-Tropsch refining process.

### Kadena F-15 Shuffle Completed

The Air Force in April concluded the three-year process of swapping out more

than 50 older F-15s assigned to the 18th Wing at Kadena AB, Japan, for newer F-15s, with increased combat capability, from bases in the US. The final three of Kadena's older F-15Cs left the base April 23, thereby completing the transfer of its 53 aging F-15s to eight Air National Guard bases Stateside in exchange for 54 younger F-15s from active duty squadrons at Langley AFB, Va., and Elmendorf AFB, Alaska.

Eighteen of the newer F-15s on Kadena's roster, from Elmendorf, were the first F-15s in USAF's inventory to carry advanced electronically scanned array radar systems.

### USAF Fixes Mortuary Procedures

The Air Force in May directed changes in the cremation process for the remains of fallen warfighters from Afghanistan and Iraq that come through the mortuary at Dover AFB, Del., the US military's single point for repatriating service members who die overseas.

USAF ordered the mortuary to use only crematory facilities that are co-located with licensed funeral homes. The new procedure also stipulated that there would be a military presence at these facilities during the process.

The Dover Port Mortuary, since it lacks a crematory, had been contracting crematory services at two facilities in the Dover area, one of which was not co-located with a funeral home and processed both human and pet remains—in separate, dedicated incinerators, but still under the same roof.

Upon hearing that a soldier who visited this crematory to be present for a fallen comrade found the site insensitive, the Office of the Secretary of Defense determined this arrangement was inappropriate "for the dignified treatment of our fallen," even though there was "absolutely no evidence whatsoever" at the time that any human remains had been mistreated, Pentagon spokesman Geoff Morrell said during a press briefing May 9.

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## Air Force Addresses F-16 Bulkhead Cracks

The Air Force's F-16 Block 40/42 aircraft are experiencing cracked bulkheads that require repair or eventual replacement, officials at Hill AFB, Utah, said in May. While not a safety-of-flight concern, this issue, like the F-15 longeron saga, epitomizes the challenges of managing aging platforms while having to fly them at high tempo rates—in USAF's case, 17 years of continual overseas deployments and war.

Already 63 of USAF's 397 F-16 Block 40/42s have been identified as having the cracks. They are found in the aircraft's 341 Bulkhead, which is located in the center fuselage area and serves as the primary attach point for the aircraft's main landing gear. The cracks were first discovered in the fall of 2007.

Four F-16s were grounded initially and had their bulkheads replaced, the Hill officials said. While the remaining 59 currently operate under "no flight restrictions" due to the cracks, USAF is not flying some of them to avoid the expense of additional structural damage prior to instituting a repair. Those aircraft that still fly are being inspected every 10 flight hours to monitor the situation.

The Air Force and Lockheed Martin, the F-16's manufacturer, planned to start installing a repair design in May. It will serve as a permanent fix for aircraft with very minor cracks (i.e., less than one-quarter inch). For those airframes with more pronounced cracks or more severe mission requirements, the repair will only extend the bulkhead's service life by an additional one-to-three years before a replacement is necessary. A new bulkhead design that can withstand additional stresses is already available.

Installation of the repair design should be complete for all known cases by January 2009, the Hill officials said. Bulkhead replacements will continue through December 2009. USAF hopes to catch future cracking early enough so that the repair will suffice and greatly reduce the need for replacing bulkheads.

Newer F-16 Block 50/52s have the same bulkhead design as the F-16 Block 40/42s, so structural fatigue will lead to the cracks in them at some point, according to the Hill officials.

## F-22 Displays Networking Power

Two specially configured F-22 fighters demonstrated the ability to transfer real-time sensor data to ground stations during the latest Joint Expeditionary Force Experiment April 15 to 25 at Nellis AFB, Nev. This was the first time that F-22 sensor data was down-linked to a combined air operations center using a tactical network, according to Lockheed Martin, the F-22 prime contractor.

The two F-22s were outfitted with an experimental version of Rockwell Collins' Tactical Targeting Network Technology waveform that enabled them to link with the CAOC at Nellis, a command center at Langley AFB, Va., and other airborne platforms. Currently Raptors have the ability only to pass digital data to other F-22s, but TTNT is envisioned as an upgrade to the F-22 fleet early next decade.

## Maintenance Units Reorganized

The Air Force plans in July to begin implementing changes under its global wing structure reorganization to meld the aircraft maintenance units that support bomber, fighter, and rescue aircraft into the flying squadrons that they support.

Maj. Gen. Robert H. McMahon, director of maintenance on the Air Staff, said May 19 the changes will give squadron com-

manders the authority and the responsibility for ensuring that their units are ready for combat and also allow them to train on a daily basis the same way that they intend to fight. The transition should be complete by the end of November, he said.

Air Force Reserve Command is opting in to the new structure, but the Air National

Guard plans to evaluate it first on a trial basis in five wings, McMahon said. USAF is studying whether it makes sense to adopt the same changes or some variant for its mobility and intelligence-surveillance-reconnaissance units.

## E-8 Re-engining Advances

Northrop Grumman has begun work to complete nonrecurring developmental activities and then begin production of new engines for the Air Force's E-8C Joint STARS fleet, the company announced May 13. The Air Force awarded it two contracts worth \$300 million collectively for this work.

The company will first convert the E-8C test bed aircraft from the current Pratt & Whitney JT3D engines to the new Pratt & Whitney JT8D power plants that offer improved performance and consume comparatively less fuel. Concurrently, Pratt & Whitney and Seven Q Seven are working to produce the propulsion pod system that will house the JT8Ds as well as the engine nacelles, thrust reversers, and pylons.

The first of USAF's 17 operational E-8Cs is slated to receive the new engines in late 2010.

## New Associate Unit Activated

The Air Force in April activated the 911th Air Refueling Squadron at Seymour Johnson AFB, N.C., the first active associate tanker unit in the service's Total Force Integration plan.

At Seymour Johnson, the new unit's active duty airmen will share operation and maintenance of KC-135 tanker aircraft "owned" by Air Force Reserve Command's 916th Air Refueling Wing. In 2007, the 911th ARS ceased operations at its former home at Grand Forks AFB, N.D., which is giving up its KC-135s under BRAC 2005.



Air Force SSgt. Charleston Calhoun takes his dog Arco through the paces at an obstacle course at Aviano AB, Italy. The obstacle course is part of a physical training regimen for military working dogs.

USAF photo by A1C Ashley Wood





USAF photo by SRA Russell Scott

**Col. Jeff Harrigian, 49th Fighter Wing commander, and Lt. Col. Mike Hernandez, 7th Fighter Squadron commander, pilot F-22s over White Sands National Monument June 2. These were the first two Raptors to be assigned to Holloman AFB, N.M.**

### F-15 Problem Still a Mystery

Air Force investigators could find “no clear and convincing evidence” pointing them to a root cause of the crash of a Hawaii Air National Guard F-15D Feb. 1 about 60 miles off the coast of Oahu, Pacific Air Forces said May 7.

However, the investigators did find “sufficient evidence to conclude” that both of the fighter’s rudders failed, most likely due to a failure involving the aircraft’s aileron-rudder interconnect that “induced a yawing, rolling motion to the left that the pilot was unable to correct,” according to PACAF.

The pilot ejected, suffering only minor injuries. But the aircraft, assigned to the 199th Fighter Squadron at Hickam Air Force Base, was destroyed upon impact. PACAF gave no indication that this crash was related to the midair breakup of a Missouri ANG F-15C in November 2007 due to a faulty structural support near the cockpit.

### New Housing Project Starts

Air Force and contractor officials broke ground May 16 at Schriever AFB, Colo., for the base’s first housing development.

Over the next three years, Tierra Vista Communities, a housing privatization partnership between USAF and Actus Lend Lease, will build 242 environmentally friendly, single family and duplex homes at the long-time commuter facility.

### Depot Workload Declines

Workload at the Air Force’s three air logistics centers is projected to drop significantly in coming years, the Air Force told Congress in April. Capacity utilization at the three depots (Ogden in Utah, Oklahoma City, and Warner Robins in Georgia) likely will decrease from 87 percent in 2007 to about 75 percent by 2020, USAF’s legislative liaison office told members of the House Armed Services Committee in a six-page document obtained by the *Telegraph* of Macon, Ga.

USAF attributed the decline to several factors: current force structure plans that are tied to a largely static budget, the retirement of older weapon systems, and the increased reliability of newer replacement aircraft and components.

In the case of Warner Robins, avionics work for the F-22 and future demands to keep C-27 transports flying will not offset the decline there, according to the document. Nonetheless, the Air Force said the depots will remain viable.

### World War II Airmen Identified

The Department of Defense announced in late April that it has identified the remains of 11 Army Air Forces personnel who went missing in December 1943 when their B-24D Liberator bomber disappeared during an armed reconnaissance mission over New Hanover Island in the Bismarck Sea.

The airmen are: SSgt. Albert J. Caruso, of Kearny, N.J.; 2nd Lt. Kenneth L. Cassidy, of Worcester, Mass.; Capt. Robert L. Coleman, of Wilmington, Del., who piloted the aircraft; SSgt. Robert E. Frank, of Plainfield, N.J.; TSgt. William L. Fraser, of Maplewood, Mo.; TSgt. Paul Miecias, of Piscataway, N.J.; TSgt. Robert C. Morgan, of Flint, Mich.; 2nd Lt. Irving Schechner, of Brooklyn, N.Y.; Pvt. Joseph Thompson, of Compton, Calif.; 1st Lt. George E. Wallinder, of San Antonio; and 2nd Lt. Ronald F. Ward, of Cambridge, Mass.

The bomber departed Dobodura, New Guinea, but never returned to base; searches failed to locate it. In 2000, locals discovered the aircraft near Iwaia village on Papua, New Guinea. Between 2004 and 2007, the site was excavated twice and remains recovered that were later identified. ■

## News Notes

- The Air Force closed its noncommissioned officers academies at Goodfellow AFB, Tex., and Robins AFB, Ga., in May as part of cost-cutting measures as it draws down end strength.

- Lt. Col. Michael Brill, an Air Force Reserve Command pilot from the 419th Fighter Wing at Hill AFB, Utah, on May 2 became the first pilot to accumulate more than 6,000 total flight hours in the cockpit of the F-16 fighter.

- The Air Force awarded a Distinguished Flying Cross posthumously to 1st Lt. Louis Valls on March 28 for his actions piloting a B-26 bomber on a mission over Italy in January 1944.

- MSgt. Anthony Acciani, an EC-130H Compass Call flight engineer, flew his 1,000th career sortie May 7 during a mission over Iraq. Acciani is a 21-year Air Force veteran assigned to Davis-Monthan AFB, Ariz.

- An April 4 ground accident in South-

west Asia so severely damaged a 28th Bomb Wing B-1B bomber that USAF declared it to be a total loss. The aircraft was from Ellsworth AFB, S.D.

- An inspector general report chided the Pentagon’s security service for failing to ensure that BAE Systems, a key contractor in the F-35 stealth fighter program, was exercising appropriate controls over access to the aircraft’s sensitive technologies.

- A NATO plan to purchase and operate several Boeing C-17s took an important step forward May 9 with the Pentagon’s notification to Congress of the pending \$700 million sale of two C-17s and support to NATO’s Strategic Airlift Capability consortium.

- The President’s Volunteer Service Award on May 16 was presented to seven military members, including three airmen. They were: Maj. Laird Abbott, MSgt. Tammy Caban (Air National Guard), and

SMSgt. Rene Rubiella (Reserve).

- The last KC-135s operated by Air Force Reserve Command’s 940th Air Refueling Wing, Beale AFB, Calif., left May 3 for their new home at Seymour Johnson AFB, N.C. The wing’s personnel will now support U-2 and Global Hawk activities.

- Lockheed Martin agreed in May to pay the US government \$10.5 million to settle a lingering dispute dealing with overpayments made by the Air Force between 1998 and 2001 for work on the now-retired Titan IV space launch vehicle.

- A federal grand jury indicted J. Reece Roth, a retired University of Tennessee professor, and a Knoxville-based firm on charges of conspiring to defraud the Air Force and disclose restricted data about unmanned aerial vehicles to foreign nationals, the Department of Justice said May 20. ■

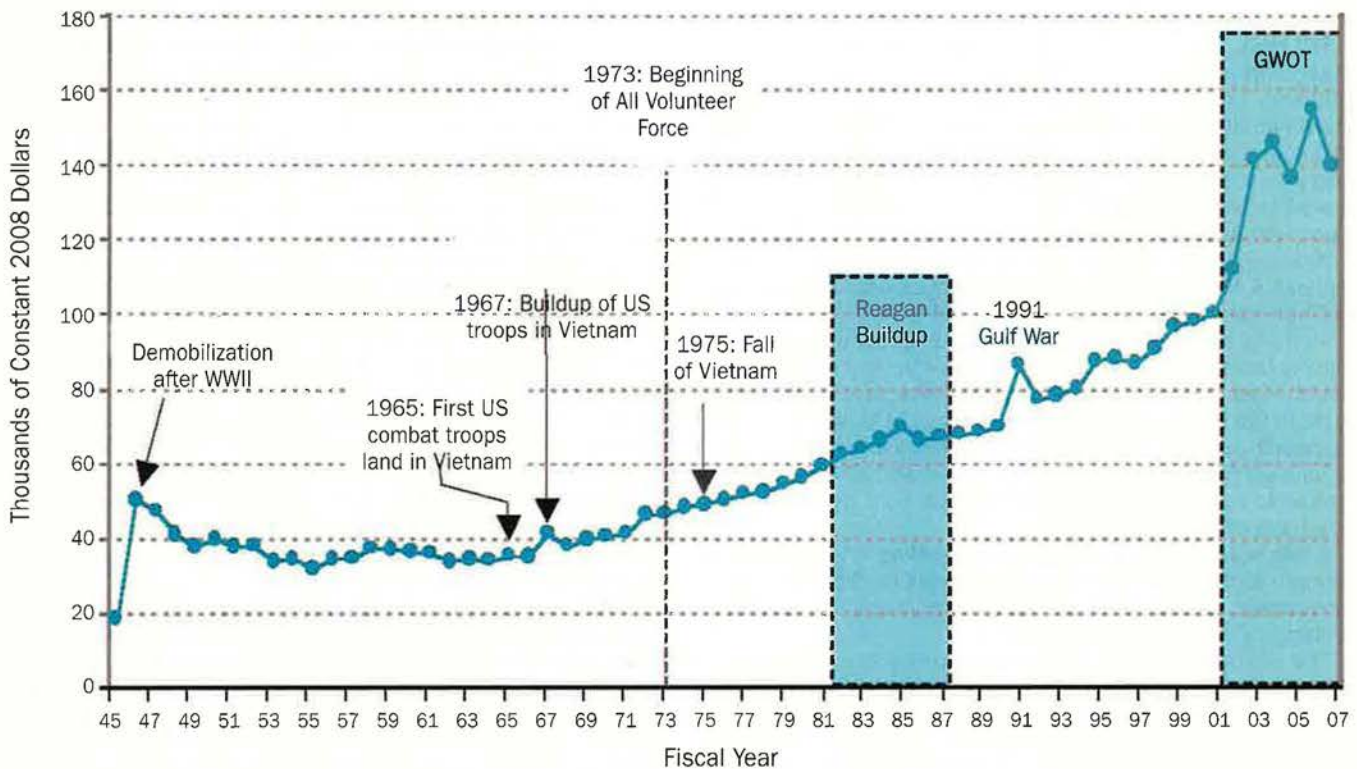


## How O&M Ate the Defense Budget

Readiness requires well-funded operation and maintenance accounts—depot work, training, fuel, logistics, health care, and so forth. O&M has seen steady growth for four decades. In terms of cost per service member, it has soared from some \$50,000 in the 1970s to \$150,000 today, reflecting

richer health care benefits, high fuel bills, and better pay for DOD civilians. O&M cost has put pressure on other parts of the budget and, if not reined in, could thwart modernization for years to come.

### Operation & Maintenance Costs Per Service Member



Source: "US Defense Modernization: Readiness Now and for the Future," Aerospace Industries Association, April 2008. Data are from DOD's "National Defense Budget Estimates for FY 2008."



## The 100-Wing Air Force

It seemed like a throwaway line. Secretary of Defense Robert M. Gates, in an April speech at Maxwell AFB, Ala., asked the airman audience to “think through what more we might do ... to enhance the air capabilities of other nations.” Gates put a name to this worldwide partnership concept, suggesting the US should “pursue a conceptual ‘100-wing air force’ of allies and partners to complement the ‘1,000-ship navy’ which the US sea service was trying to assemble “across the maritime commons.”

This idea didn’t get much press. It was blown out by Gates’ criticism of the armed services for supposedly failing to give it their all in the wars of Southwest Asia. What, though, did Gates really intend?

Gates may take credit for the new name, but the term “100-wing air force” sums up a concept USAF for some years has been pushing hard. From securing basing rights and sharing intelligence to schooling friendly air forces in counterterrorism and setting up international training opportunities, the Air Force has worked to lay the groundwork for integrated international cooperation.

The best clue is the comparison to the 1,000-ship navy. This term (a strange echo of the Reagan Administration’s planned “600-ship navy”) refers to an informal, constantly evolving international fleet combating threats to maritime security. The idea is that all nations using the high seas are threatened by piracy, smuggling, and terrorism, so it simply makes sense to work together to stop these threats. First articulated by US Navy Vice Adm. John G. Morgan Jr., and Rear Adm. Charles W. Martoglio, the concept has been championed by Adm. Michael G. Mullen, first as Chief of Naval Operations and now as Chairman of the Joint Chiefs of Staff.

“In many ways, the ‘Think Globally, Act Locally’ slogan applies to developing a stable security environment that enables global, regional, and national prosperity,” Morgan and Martoglio wrote in the November 2005 issue of the US Naval Institute’s *Proceedings*. The 1,000-ship concept hinges on like-minded nations contributing what they can, when and where it makes sense. No treaties are in play, and nations work together when they have common goals.

If this sounds like a recipe for free-riding on US military strength and experience, that’s because it is. Still, nations in many cases would shy away if Washington was perceived as pushing its own agenda too hard.

The US doesn’t even need to be involved to reap the benefits. American and Navy officials cite cooperation between Singapore, Indonesia, and Malaysia in protecting the Malacca Strait as an example of international action that helps the US without American participation. Similarly, new NATO members in Eastern Europe are flying air defense missions defending European security without US involvement.

The same concepts easily transfer to a 100-wing air force. Recognizing not only that the Air Force cannot police the entire world and that relationships are key to long-term cooperation, USAF has in recent years shifted its international focus from equipment sales to so-called political-military affairs.

Numbers are only suggestive. The US Air Force has recently said it has 19 fighter-attack wings, 10 bomber and ICBM wings, 18 ISR wings, and 34 mobility wings—81 in all. This implies



Tails of the various wings.

that the US can still be expected to contribute the lion’s share of resources to the 100-wing air force.

USAF published official security cooperation strategies in 2004 and 2006. They are to be replaced by a new Global Partnership Strategy, which the service hopes to have completed around the end of the summer. The new strategy will include classified, nation-by-nation strategic plans to help direct the Air Force’s key relationships. This currently includes 60 country-specific strategies, plus larger strategies for Central America (as a region) and NATO territory.

The 2006 document notes, “These countries were identified as having the greatest potential to contribute air, space, and cyberspace capabilities to partner security or to a coalition.” The country road maps might include combined training goals, proposed logistical improvements, interoperability improvement plans, and other ways to improve integration.

The interests of the US and friendly nations “more often than not coincide,” said Bruce S. Lemkin, deputy undersecretary of the Air Force for international affairs. Longstanding relationships mean that partner nations “can take care of their own security in a way, frankly, that means we don’t have to do that—but they’ll be able to operate with us when it is appropriate.”

NATO participation creates standards and expectations for Allies to cooperate. A wide range of friendly air forces now work together to share intelligence for the War on Terror, and often sit side by side in air operations centers. Nations participating in the F-35 program are buying into a 30-year relationship with the United States. Air Force Special Operations Command is doubling the size of its foreign internal defense capability, which teaches foreign air forces how to defend against terrorism and insurgency. The list goes on.

Familiarity can breed success. For example, the US worked closely with Thailand and other nations to deliver aid after the devastating 2004 Indian Ocean tsunami, but essentially worked in a supporting role. There will be more. This is, by another name, the 100-wing air force.

**More information:** [www.airforce-magazine.com/Magazine-Archive/Pages/2008/June%202008/0608speech.aspx](http://www.airforce-magazine.com/Magazine-Archive/Pages/2008/June%202008/0608speech.aspx)



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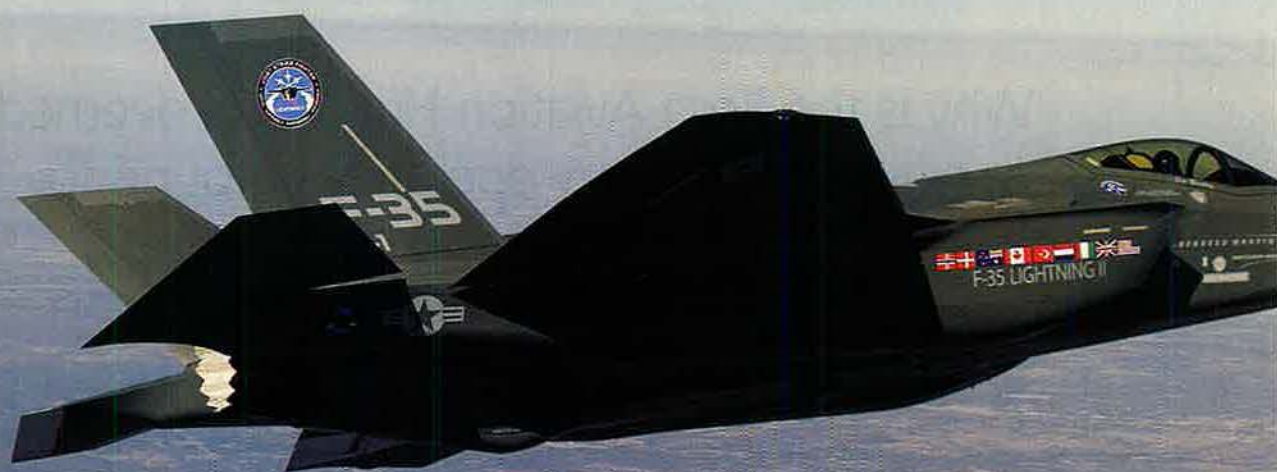
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# Bets Down on Lightning II


*The F-35 appears to be on track and even slightly ahead of the game in terms of cost.*

By John A. Tirpak



*The first F-35 test aircraft, a conventional takeoff model, files a basic flying qualities mission over Texas.*





**T**he F-35 Lightning II fighter has always loomed large in USAF's air combat plans. The future strength of the multirole and attack fighter inventory depends on it. The service anticipates buying 1,763 of the fighters, using them to replace both the F-16 and A-10. And that need is urgent; those warhorses have reached their retirement ages, and the Air Force is keeping them going with stopgap upgrades.

And now, the F-35's importance could be about to take a sizeable jump.

The cause is a possible premature end of F-22 fighter production. The Bush Administration has done its best to strangle that program short of USAF's declared minimum need. If the new Administration that takes office in January does nothing to alter the situation, the F-35 will be thrust more and more into the breach.

That is because the F-35 is the preferred—in fact, the only—possible backfill for the Raptor, the world's most advanced air superiority fighter. If indeed F-22 production stops at 183 aircraft—some 200 airplanes short of the 381 the Air Force long has maintained it needs—then the only reasonable alternative will be increased procurement of the F-35s, said Gen. T. Michael Moseley, who was then USAF Chief of Staff. The alternative would be to accept a dangerous gap in US air capabilities.

The Air Force doesn't want to trade F-22s for F-35s. Officers make clear that this is no knock on the Lightning. These two fighters were optimized for different purposes; it would be unwise, at this late date, to expect one to do the other's job with anything like the same degree of capability and efficiency. Still, the decision is largely out of USAF's hands, and the Air Force will have to live with what's handed to it.

The good news is that the F-35 program appears to be on track and even slightly ahead of the curve in terms of cost. The Navy and Marine Corps will buy 680 F-35s in an as-yet-undecided mix of short takeoff/vertical landing F-35Bs and somewhat larger, aircraft-carrier-capable F-35Cs. Already, eight foreign nations have partnered with the US to develop the fighter; they plan to buy at least 700 variants for their own air forces. Five other nations have shown interest.

For the United States military services, especially the Air Force, the dominant concern will be numbers. The next six years, at least, will see retirements of old fighters outstripping the purchase of new ones. This will contribute to the

so-called "fighter bathtub." That is a term of art for what shows up on fighter inventory charts when the trend line, over time, declines sharply, bottoms out, and then, at some future date, turns up again and flattens out at a higher plateau. The result looks like a cutaway cross section of a bathtub.

The threatened loss of nearly 200 F-22s in Pentagon political wars would only deepen and extend that bathtub dip. If the new post-Bush Administration decides to terminate the F-22 line, Moseley said, all combat-coded F-22s built would have to be put in the highest spiral development, meaning they must be equipped with advanced capabilities now on the drawing board or planned as upgrades, but not yet necessarily funded.

### Fighters Not Interchangeable

Then, Moseley added, the Air Force would have to make up the fifth generation capability in the overall "fighter bathtub" with F-35s.

Fifth generation fighters, in Air Force parlance, are those with a high degree of stealthiness, maneuverability, sensor fusion, and networked communications. This type will be essential to maintaining the credibility of its striking power, said USAF officials. The designation applies to both the F-22 and F-35, at present the only two Gen. 5 fighters in the world.

Moseley, speaking in a May interview, declined to speculate about how many F-35s he thought would be needed to make up for such a gaping shortage of F-22s. He said he remains hopeful that the F-22 program will be continued beyond the current approved run of 183 aircraft.

Moseley maintained that the two aircraft are not interchangeable, in that each was the product of a different design philosophy. The F-22 was the "no compromise" product of an effort to build "the finest air superiority-air dominance fighter in the history of combat aviation," he asserted, while the F-35 was optimized for affordability, able to meet the multirole needs of the Air Force, Navy, and Marine Corps, with all capabilities tradeable to achieve low cost.

Buying more F-35s to fill the breach would definitely be the second-best option, but the alternative—accepting a gaping hole in the fighter force—would be worse.

Increasing the F-35's percentage share of the Air Force's future fighter inventory is exactly what the Pentagon's civilian leaders have in mind.

Photo by Lockheed Martin



Computer-generated plan view of the USAF F-35A.



Lockheed Martin illustration

arguing that stealth in all the services (through ownership of the F-35) is preferable to “concentrating” that capability in one service—the Air Force.

John J. Young Jr., Pentagon acquisition, technology, and logistics chief, told the House Armed Services air and land forces subcommittee in March that Defense Department analysis shows “you need a certain number of fifth generation fighters for these high-threat ... major combat operations. But to change that mix to a higher-cost F-22 at the expense of the lower-cost Joint Strike Fighter, the studies show variation in there does not change our effectiveness or our loss ratios.”

He was referring to an in-house study, called “Joint Air Dominance,” which was prepared by the Defense Department’s Program Analysis and Evaluation shop. He told the panelists

that he would provide classified data to back up the assertion.

Neither Gates or England, nor Young explained why they were casting the F-22 and F-35—always viewed as complementary by the Air Force—as competitors.

However, Young parted the curtain a bit on Pentagon leadership thinking, saying that “it’s hard to see multiple, high-end peers for those high-end threat engagements,” and that top leaders don’t think it’s likely the US would simultaneously engage two peer competitors with advanced aircraft and air defenses. In other words, they feel comfortable with an Air Force sized to cope with one major theater war at a time.

Early this year, Defense Secretary Robert M. Gates told Congress he thinks 183 is “probably the right number” of F-22s to buy. He expressed concern that buying more of them would cut into the future purchases of F-35s. His worry, presumably, was that the Navy and Marine Corps would suffer for this. Gates’ deputy, Gordon England, amplified the opinion in a letter to 96 Congressmen,

Gates has subsequently observed that fiscal constraints must force tough choices among all weapon systems.

A major question here is the degree of comparability that exists between the two fighters.

Young said he sees the two fighters as “very comparable airplanes.” There are “some distinguishing features,” he allowed, such as the F-22’s “widely publicized supercruise” powers, “but the truth is, they are both highly capable fifth generation fighters with fewer distinguishing features than people offer.”

For his part, the F-35’s current program manager, USAF Maj. Gen. Charles R. Davis, says that the F-35 isn’t in the same class as the F-22. He is quick to add, however, that the F-35 is still a formidable platform and certainly would be able to hold its own against any modern or projected threat.

“I’ll tell you right off, we probably do not have the air show profile that would match a [Su-27] Flanker,” Davis said in an interview. “But we can destroy that Flanker from tens [and] tens of miles away while he’s out doing his air show profile, and never know he’s going to die until he dies.” The F-35’s stealth, he said, gives it “first look, first shot” capability.

### Day One or Year Five

“We can fight outnumbered against Flankers and [MiG-29] Fulcrums and prevail in the conventional scenario just about every time,” Davis maintained. In a close-in, visual dogfight, “we will have to work a little bit harder,” he allowed, “but even then, I’m not convinced that we are outclassed in that category, by any stretch of the imagination.”

The F-35, Davis said, was always meant to be a balanced mix of air-to-air and air-to-ground capability. It has the ability to penetrate enemy air defenses in full stealth mode, yet can load up external stations with weapons if stealth is not needed. With full internal weapons, the Air Force version can maneuver at nine Gs, a number equal to that of the F-16 with minimal weapons.

“No other airplane can swing both ways—‘Day One’ stealth or ‘Year Five’ in Iraq, with wingtip to wingtip stores,” Davis asserted.

The services, the program office, and prime contractor Lockheed Martin frequently test the aircraft’s capabilities against threats and other emerging conditions, he said, to ensure that it remains relevant to all kinds of wars.

Northrop Grumman illustration



The Marine Corps will fly the short takeoff and vertical landing variant. Illustration depicts an F-35B operating from a carrier.



It is becoming apparent, said Davis, that the F-35 can be kept fresh through every-other-year block upgrades, mainly to incorporate new weapons but also to address emerging threats and other issues as they arise.

Program plans call for the first update, called Block 4, to add a ground-collision avoidance system, an "IR pointer" allowing pilots and ground forces to draw on shared digital maps for target identification, expanded satellite communications, and real-time streaming video.

Block 5 and Block 6 are under review by the program office.

Sometimes, there will be an "out-of-cycle" upgrade to incorporate a particularly pressing item, Davis said. The first of these will be the integration of the Small Diameter Bomb II, now in competition.

The F-35 made news in April when the Pentagon released its selected acquisition reports for 2007. These are the Pentagon's in-house estimates of the cost of major weapon systems.

The SAR showed that the overall cost of the F-35 program actually declined by nearly a billion dollars in 2007, to just under \$299 billion. Those costs include everything from developing and buying the aircraft to building hangars to house them, across the entire life of the program.

"The bottom line," Davis said in a teleconference with reporters, is that "total acquisition costs of the program [have] slightly decreased. ... [Nor has] the average cost of the airplanes increased any since last year." The performance shows the program is making progress, "not only understanding what the costs

are, but being able to control them to some degree. And so, that's news of note, I think."

Davis added that negotiations on the second lot of low-rate initial production aircraft "puts the numbers for those airplanes a little bit below even where ... the SAR shows they should be." The LRIP II contract was subsequently announced on May 22, and provided \$2.2 billion for 12 aircraft, lower than expected.

The cost drop occurred despite hefty spikes in the cost of raw materials, such as titanium.

This also took place despite some design faults that were uncovered in early flight tests. A significant one was arcing in the actuator system, which brought a test flight to a premature end. The aircraft landed safely—the pilot was largely unaware of the fault—but there was a months-long delay as the actuators were redesigned and installed.

More recently, the "lift fan"—essentially a second engine behind the cockpit, used in the STOVL model—threw a fan blade in testing. The problem is well-understood and a fix will be forthcoming soon, Davis said.

There have been some production setbacks, as well. The F-35 was initially intended to feature a one-piece composite wing. The idea was that a single



Computer-generated plan view of the F-22, a "no-compromise" air dominance fighter.

Lockheed Martin illustration

piece would diminish assembly time and maintenance by sharply reducing the number of fasteners and touch labor required in assembly. It was a good idea in theory, but it didn't work.

#### Four Parts

"We had to discard quite a bit of tools that were built for that large 'bat wing,' and now we've gone to a new tooling concept that allows us to go to four individual pieces," said Daniel J. Crowley, F-35 program manager for Lockheed Martin.

Crowley explained that the large wing was hard to make. Moreover, failure to have all attachment parts ready at the same time would create a production bottleneck. Breaking the process into four smaller parts has sped things up by allowing work to continue on available parts.

Davis said the change was significant; it boosted the cost of early USAF and Marine Corps aircraft—but will end up reducing costs by the same amount on



Lockheed Martin illustration

The F-35C (shown here in an artist's conception) will have larger wings and operate from big-deck aircraft carriers.



## Spreading the Lightning II Far and Wide

Eight nations—so far—have signed up for the F-35. If all goes as expected, the program in 2013 will begin to shift over to multiyear procurement, wrapping together foreign and US orders to achieve greater savings.

The eight overseas partner nations will receive their F-35s in the following order: Netherlands, Britain, Italy, Australia, Turkey, Denmark, Canada, and Norway.

Individual national production numbers have yet to be established. That will be determined when they officially sign their orders, according to Tom Burbage, Lockheed Martin's F-35 vice president. Each of the partners has contributed money to development and has had a proportional say in setting requirements for the aircraft.

Israel and Singapore also participate, but in "observer" status. That means they are planning to buy F-35s but have not played a role in development.

In addition, five other countries have shown interest in the F-35: Japan, South Korea, Spain, Belgium, and Greece. All but Greece have entered into at least preliminary negotiations on joining the program.

Burbage noted, "Anybody that flies an F-16 has an interest in eventually replacing that airplane." The F-16 has served in more than 30 air forces. The F-35 also replaces AV-8Bs and F/A-18s, which could add to the list of potential customers. The Air Force projects an overseas market, counting current partner nations, of more than 4,000 F-35s.

the Navy model, which comes along later in the production run. Over the whole program, the change created a net savings.

Another challenge has been the STOVL system for the F-35B. Davis said the STOVL system is "still up about 20 to 25 percent above what we originally projected" in cost.

However, there has been greater-than-expected "learning curve" benefit from construction of early F-35s, and this will result in larger-than-expected savings early in the run.

"We have found that there is more commonality between the three variants than we predicted," Crowley reported, and it's been easier for workers to shift from one variant to another without skipping a beat. Davis also noted that the production F-35s are being built on the same line as the test models, and that has sped up the learning curve and saved money as well.

"With approximately 19 airplanes in production right now," Davis said in an April teleconference with reporters, "every day we get more actuals [real costs] on what it takes to build an airplane. We also get better every time we build an airplane. ... It gives us a better understanding of what jets and later lots will cost."

The SAR was released within just a couple of weeks of a Government Accountability Office report that blasted the F-35 program, charging that it had increased in cost by \$23 billion in a single year and had nearly depleted its management reserves.

Davis, in the telecon, flatly dismissed the GAO report as a cut-and-paste job that reflected outdated information and double-counting of costs in many areas.

### Bogus Numbers

"We do not agree with that estimate," Davis said. "There's no basis for that estimate. They did not do their own assessment to get that estimate and there's no numbers that support it."

He explained that the GAO took "other services' and other agencies' estimates" and came up with a bogus number.

"They added numbers that were done up to four years ago by other agencies within

the Department of Defense," he said, "and basically added all of the numbers they could find in terms of cost growth."

Compared with previous fighter programs, "we are two or three years ahead, we're two or three times better in ... the quality off the production line. The numbers show the program is doing well for this early stage." The good news, he said, is that "we're going to deal with a lot of the same problems, but we're going to deal with them earlier."

One lurking cost challenge, however, is the dropping value of the US dollar. That has made parts purchased from overseas more expensive, while reducing the cost of the aircraft for allied partners.

Britain is a major F-35 development partner. Given the rise of the pound sterling relative to the dollar in recent years, the value of London's developmental contribution has diminished.

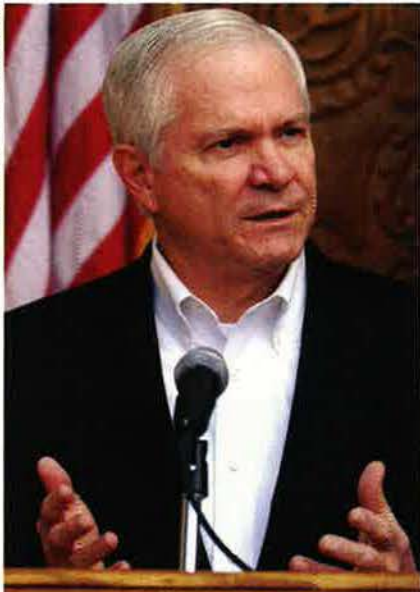
"That change alone has cost the program, to date, about \$400 million," Davis said. The partners will be able to buy "a lot more airplanes" for the same money, but the program is asking them to provide additional funds to help us "offset some of that cost growth" driven by exchange rates. The program is also considering "hedge currency buys to mitigate cost fluctuations" as one way to deal with the problem.

Two aircraft are now on the flight line. Seventeen more are in various stages of construction at Lockheed Martin's Fort Worth, Tex., facility. With the award of the LRIP II contract, which also starts long-lead items for LRIP III, a total of some 48 F-35s are in the works.



Technicians prepare to install the engine of an F-35 at Lockheed Martin's Fort Worth, Tex., plant.



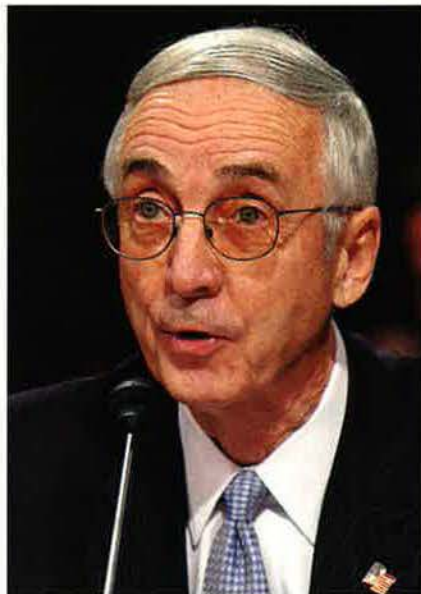


**Robert Gates, Secretary of Defense**

Davis said the STOVL model will accumulate many flights in conventional mode before trying to carry out the kinds of hovering feats achieved by an X-35 concept demonstrator.

"In a disciplined flight-test program, we'll start at altitude and gradually work it lower and slower until we eventually get to a vertical landing," something Davis predicts for spring of 2009.

There will be 12 F-35 flight-test aircraft—five Marine Corps STOVL, four Air Force conventional takeoff and landing, and three Navy carrier-capable types. "There's commonality among them; we'll learn from each," said Wilbert D. Pearson Jr., Lockheed Martin vice president for F-35 testing.



**Gordon England, deputy SECDEF**

The CTOLs can accomplish much of the standard flight tests for handling and flight controls.

#### Overseas Sales

"The mission systems are virtually identical on all three variants, so we only need to test mission systems on one of the airplanes," Pearson noted.

As matters stand today, the Marine Corps F-35B will be the first to go operational, in 2012. The Air Force follows in 2013, and the Navy in 2015.

Washington expects the foreign partners, taken together, to buy at least 700 fighters, adding more than 30 percent to the overall production level and dramatically reducing the unit cost of the



**John Young, DOD acquisition chief**

aircraft. They could buy substantially more, which would reduce unit costs even further.

Once the program gets into the fourth production lot, Davis said, a ballpark flyaway cost for the F-35A would be \$60 million to \$70 million. For the other two variants, the figure would be \$80 million to \$85 million.

However, he noted that every overseas sale will sharply lower unit cost by spreading overhead over more units. If Israel were to buy 25 aircraft, he said, it would "reduce [the] cost to the US services of almost \$500 million. ... Every 10, 15, or 20 airplanes that everybody buys has a significant savings in all the rest of the partnership."

Crowley said the Fort Worth plant will be able to turn out about one F-35 per business day—nominally, 220 per year.

If the Pentagon wants them faster—or if additional foreign orders begin to pile up—the contractor could increase production to as many as 300 fighters per year, by adding shifts, going to weekend work, and using an assembly and checkout plant in Italy.

There has been a sea change in the attitude toward the F-35, both in the Pentagon and on Capitol Hill, Davis observed. He noted that, within the Air Force, there have over the years been some heated F-35 vs. F-22 discussions. In the Navy, it was F-35 vs. F/A-18. The Marine Corps has always liked it.

"I do think folks have realized this is probably the program that's going to be the cornerstone of [future] tacair," Davis said. ■

## Does This Fighter Program Need Two Engines?

One of the few truly serious problems with the F-35 concerns its engines, and the problem is entirely political.

Original plans called for program-long competition between two major engines—the Pratt & Whitney F135 and the General Electric-Rolls Royce F136. Yet when the Pentagon selected the F135 as the winner of the initial production contract, it abandoned the F136, claiming it couldn't justify two engine suppliers.

Congress, meanwhile, has consistently directed it to return to the status quo ante, arguing that an engine competition will end up saving money.

Said a frustrated Maj. Gen. Charles R. Davis, F-35 program manager, "I'd either like to have it in for the rest of its life or out. ... I don't care. Pick one."

However, "my plea ... would be that it not come out of our basic program lines within JSF, because that would be another perturbation of either cost or production." He said money will have to be added for a second engine. He noted, "We are nearing a point where ... we've got to start making some production buy decisions on F136. ... We've got to do some no-kidding production planning. ... and if we continue to do this year-to-year program, it makes it very difficult to do that."

House and Senate Armed Services Committees added F136 funds in their 2009 defense authorization proposals.



**Having acted swiftly, the Pentagon chief outlined his reasons for the firing of USAF's leadership.**

# The Gates Case

*On June 5, the top civilian in the Department of Defense, Secretary of Defense Robert M. Gates, took the unprecedented step of decapitating an American armed service. He struck off the Air Force's most senior civilian—Secretary of the Air Force Michael W. Wynne—and Chief of Staff—Gen. T. Michael Moseley. He named as their successors Michael B. Donley, a senior DOD official, and Gen. Norton A. Schwartz, the head of US Transportation Command. In the modern history of the US military, nothing comparable has ever taken place.*

*Gates, the 22nd Secretary of Defense, permitted both men to tender their resignations, which he immediately accepted. He then went before an assembled Pentagon press corps to present the justification for his action.*

*In this appearance, the Pentagon chief cited what he called, "systemic issues associated with ... declining Air Force nuclear mission focus and performance." Left unmentioned by Gates was the fact that he had clashed repeatedly with both Wynne and Moseley over issues having nothing to do with the nuclear mission but of grave importance to the service they led.*

*We present his words and claims—the Gates Case—for public inspection.—The Editors*

## Robert M. Gates' Remarks

I'm here today to provide a summary of the investigation into the shipment of sensitive missile components to Taiwan, and to announce the resulting actions and decisions. A copy of this statement, which I confess is a little long, and a fact sheet will be available after the press conference.

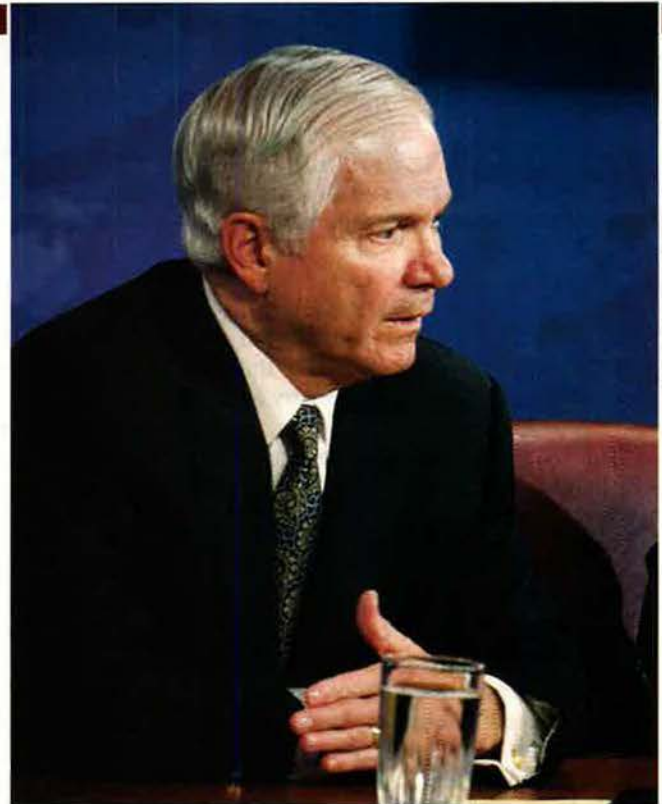
A credible nuclear deterrent has been essential to our security as a nation. And it remains so today. The safety, security, and reliability of our nuclear weapons and associated components are of paramount importance.

Our policy is clear. We will ensure the complete physical control of nuclear weapons. And we will properly handle their associated components at all times. It is a tremendous responsibility, and one we must and will never take lightly.

On March 25th of this year, I appointed Adm. Kirkland H. Donald, director of naval propulsion, to conduct a thorough investigation into the facts and circumstances regarding the misshipment of four MK-12 forward-section re-entry vehicle assemblies to Taiwan.

Admiral Donald holds the most senior position in our military dedicated to the safe and effective employment of nuclear technology in defense of the nation. Admiral Donald has completed his investigation. And I have received his final report.

Let me summarize the findings of Admiral Donald's investigation. First, the investigation did not find anything



Secretary of Defense Robert Gates

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

that would affect the health and safety of the public or our men and women in uniform or call into question the safety, security, and reliability of our nuclear arsenal.

Second, the integrity of the nation's nuclear deterrent force was not placed at risk as a result of this misshipment. MK forward-section assemblies are devices that arm and fuse nuclear warheads. They do not contain explosives or fissile material and are not inherently dangerous.

Further, the investigation yielded no evidence that the forward-section assemblies were compromised when they were out of US custody, nor was there ever any compromise of control of nuclear materials.

Having said that, this incident represents a significant failure to ensure the security of sensitive military components. And more troubling, it depicts a pattern of poor performance that was highlighted to us following last year's incident involving the improper movement of nuclear weapons between Minot Air Force Base and Barksdale Air Force Base.

The specific cause of this event was the Air Force and Defense Logistics Agency's sole reliance on and lack of compliance with existing supply system procedures to provide positive



control of the four forward-section assemblies. The supply system is designed to move and control large quantities of typically low-value material, and mistakes do occur. However, mistakes are not acceptable when shipping and controlling sensitive, classified parts.

Additional controls that would have been appropriate were not used. Moreover, existing procedures were not always followed. Based on Admiral Donald's initial assessment provided to me in April, I directed the Air Force, the Navy and Defense Logistics Agency to conduct a comprehensive inventory of all nuclear and nuclear-related materials, to re-establish positive control of these sensitive, classified components. These actions have been completed, and the results are being evaluated.

However, those actions only address the immediate problem.

During the course of the investigation, other issues indicating a decline in the Air Force's nuclear mission focus and performance became apparent. Rather than an isolated occurrence, the shipment of the four forward-section assemblies to Taiwan was a symptom of a degradation of the authority, standards of excellence, and technical competence within the nation's ICBM force. Similar to the bomber-specific August 2007 Minot-Barksdale nuclear weapons transfer incident, this incident took place within the larger environment of declining Air Force nuclear mission focus and performance.

Specifically, the investigation identified systemic issues associated with this decline. First, the investigation identified commonalities between the August 2007 Minot incident and this event. Both events involved a chain of failures that led to an unacceptable incident. The investigation determined the Air Force does not have a clear, dedicated authority responsible for the nuclear enterprise and who sets and maintains consistent, rigorous standards of operation. The investigation concluded that these shortcomings resulted from an erosion of performance standards within the involved commands and a lack of effective Air Force leadership oversight.

Second, the investigation found that the failures that led to the misshipment could have been prevented, had the Air Force's inspection and oversight programs been functioning effectively. The investigation also determined that the lack



USAF photo by Dave Ahlschweide

**Secretary of the Air Force Michael Wynne**

of a critical self-assessment culture in the Air Force nuclear program, and inspection processes that diminish ownership at the command level, make it unlikely that systemic weaknesses can be discovered and addressed. Overall, the Air Force has not been sufficiently critical of its past performance, and that has led to recurring problems of a similar nature.

Third, the investigation confirmed a declining trend in Air Force nuclear expertise similar to findings in other, earlier reports.

This lack of expertise contributed to involved commands overlooking the problems that led to the misshipment.

Years ago, the career path for Air Force personnel in the nuclear field was well-established and prestigious. However, the overall mission focus of the Air Force has shifted away from this nuclear mission, making it difficult to retain sufficient expertise. The Air Force has not effectively compensated for this diminished expertise through training and active career management.

The report makes clear that these problems and mistakes have their roots in decisions made over a period of at least 10 years. Nonetheless, many of the problems leading to the Minot and nosecone incidents have been known or should have been known.

Action is required on two fronts: first, fixing the structural, procedural, and cultural problems; and second, ensuring accountability. In terms of addressing the problems, the Air Force already has taken initial steps. However, I believe an outside perspective is required to ensure sufficiently far-reaching and comprehensive measures are taken.

Accordingly, I have asked Dr. James Schlesinger, former Secretary of Defense, Secretary of Energy and director of Central Intelligence, to lead a senior-level task force that will recommend improvements necessary to ensure that the highest levels of accountability and control are maintained in the stewardship and operation of nuclear weapons, delivery vehicles, and sensitive components.

The work of the task force will have two phases. The first phase, to be completed within 60 days, will make recommendations on organizational, procedural, and policy matters involving the Department of the Air Force. The second phase, to be completed within 120 days, will examine management and oversight of nuclear weapons and related materials and systems across the entire Department of Defense.



USAF Photo by Melanie E. Rodgers

**Gen. T. Michael Moseley**



**“The focus of the Air Force leadership has drifted with respect to perhaps its most sensitive mission.”**

The task force will be drawn from the Defense Policy Board and the Defense Science Board. A copy of the task force’s mission statement and charter letter will be provided at the end of this briefing.

The problems identified by the investigation have been developed—have developed over a period of years. However, Admiral Donald’s report also identified contemporary failures and a lack of effective oversight. Individuals in command and leadership positions not only fell short in terms of specific actions, they failed to recognize systemic problems, to address those problems, or, where beyond their authority to act, to call the attention of superiors to those problems. Each had the leadership responsibility to identify and correct or flag for others the structural, procedural, and performance deficiencies identified in just a few weeks by Admiral Donald.

The challenge, then, is how and at what level to apply individual accountability. Here, Admiral Donald’s report provides guidance. He concludes, and I quote, “Senior leadership accountability also arises from the findings indicative of an overall decline in Air Force nuclear weapons stewardship, a problem that has been identified but not effectively addressed for over a decade. Both the Minot-Barksdale nuclear weapons transfer incident and the Taiwan misshipment, while different in specifics, have a common origin: the gradual erosion of nuclear standards and a lack of effective oversight by Air Force leadership.”

It is my responsibility to ensure that the Air Force is on the right path to correcting the systemic and institutional nuclear

weapons stewardship problems that have been identified. A substantial number of Air Force general officers and colonels have been identified as potentially subject to disciplinary measures, ranging from removal from command to letters of reprimand. Such measures, whether taken by the Air Force or by my direction, might help address the immediate problems but, I have concluded, would not adequately address the broader issues involved.

Accordingly, after discussion with the President and with the support of the Chairman of the Joint Chiefs of Staff, I have accepted the resignation of the Secretary of the Air Force and the resignation of the Chief of Staff of the Air Force.

I will direct the new Secretary and the new Chief of Staff, once confirmed, to evaluate each of the individuals identified by Admiral Donald as bearing responsibility in the recent incidents and systemic problems, to determine whether and what disciplinary measures are warranted, and whether or not they can be part of the solution to the problems identified by the investigation.

In summary, I believe these actions are required because, first, the focus of the Air Force leadership has drifted with respect to perhaps its most sensitive mission.

Second, performance standards in that sensitive area were allowed to degrade.

Third, only after two internationally sensitive incidents did Air Force leadership apply increased attention to the problem.

And fourth, even then, action to ensure a thorough investigation of what went wrong was not initiated by the Air Force leadership but required my intervention.

Mike Wynne is a dedicated and honorable public servant, and Buzz Moseley has given decades of courageous and devoted service to his country. They both deserve our gratitude for their service. I have enjoyed serving with them, and I deeply regret that the issues before us require the actions that I have taken.

While this is a difficult day for the Air Force, for the Department of Defense, and for me, it also marks the beginning of a return to the standards of excellence and accomplishment for which the Air Force has long been known. I will make recommendations for a new Secretary and new Air Force Chief of Staff shortly.

Let me close on a personal note. The Air Force is my service. That is the uniform I wore nearly 42 years ago when I first encountered, in the Strategic Air Command, the extraordinary men and women who protect and defend our country. Every day the amazing men and women of our Air Force are in combat in Iraq and Afghanistan, supporting all the services worldwide, and deterring potential adversaries. They have my respect, my support, and my commitment to do everything I can, in my remaining time to work with them, to sustain the tradition of service and excellence that has been the hallmark of the United States Air Force since its inception. Thank you.

## Q&A With Pentagon Reporters

**Q:** Did you conclude that General Moseley and Secretary Wynne were simply incapable of changing course and fixing the problems, or were they unwilling to do what you wanted them to do?

**A:** I believed that we needed a change of leadership to bring a new perspective and to especially underscore the

USAF photo by SSgt. Barmie J. Davis III



**Gen. Norton Schwartz**



importance of accountability in dealing with these kinds of problems. As I say, I have the highest respect for both men, but I felt the change was needed for a number of these reasons.

Q: Sir, can you tell us—the other two pieces of the investigation, into the Navy nuclear arsenal and the DLA—did they find similar problems, or did they get a clean bill of health?

A: The investigation really did not deal with the Navy part of it. It did deal with the Defense Logistics Agency, identified some problems. And there are a couple of disciplinary recommendations that have been made to the Secretary of the Army.

Q: Dr. Gates, you have been critical of the Air Force and other officers who have been not focused on the current wars. You used “next war-itis” in one speech. You criticized UAV efforts. How much do these other issues that you have highlighted in speeches regarding the Air Force come into your decisions on a leadership change?

A: I’ve made the decisions that I’ve made based entirely on Admiral Donald’s report.

Q: Sir, this is obviously, as far as I could tell, looking back, an unprecedented move to see both the civilian and military leadership of a service removed in this fashion. What does this say about the seriousness with which you view this issue and, you mentioned, the most sensitive mission that the Air Force has? Could you speak a little bit to that?

A: I think that really is the crux of it, the stewardship of our nuclear deterrent is the most sensitive mission that we have. And therefore, I think, the problems that have been identified—despite the fact there was no compromise of the technology, despite the fact that there was no danger involved—the fact that the stewardship itself and the declining standards raised questions in the minds of the public as well as internationally, in my view, required strong action. One more question.

Q: Sir, you talk about the degradation of focus in terms of nuclear shipping and you talk about the critical lack of self-assessment culture. Can you talk a little bit more about that? I mean, is it beyond the nuclear mission, in the way you see it?

A: All of the conclusions that I have described were focused strictly on the nuclear mission, on the ICBM force and the bombers. And I assume high standards of excellence elsewhere but, you know, if problems occur, then we’ll look at them. But this has been focused—Admiral Donald’s report really focused only on the nuclear mission.

Q: [The firings] would not have been made had it not been for the Taiwan sale mistake? Is that what you’d sort of conclude?

A: I think it was the second incident that prompted me



Acting SECAF Michael Donley

to believe that there were serious systemic problems here, a part that went well beyond the incident involving Minot and Barksdale. So the Taiwan incident clearly was the trigger. Thank you very much.

Q: [W]ould you have liked to see a lot of changes after Minot? Should the Air Force have taken more dramatic steps more quickly on the protection of the nuclear arsenal?

A: Well, I think it goes back to the point that I think that there was, as Admiral Donald points out, the lack of critical self-assessment. And I would just leave it at that. Thank you.

## Defense Department Fact Sheet

### Background

On 1 August 2006, a military logistics command located on Hill AFB, Utah, shipped what was believed to be four helicopter batteries to Taiwan to fill a foreign military sales order. The items actually shipped, however, had been previously misidentified and were actually four classified Mk-12 Forward-Section Reentry Vehicle Assemblies (forward-section assemblies), which are used on the Minuteman III Intercontinental Ballistic Missile (ICBM). These forward-section assemblies arrived in Taiwan in October and November 2006. The forward-section assemblies were under Taiwan military control for approximately 17 months. After US personnel realized the shipment was not helicopter batteries, the forward-section assemblies were brought back into US custody on 21 March 2008 and returned to Hill Air Force Base on 25 March 2008.

### Time Line

**8 March 2005:** Ten Mk-12 re-entry vehicle forward-section assemblies (which included the four forward section assemblies sent to Taiwan) were shipped by Defense Distribution Depot Hill, Utah, to F. E. Warren AFB, Wyo.

**28 March 2005:** F. E. Warren AFB sent four forward-section assemblies (the four assemblies sent to Taiwan) back to Defense Distribution Depot Hill, Utah, for storage. Due to

**“I’ve made the decisions that I’ve made based entirely on Admiral Donald’s report.”**



supply shipping errors, the four classified forward-section assemblies were sent to the Defense Distribution Depot Hill, Utah, unclassified warehouse with inaccurate description information on the outside of the containers.

**30 March 2005:** The four individually packaged forward-section assemblies were received at the Defense Distribution Depot Hill, Utah, unclassified warehouse. The receiving custodian did not follow receipt procedures which required opening shipping containers to verify contents. The receiving custodian then incorrectly receipted and marked the four forward-section assemblies as helicopter batteries because of inaccurate information on the outside of the containers.

**16 June 2006:** Defense Distribution Depot Hill, Utah, received a foreign military sales requisition for helicopter batteries from Taiwan through US Army Security Assistance Command.

**1 August 2006:** Defense Distribution Depot Hill, Utah, filled the foreign military sales requisition by shipping the four individually containerized, incorrectly marked forward-section assemblies to Taiwan's designated freight handler for further shipment to Taiwan.

**25 September 2006 and 15 October 2006:** Taiwan's designated freight handler arranged for shipment of the four individually containerized forward-section assemblies to Taiwan. Three were shipped on 25 September 2006; one was shipped on 15 October 2006.

**25 October 2006 and 9 November 2006:** Four individually containerized forward-section assemblies were received at Aviation Depot, Tainan, Taiwan. Three were received on 25 October 2006; one was received on 9 November 2006.

**16 January 2007:** Taiwan Army personnel submitted a supply discrepancy report to US Army Security Assistance Command reporting that the batteries requisitioned were not received. US personnel did not recognize that the items were actually forward-section assemblies even though the supply

**“It was the second incident that prompted me to believe that there were serious systemic problems here. ... The Taiwan incident clearly was the trigger.”**

discrepancy report included enough information to properly identify the items.

**19 January 2007:** US Army Security Assistance Command mailed a hard copy of the supply discrepancy report to Defense Distribution Depot Hill, Utah. Defense Distribution Depot Hill, Utah, did not respond and there was no record of Defense Distribution Depot Hill, Utah, receiving the supply discrepancy report.

**5 June 2007:** US Army Security Assistance Command submitted an electronic follow-up supply discrepancy report for resolution. This action by US Army Security Assistance Command was late.

**20 July 2007:** US Army Security Assistance Command contacted Defense Supply Center (Columbus) for action on the Taiwan supply discrepancy report. Defense Supply Centers (both Columbus and Richmond) acted on the supply discrepancy report, submitted a credit memorandum to the Defense Financial Accounting Service to authorize a credit to Taiwan's foreign military sales account, and authorized disposal of the material without knowledge of its identity.

**24 September 2007:** Defense Supply Center (Richmond) confirmed the previous supply discrepancy report response and resubmitted the credit memorandum to Defense Finance and Accounting Service.

**25 November 2007:** Defense Supply Center (Richmond) closed the supply discrepancy report.

**14 March 2008:** Taiwan liaison officer at US Army Security Assistance Command notified US Army Security Assistance Command that Taiwan Combined Logistics Command stated that they could not dispose of the material and requested further guidance or instructions.

**19 March 2008:** US Army Security Assistance Command located and contacted the integrated material manager for forward-section assemblies at Ogden Air Logistics Center, 526th ICBM Systems Group. The integrated material manager identified the material as forward-section assemblies and requested assistance in the return of the material to US control. US Army Security Assistance Command requested Taiwan cease disposal activities.

**19-25 March 2008:** US Army Security Assistance Command, Office of the Secretary of Defense, and American Institute in Taiwan acted to secure the four forward-section assemblies and returned them to Hill Air Force Base. ■



*Adm. Kirkland Donald*





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# Counterinsurgency From Above

A prominent analyst makes the case for emphasizing airpower in the nation's "small wars."

By Phillip S. Meilinger

**I**n 2003, after a dozen years of airpower-based American military successes, things went awry. US ground troops occupying Iraq entered a four-year period of increasing losses and growing insurgency. By early 2007, Iraq appeared headed into an abyss.

The nation's military strategy for counterinsurgency (COIN) was not working. The US had approached the war with the thought in mind that it needed to insert large numbers of conventional ground forces, that it needed to fight bloody force-on-force—even man-on-man—battles with the insurgents, and that it needed to physically occupy enemy territory. The watchword was “boots on the ground.”

While US forces have enjoyed more success over the past year, there has been little fundamental change.

What if US military commanders were to approach the War on Terror from a totally different position? What if they accepted that the current problem is actually a civil war between the moderates and the radicals within global Islam? In that case, the West's role would be to support the Islamic moderates, not just with military power but also all other forms of power.

In such a scenario, the logical commander would be the head of our intelligence apparatus, and his campaign plan would focus on psychological operations. The last thing the US would want to do is inflame local resentment by inserting tens of thousands of ground troops.

If the US military could break the lock that the boots on the ground and the “occupation of territory” mind-sets have on

strategy and switch to a more air-centric joint strategy, the end result could very well be more success—at a lower cost in both casualties and dollars.

Many of the traditional beliefs regarding insurgencies—and thus our strategies for combating them—have failed.

Breaking out of the current mind-set will not be easy, however. There is a large canon of literature regarding insurgencies and counterinsurgency operations, and much of the opinion contained therein has become conventional wisdom.

In fact, none other than Army Gen. David H. Petraeus, who led US forces in Iraq during the surge of 2007 and 2008, helped set the COIN doctrine relegating airpower to a support role. In 2006, as a lieutenant general, Petraeus co-authored the Army-Marine Corps combined arms field manual for counterinsurgency. The





**Above:** An AC-130 gunship blazes away as it banks over Hurlburt Field, Fla. **Right:** An A-10's cannon blasts a target near Kirkuk, Iraq.

airpower under the control of numerous ground commanders. "At the tactical level, air support requires a decentralized command and control system that gives supported units immediate access to available combat air assets," it read.

Petraeus did, however, recognize the danger of conventional thinking. Successful COIN operations require militaries to "overcome their institutional inclination to wage conventional war," he wrote.

As post-2003 Iraq has shown, the US needs new COIN strategies, with the logical solution being airpower-shaped joint operations. A look at the literature regarding insurgency and COIN reveals some verities (things that are essentially true), legends (things that are widely expected to be true but may not be), and surprises (curveballs that catch us unprepared). It also leads inevitably to some suggestions.

## 1. Verities

The most obvious truth about insurgent war is this: You are better off avoiding it. The world currently is wracked by some 80 insurgencies, large and small. Most of them do not concern America's vital interests. We can afford to stay out. We need to give our forces a hand by not putting them into impossible situations in the first place.

Another verity: Intelligence is king. The US tends not to be very good at this. In October 2007, President Bush warned Iran to cease its ongoing nuclear program; yet, two months later the US Intelligence Community revealed it had been wrong for the previous four years—Iran did not have an active nuclear arms program. Lest we forget,

intelligence errors contributed to the US decision to invade Iraq in 2003.

If intelligence is the king, then media is the queen. Recall three photos from the Vietnam War: a suspected Viet Cong terrorist executed on a street in Saigon by a pistol shot to the head; a young girl, naked, running away in terror from a napalm strike; and a US soldier using his lighter to set fire to a native hooch. In Iraq: the photos of Abu Ghraib and the photo of a US marine standing over a prostrate Iraqi and putting a bullet into him. These photos from Vietnam and Iraq may have represented extreme events, but that doesn't matter. To a great extent, they defined those wars in the minds of millions of people worldwide. Despite repeated efforts, the US has had difficulty steering public perceptions about its war efforts.

Strategic vision is also key. There is an old military saying that brilliant tactics cannot overcome a flawed strategy. Kosovo in 1999 was a rare example of an exception to the rule. Despite a poorly conceived strategy imposed by NATO leaders, airmen were able to overcome it with their professionalism, creativity, and competence. American troops in Iraq are equally professional and creative; their lives depend on it.

Unity of command is crucial to the success of any military operation, including counterinsurgency. Moreover, in COIN, the military tool is only one, and usually a lesser, of the levers of power to be used. This usually favors putting a civilian in charge. A word of warning, though. Maxwell D. Taylor, US ambassador to South Vietnam in 1964 and 1965, was a retired general and former Chairman of the Joint Chiefs of Staff. He seemed the ideal choice for

influential document gave scarcely a mention to airpower.

The field manual relegated discussion of airpower to an annex comprising the final five pages of 335. It espoused the view that, for COIN, airpower is mostly useful for moving ground troops and providing ISR. As blunt instruments, air strikes should only be used "carefully."

USAF Maj. Gen. Allen G. Peck, commander of the Air Force Doctrine Development and Education Center, subsequently said the field manual presented "a very two-dimensional view of how to fight a counterinsurgency."

Perhaps most disturbing to airmen, the document also advocated placing





his position in Saigon, yet he failed. L. Paul Bremer III, a career diplomat, led the Coalition Provisional Authority in 2003-04. He also failed. In COIN, unity of command is a necessary but not sufficient factor in success.

## 2. Legends

Among all of the legends, the first and possibly most important is the claim that insurgencies are all about poverty and repression—that the insurgents therefore have a legitimate complaint. That is why, the argument goes, there must be a comprehensive COIN strategy that includes land reform, economic development, attacks on corruption, and so forth. In truth, Islamic fundamentalism is not about poverty and repression. To a large extent, Islamic fundamentalists are fighting against giving people freedoms. Witness the degree of poverty and repression that was present in Taliban-era Afghanistan.

Another legend: the need to “win hearts and minds.” We think it is a key to victory. Yet, this is one of those one-way streets seen frequently in insurgencies. The Viet Cong killers were not trying to win hearts and minds when they slaughtered 35,000 villagers in South Vietnam. Nor were the minions of al Qaeda that flew airliners into the World Trade Center and the Pentagon, or bombed the Madrid and London transit systems. Rather, insurgents deliberately use terror. Although it is important that democracies try to win over the population, it is not necessary for the insurgents to do so.

Legitimacy is often cited in the litera-



USAF photo by SrA. Larry E. Reid Jr.

**Airmen of the 432nd Aircraft Maintenance Squadron, Creech AFB, Nev., assemble an MQ-1 Predator that has returned from Afghanistan. The markings denote the number of Hellfire missiles it has fired.**

ture surrounding COIN. A relevant question, however, is who needs legitimacy? Is it the host nation or the insurgents? This is another one-way street. Unfortunately, it appears that when the West helps a host nation combat terrorism, the host nation is branded a puppet, but when the insurgents are helped by Russia, China, or Iran, they are not stigmatized.

Another legend: All of this stuff is new. We constantly hear that we live in a new world fraught with new enemies and new challenges. Not really. Insurgencies have been going on since ancient times, and the basic characteristics—guerrilla operations, the mixing of political, economic, and military factors, the need for sanctuaries and outside support—are recurring themes. It’s probably wise to note, however, that the current enemy

is about as bad as they come. The 9/11 attacks and bombings of the trains in Europe were designed to deliberately slaughter as many innocent people as possible.

Here is the biggest legend of all, so big that it qualifies as a full-fledged myth: Success in COIN requires boots on the ground and occupation of territory. Use of conventional ground troops is very expensive despite limited effectiveness. Last year, the Congressional Budget Office stated that the cost thus far in Iraq was \$604 billion and the cost will eventually surpass a trillion dollars. Compare that to the air campaigns of Northern and Southern Watch, which were amazingly successful but cost less than \$1 billion annually.

Regarding cost: The new US Army-Marine Corps doctrine manual on counterinsurgency states that there must be a minimum of 20 counterinsurgents per 1,000 people. That perhaps sounds a bit unremarkable—until one does the math. Iraq has 27.5 million people. To ensure there are 20 counterinsurgents per 1,000 people would require 550,000 ground troops—three times the number already deployed there.

Moreover, in Vietnam the US did fulfill the minimum requirements. In fact, we had three times the number of boots on the ground supposedly necessary for success—525,000 US troops and another 675,000 South Vietnamese troops for a population of 20 million. Yet, all of those troops did not even detect, much less prevent, the Tet Offensive of 1968.

The strategy of putting tens of thousands of ground troops in harm’s way is very deadly—not only for our military forces, but for the civilian population we

USAF photo by SSgt. Jeffrey A. Wolfe



**SrA. Josh Gianni (l) and SrA. Leo Ortiz track a target during an anti-insurgency operation near Kirkuk, Iraq.**





**Gen. Nguyen Ngoc Loan, chief of the South Vietnamese national police, executes a suspected Viet Cong officer, Nguyen Van Lem, on a Saigon street in 1968. In the author's view, this famous photo helped define Vietnam as a cruel and unjust war in the public mind.**

are trying to protect. US casualties in Iraq have gone in cycles. We are currently in a downward trend, but have been there before. While civilian deaths are notoriously hard to calculate and are prone to all sorts of biases and manipulations, there is no doubt civilian deaths in Iraq have been significant.

Even with the recent "surge" of US military forces into Iraq, it would be unwise to assume we are controlling the pace of military operations; our own literature states the insurgents control the tempo. And despite rhetoric about counterinsurgency being first and foremost a war of ideas, we nonetheless have chained ourselves to a strategy that emphasizes the traditional notions of occupation of territory and body counts.

### 3. Surprises

Westerners often assume that everyone has a fundamental yearning for democracy and freedom. It never occurs to us that millions of people do not. Rather, they willingly submit to what seems to Americans an oppressive way of life. Many do not want freedom of religion. They do not want women to have equal rights. They do not want freedom of speech, or the ability to watch whatever movies they wish, or to vote as they see fit. Freedom, as we define freedom, is not a universal desire.

Ideology rules: Westerners are unable to dent the intellectual and religious model that governs radical Islam. It is not about logic—as we define logic. For example: Two years ago, the cartoons in a Danish newspaper regarding Islam and Mohammed caused riots in several places

around the world. Recall also the death sentence imposed by Iranian mullahs on British citizen Salman Rushdie for his novel, *The Satanic Verses*. Now recall the book and movie *The Da Vinci Code*. They were frontal assaults on sacred tenets of Roman Catholicism—yet there were no riots or fatwas calling for the death of the author. Americans simply do not think like Islamic fundamentalists and need to recruit intelligence operatives who do.

The war is a "limited war" only for us. This is another one of those surprises. The US may be fighting a limited war, but the Islamic fundamentalists are not. Democracies seek to protect innocents, avoid damaging mosques, and limit collateral damage, but insurgents do not show restraint. Most revolutions change the political structure, but Islamic fundamentalism seeks to overturn a country's entire political, social, economic, and military structure.

### 4. Suggestions

The traditional means of dealing with insurgencies are not working. What we need are new ideas and strategies, not simply new tactics to implement old strategies. The United States needs to find a way to achieve its political goals with the least cost in blood and treasure.

The role for airpower in COIN is generally seen as providing airlift, ISR capabilities, and precision strike. This outdated paradigm is too narrowly focused and relegates airpower to the support role while ground forces perform the "real" work. Worse, marginalizing airpower keeps it in support

of ground-centric strategies that have proved unsuccessful.

What are some other possibilities?

First, it would be useful to revisit the "air control" operations employed by the Royal Air Force in the Middle East in the 1920s and 1930s. These operations were not always successful in objective military terms, but they were unusually successful in political terms, in part because they carried a low cost in both financial and casualty terms. In many ways these operations were the precursors of "Watch" operations over Iraq in the 1990s.

In Northern Watch and Southern Watch, the US-led coalition flew more than 300,000 sorties over Iraq between 1991 and 2003 while suffering no combat losses and with a cost less than \$1 billion per year. The result: Saddam Hussein was contained. Not only could he not threaten his neighbors, he was unable to build facilities for weapons of mass destruction.

American airpower enjoyed other successes of a similar nature. The US-led victories in Bosnia (1995), Kosovo (1999), Afghanistan (2001), and Iraq (2003) were achieved using a combination of air and space power, special operations forces, indigenous ground forces, and robust intelligence assets.

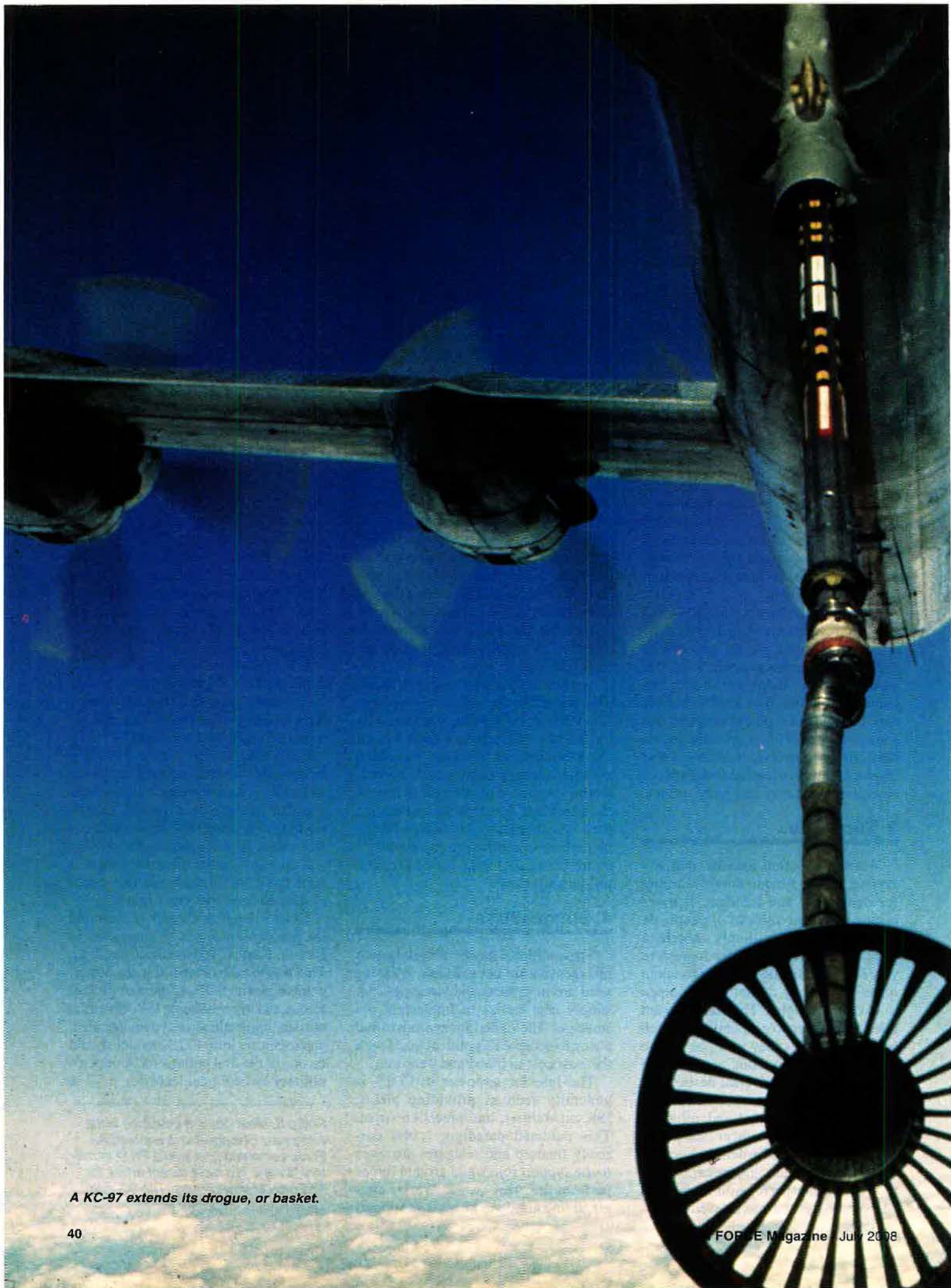
Until the start of the current Iraq War, conventional US ground troops played only a minor role. This was not the preferred strategy of the ground officers, but it proved repeatedly successful.

Compared to 1991 or even 2003, today's Air Force has more sophisticated and effective sensor aircraft and satellites that can produce even greater results. Pushing to develop new ways to sniff out weapons of mass destruction, detect IEDs, and operate in urban environments will help, and USAF already has the benefit of lessons from five years in Iraq.

DOD's leaders should re-examine the paradigm that was so successful in Bosnia, Kosovo, Afghanistan, and Iraq. That was the use of air and space power, combined with SOF, indigenous ground forces, and overwhelming ISR. Given the outstanding results already demonstrated, an air-centric joint COIN model should be one of the first options for America's military and political leaders. ■

*Phillip S. Meilinger is a freelance writer living near Chicago. He is a retired Air Force command pilot with a Ph.D. in military history. His most recent article for Air Force Magazine was "The 90-Year Tanker Saga," February 2007.*





*A KC-97 extends its drogue, or basket.*





Vintage photos of the aircraft behind  
USAF's worldwide reach.

# Tankers Through the Years

Photos compiled by Warren Thompson

Photo by Dave Henry



**A**erial refueling is in many ways synonymous with the Air Force's ability to project power around the globe, putting virtually any spot on earth within reach of a nonstop flight. The capability was conclusively demonstrated with Carl A. "Tooney" Spaatz' Question Mark week-long flight in 1929.

111 The KC-97 was a variation of the B-29 and B-50 bombers, and was the first tanker to range far overseas. Here, a KC-97 refuels a much faster F-4 Phantom jet fighter over Bitburg AB, Germany, in 1969. Note the F-4's nose-high attitude to keep from overtaking the KC-97. 121 A B-52 from Diego Garcia slides up to a KC-135 during a mission in Operation Desert Storm, 1991.



131 A B-58 Hustler of the 305th Bomb Wing hooks up with a KC-135. The supersonic Hustler was fast, but had limited range, and was dependent on tankers to reach even the closest intercontinental targets. 141 A 116th Fighter Bomber Wing F-84 Thunderjet prepares to refuel over Japan in summer 1953. 151 A KB-29 passes fuel to a 116th FBW F-84 over the Sea of Japan in late 1953. Note the use of the probe-and-drogue method of filling the fighter's wingtip tanks. The Air Force would later adopt the "flying tailboom" method of fuel transfer, which permitted tanking at higher airspeeds.





Photo by Rose Reynolds

1



Photo by J. J. J. J.

2

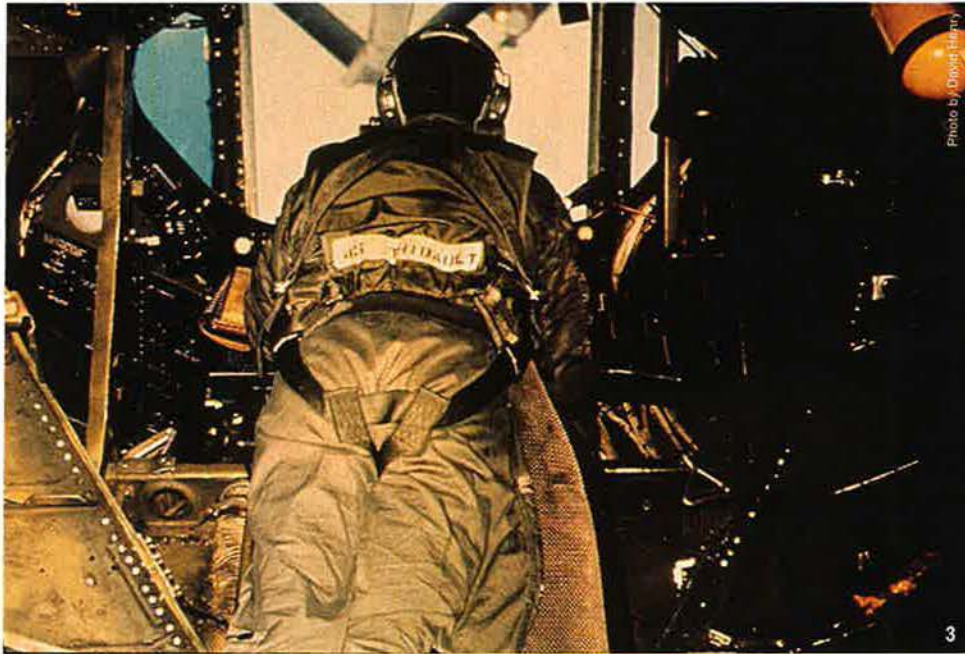


Photo by David Hursey

3

111 An F-117 Nighthawk tops off at the Saudi Arabian border before pressing on for another Desert Storm attack in 1991. The F-117s hit most of the targets struck within Baghdad, but were based well out of range of Iraq's Scud missiles, making the tanker a compulsory part of each mission, often several times. 121 An FB-111 from the 380th Bomb Wing gasses up behind a then-new KC-10 in its original high-visibility paint scheme, in October 1990. 131 The boom operator's "office" in the KC-97, in 1970. 141 An F-100 of the 356th Tactical Fighter Squadron attempts a probe-and-droge refueling over the Adriatic Sea in 1960. 151 As jet fighter aircraft became the USAF norm, the KB-29 was superceded by the KB-50, which augmented its turboprop engines with jets on the outer wings. This KB-50 is refueling F-100s over France in 1959.



Photo by Bob Tillak

4



Photo by C. F. Harrington

5



111 A KC-97 tanks up A-37s from Hurlburt Field, Fla., over the Gulf of Mexico en route to Howard AFB, Panama, in a 1970 exercise. 121 A B-2 Spirit hooks up with a KC-135. The B-2 fleet flew combat missions round-trip from Whiteman AFB, Mo., to targets in Serbia during Operation Allied Force and to Afghanistan in Enduring Freedom. Despite having the longest "legs" in the Air Force, the B-2s needed several refuelings on such missions.



Photo by Dave Henry

1



USAF photo

2



Photo by Warren Thompson

3

131 An F-15 of the Air National Guard 159th Fighter Group, New Orleans, fuels up over the Gulf of Mexico in 1987. 141 This 116th FBW F-84 shows off its unique refueling hardware. The type was part of an experiment in fighter aerial refueling during the Korean War.



Photo by Robert Mason

4





1  
95th Bomb Wing photo



Photo by Chuck Batesford

2



Photo by Robert Majer

3

111 View from the front office of a B-1B taking on gas from a KC-135 somewhere over the southwest US in 1989. 121 The KC-97 boom operator's space was tight, austere, and uncomfortable. Only with the introduction of the KC-10 did boom operators get to sit upright, instead of lying prone. 131 A KB-29M at Yokota AB, Japan, in June 1953. The 98th Bomb Wing aircraft participated in refueling tests of fighter aircraft. 141 A KC-135 Stratotanker tops off a KC-10 Extender: They have carried the USAF aerial refueling mission since the 1950s and 1980s, respectively. The two are escorting a flight of Marine Corps F/A-18s across the US to a California exercise. 151 With its mix of turboprop and jet engines, the KB-50 was a transitional tanker. Here, one forms up with George AFB, Calif., F-104s deployed over Spain.



Photo by Warren Thompson

4



Photo by Ray Pembolin

5



111 Fully "bombed up" F-4 Phantoms top off before pressing on to their targets in North Vietnam in early 1970. 121 A KC-10 wearing the "whale" camouflage scheme taxis at Barksdale AFB, La., in May 1987.

Photo by Ken Smith



1

Photo by Warren Thompson



2

Photo by Joe Schwab



3

131 A KC-97 on the tarmac at Wheelus AB, Libya, in July 1954. In the 1950s, there was a steady transit of European-based fighters to Libya for range training. 141 The last B-52G to fly out of Eaker AFB, Ark—nickname: Memphis Belle III—is shown tanking en route to its new home, Barksdale AFB, La., in 1991.



Photo by Warren Thompson

4



111 An A-10 armed with AGM-65 Maverick missiles takes on fuel during a training hop over the Gulf of Mexico in the early 1990s. The aircraft was assigned to the 926th Tactical Fighter Group of the Air Force Reserve, operating from Barksdale AFB, La. 121 A KB-50 prepares to connect with F-100s over North Africa. The KB-50s were converted from B-50A and RB-50B bombers deemed excess to the fleet when the B-36 went operational. 131 A 1987 view of a B-1B from Dyess AFB, Tex., taking on fuel from a Tennessee Air Guard KC-135.



Photo by Warren Thompson

1



Photo by Warren Thompson

3



Photo by Mack Sennett

2



Photo by Chuck Baisden

4



Photo by Ed Schworn

5

141 Several KC-97s of the 308th Air Refueling Squadron, sometime in the 1950s. 151 The A-7D was the last jet fighter USAF flew with a refueling probe; the aircraft was adapted from a Navy design. This one, from the 3rd Tactical Fighter Squadron at Korat AB, Thailand, is filling up en route to a mission in the latter part of the Vietnam War. A KC-135 is delivering the fuel. ■



# Pacific Choke Po

The US military now feels a need to keep a wary eye on the Strait of Malacca and its neighborhood.

By Richard Halloran

**H**alfway around the world from the US mainland, between Singapore, Indonesia, and Malaysia, runs the 550-mile-long Strait of Malacca, a route traversed by tens of thousands of merchant and warships sailing between the Pacific and Indian Oceans. At its eastern terminus, the strait opens into the South China Sea.

Linked together, they form a choke point extraordinary that exists in the shadow of armed pirates, stateless terrorists, and national armed forces. If the world were to lose access for an extended period,

the consequences for the industrialized world, including the United States, would be grave.

The Pacific passageway is critical today for two reasons:

■ The lane has become vital to the maintenance of world commerce. Through this constricted oceanic area passes some 30 percent of the planet's trade. Super-tankers traversing the waterway bring in 80 percent of the oil needed to fuel the economies of Japan and China. More ships pass through it than through the Panama and Suez Canals combined. Blockage would be catastrophic. Use of alternative

routes would at least triple and possibly quintuple sailing times. Insurance costs would soar. Blows from increased costs and disruptions would damage the US economy.

■ It is potentially a military hot spot. The US Navy, which has been shifting its weight into the Pacific and Indian Oceans under a new maritime strategy, views this passage as the essential thoroughway between the two oceans. In April, for instance, the carrier *Abraham Lincoln* sailed from the US West Coast across the Pacific and passed through the South China Sea to Singapore. There, the carrier





*USS Nimitz and her crew get a close-up view of a heavy B-52 bomber flying out of Andersen AFB, Guam.*

exercised with Singapore's Navy before steaming to the Persian Gulf to support US operations in the Mideast. It is also a focus of US air operations.

Fereidun Fesharaki, an authority on the international oil trade at the East-West Center, a think tank in Honolulu, said: "If the sea-lanes through the Straits of Malacca and the South China Sea were blocked, there would be disastrous consequences for the region and indirectly for the US. Indeed, such closure would not be tolerable and they would have to be opened by force."

Moreover, China claims that large parts

of the South China Sea are internal waters, which puts Beijing into possible conflict with the Southeast Asian nations whose shores are washed by the sea. They and the US and other Asian nations dispute the Chinese claim. China is believed to be building a naval base on the island of Hainan, in the northern reaches of the South China Sea.

At the Shangri-la Dialogue in Singapore, Lt. Gen. Ma Xiaotian of the People's Liberation Army was asked what China could contribute to protect the sea-lanes in that sea and the Strait of Malacca. Ma said: "We have noticed in

recent years that all regions in Malacca, coastal Bangladesh, coastal Yemen by the Red Sea, and coastal Somali of East Africa have seen rampant pirate activities which threaten seaborne trade of the countries worldwide." He continued: "We advocate for mainly relying on the effort of all coastal countries to combat piracy, the international community to observe charter of the United Nations, to observe the international Law of the Sea. Coastal countries should all play the leading role on maritime security against pirate activities. For example, based on this spirit we recently formed an alliance with coastal countries to carry out sea patrol in common waters."

### Major Oil Route

Adm. Timothy J. Keating, chief of US Pacific Command, was in Indonesia recently to encourage cooperation among Southeast Asians on security in the strait and the South China Sea. Keating urged Indonesia, Malaysia, Singapore, Thailand, and other nations to share intelligence, so that the 50,000 to 70,000 ships (depending on whether coastal ships are included) passing through the sea-lanes each year are safe from pirates and terrorists.

The importance of the strait was underscored by the release last October of the US Navy's new maritime strategy.

It sets the main concentration for US naval operations in the western Pacific and Indian Oceans. "This combat power can be selectively and rapidly repositioned to meet contingencies that may arise elsewhere," said the paper. Moving ships between the two oceans expeditiously means transiting the South China Sea and the Strait of Malacca unhindered.

Over the last two decades, as the economies of Asia have leaped forward, their dependence on Middle Eastern oil has gone up. Oil imports to fuel the economies of China, Japan, South Korea, and Taiwan flow through the strait from the Persian Gulf in tankers at a rate of 15 million barrels a day. (In contrast, 4.5 million barrels a day move from the Gulf to Europe through the Suez Canal.)

A disruption would have an immediate effect on those economies, soon to be followed by a devastating effect on the US economy. In 2007, total trade between the US and the four leading Asian economies totaled \$742 billion—more than half with China.

Southeast Asian intelligence officers said they have been watching closely—even desperately—for evidence that terrorists are plotting to scuttle supertankers





AP Photo by Teh Eng Koon

**Malaysian maritime police buzz past a cargo ship in a show of force demonstration. Pirates have attacked Japanese-owned ships in Malaysian territorial waters.**

in the Straits of Malacca, Sunda, and Lombok, thus closing the South China Sea to shipping. PACOM officers said governments of the littoral states have trained anti-scuttling forces to react quickly in an effort to prevent that blockage.

Keating, in testimony before Congress in March, agreed on the potential threat from terrorists. "It's our No. 1 challenge," he said. "I am more concerned with that than I am with, let's say, North Korea or the People's Republic of China." He was upbeat, though, adding, "The progress we are making, I think, is significant. ... We are undertaking as broad an effort as I think we can."

Ian Storey, a scholar at the Institute of Southeast Asian Studies in Singapore, calls the South China Sea policy "China's Malacca Dilemma."

On one hand, Beijing claims the waters from the island of Hainan south to the Indonesian island of Natuna as an internal sea, and has suggested that the United States withdraw from the region. A Chinese admiral suggested that the US and China split the Pacific, with China controlling the western half and the US moving to the east. Keating immediately stated explicitly that the US was in Asia to stay. On the other hand, China's Navy, while modernizing, is still not strong enough to enforce its claim to the South China Sea and to ensure that the strait remains open for the ships plying the China trade and bringing in the bulk of the nation's oil imports.

"At present, China lacks the naval power necessary to protect its sea-lanes," Storey wrote. "Beijing fears that during a national security crisis ships carrying energy resources could be interdicted by hostile naval forces. Any disruption to the

free flow of energy resources into China could derail the economic growth on which the Chinese government depends to shore up its legitimacy and pursue its great power ambitions."

#### **American Pretext?**

Thus, China has "a vested interest in the elimination of transnational threats in the waterway," said Storey, "yet Beijing remains uneasy at the prospect of a greater role for external powers in securing the strait."

Some Chinese analysts have accused Washington and Tokyo of "using the threat of terrorism" as "a pretext to expand their naval presence in and around the strait." The Chinese have watched with concern as India has enhanced its presence in the area, especially the modernization of military facilities on the Andaman and Nicobar Islands at the strait's northwest terminus.

Some in the Chinese commentariat have demonstrated worries that have "bordered on the paranoid," Storey said. One Chinese newspaper, he observed, recently condemned US Indonesia military cooperation as "targeting China" and aiming at "controlling China's avenue of approach to the Pacific."

US strategy is to rely on Southeast Asian nations to take the lead in protecting the waterways. The supporting role of the US ranges from providing equipment and training, combined exercises, bilateral exchanges, ship visits, multilateral conferences, and planning sessions, to medical and humanitarian assistance.

US concerns about the strait and South China Sea are relatively new. A dozen years ago, several Pacific Command

officers came together to discuss this sea-lane. When asked how many ships passed through those waters, one said: "We don't know. Ask Lloyd's of London, they keep track of those things."

American interest in the strait, however, was revived four years ago by Adm. Thomas B. Fargo, then PACOM commander. In an address in Singapore to defense ministers and senior military officers from Asia, Fargo proposed a Regional Maritime Security Initiative to protect the sea-lanes from pirates and terrorists.

At first, Fargo's proposal was misunderstood as suggesting that the US secure the passageways, including posting marines on ships in transit. That caused an uproar among Southeast Asian leaders who saw the security initiative as an encroachment on their sovereignty. They quickly asserted that they would take responsibility for maritime security, which was what Fargo intended.

Adm. William J. Fallon, Fargo's successor, dropped into the town of Medan not far from the Malacca Strait in Indonesia in February 2006 to discuss the security of the vital waterway. In a meeting with Indonesian naval and police officers, an Indonesian officer told him somewhat diffidently, "Admiral, we really don't know why you are here. This is our problem and, with our neighbors in Singapore and Malaysia, we can take care of it."

By the tone of his voice and the look on his face, one could see that Fallon was clearly pleased. "It's your neighborhood," he replied, "and you should do it yourselves. If we can help, please let me know."

The concept appears to have caught on. The Defense Minister of Malaysia, Mohamed Najib Tun Abd Razak, outlined in a speech a year ago the evolution of threats. Before 9/11, he said, security focused on piracy, illegal fishing, and smuggling.

After the terrorist assaults, he said, "the debate has shifted to the potential threat of seaborne terrorism and the risk of terrorist attack on ships transiting along the 885-kilometer [550-mile] waterway. The maritime community also started to link the possibility of a nexus between piracy and terrorism and how piratical activities might become tools of terrorists. Some even raised the possibility of terrorists hijacking tankers and damaging major port facilities."

Singapore's Defense Minister, Teo Chee Hean, last year spoke at the Changi Naval Base at the commissioning of the



frigate *Formidable*, first in a class of six ships designed to patrol the Malacca Strait and waters around Singapore. Three more were commissioned in February and all are scheduled to be in service in 2009. Changi is also the site of a pier built by Singapore to service US aircraft carriers.

### Air Engagement

The Air Force is heavily engaged. A squadron of Singaporean F-16s assigned to Luke AFB, Ariz., is used by USAF to train pilots for missions over the South China Sea.

The 425th Fighter Squadron also schools weapon systems officers to operate sensors in the backseat of F-16Ds. About 30 percent of the squadron's sorties are after dark, with pilots learning to use night vision goggles and practicing low-altitude navigation and infrared targeting. Maintenance crews are included in the training.

There is a constant US airpower presence in Southeast Asia. In February, USAF and Navy aircraft deployed to the Singapore Air Show. For an exercise called Commando Sling, F-16s from the 51st Fighter Wing at Osan Air Base in South Korea flew to Singapore last October. (A second Commando Sling scheduled for January was canceled because many F-15s were grounded at the time.)



AP photo by Ed Wray

*A Singaporean sailor keeps watch with a machine gun during a patrol of the waters off of that Asian city-state.*

USAF and marine aviators joined pilots from the Royal Thai Air Force and the Singapore Air Force in Cope Tiger, in Thailand in February. In Balikpapan, a Tagalog word meaning "shoulder to shoulder," C-130 and C-17 crews moved equipment, people, and relief supplies through Clark Field in the Philippines in March. Maritime security will be built into Balikpapan exercises for at least the next five years.

Less visible were sorties of four B-52 bombers that flew from Guam in four

directions to Hawaii, Alaska, Northeast Asia, and Australia to hit targets at the same time.

The US is equipping five to 10 radar sites in each of Indonesia, Malaysia, Thailand, and the Philippines to help track ships. The US feeds intelligence to several nations to nudge them into sharing their own information with neighbors. The first Global Hawk unmanned surveillance plane is scheduled to arrive in Guam, the expanding island base in the central Pacific, in 2009; a key mission

*The Strait of Malacca touches the interests of many nations.*



Staff illustration by Zaur Eylanbekov





**Two Singapore F-16s await the "go" for a Jan. 23 mission at Nellis AFB, Nev. Singaporean forces were in Nevada participating in Red Flag, and regularly train with the US on skills needed to defend their local waterways.**

will be reconnaissance over the South China Sea.

The oldest combined exercise in Southeast Asia saw the US join Thailand, Singapore, Indonesia, and Japan in the 27th Cobra Gold exercise in May that included drills to maintain superiority in and over the sea-lanes. Mobility aircraft can be used for both military and humanitarian assistance. "They may not get as much attention as the pointy-nosed airplanes," said one PACAF officer, "but they get the job done moving stuff around."

Intelligence-surveillance-reconnaissance capabilities are high on the training agenda.

In other training, the 31st Marine Expeditionary Unit did beach landing exercises with Indonesian marines in March. The amphibious ship *Essex* conducted noncombatant evacuation training at sea in February. *Essex* would become a safe haven for Americans caught in a natural disaster, war, or civil unrest.

The US underscored its interest by moving the Sealift Logistics Command Far East from Japan to Singapore in 2006. The command operates an average of 50 ships in the Pacific and Indian Oceans, delivering fuel and supplies to US ships, transporting cargo, responding to humanitarian crises, and supporting special operations.

Having the logistics unit in Singapore puts it next to Task Force 73, the command it supports. That task force coordinates Pacific Fleet's Cooperation Afloat Readiness and Training (CARAT) exercises to prepare US warships to operate with the navies of Southeast Asia.

At the eastern end of the South China

Sea, US Special Operations Forces are assisting Filipino troops in fighting Abu Sayyaf terrorists in the southern Philippines. Officers at PACOM said the island chains running through the Sulu and Celebes Seas are "ratlines" along which terrorists move among the Philippines, Malaysia, and Indonesia.

#### Free-loading?

The costs of ensuring safe passage have been controversial. In a statement last year, policy experts from groups representing four of the region's littoral nations noted, "At present, the costs of ensuring the enhancement of safety of navigation and environmental protection are not borne fairly and equitably amongst littoral states, user states, and other beneficiaries of passage through the straits."

The Malaysian Defense Minister, Najib, echoed that consternation, asserting that nations whose ships regularly transit the strait had failed to support the costs of maintaining those sea-lanes. "It is regrettable," he said, "to note that the international users have thus far not matched their usage of the straits with contribution to the costs of maintaining its safety and security."

He singled out Japan as an exception. Japan, which relies on goods flowing through the strait as much as any nation, has helped "enhance navigational safety through the installation and maintenance

of navigational aids as well as pollution preventive measures," Najib said, and recently "handed over a training ship ... to the Malaysian Maritime Enforcement Agency."

An occasional US show of force reinforces the concept that the US is committed to free navigation in those waters. The carrier *Nimitz* sailed through the strait last September to join ships from India, Japan, Australia, and Singapore for an exercise named Malabar near the Andaman Islands close to the Indian Ocean end of the Strait of Malacca.

PACOM officers said that getting nations around the South China Sea to work together requires finding ways to overcome issues of sovereignty. Southeast Asian nations once ruled by France, Britain, Portugal, the Netherlands, and the United States jealously guard the independence gained after World War II and are suspicious of hints at encroachment on newly acquired sovereignty.

The principle of "hot pursuit," for instance, has yet to take hold. For a police vessel to chase a terrorist ship from the territorial waters of one country into the waters of another would violate the sovereignty of the second, and thus would be unacceptable.

American officers encourage multinational cooperation through four steps. First is to get agencies within a nation to work together, a difficult task even in the US. In Indonesia, for example, 13 agencies are engaged in maritime security.

Second is to get a nation to work across the border with its neighbor. Using subdued language can be essential. "Common operating picture," a phrase Americans use to mean that everyone engaged is seeing the same information at the same time, is shunned as suggesting offensive operations. "Shared situational awareness" is more acceptable.

Third is to persuade those engaged to agree on a process for rapid decisions. In cultures in which decisions are often made by consensus, this takes patient explanation.

Fourth is actual interdiction of a suspected pirate or terrorist by ships and aircraft, and handing information in a timely manner to another nation's forces. Much has been accomplished through seminars that start out at bilateral senior levels and progress to multilateral gatherings of middle-grade officers. ■

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The issue isn't the weapon; the issue is which side will win the latest nuclear argument.

# The Warhead Wars

By James Kitfield

**F**or those with the job of preserving the nation's nuclear deterrent, the key requirement is a new-design weapon. "We need a modernized nuclear warhead that has high reliability, safety, and security features that are improved over what we currently have, and maintainability of design—which we absolutely do not have ... today," says Gen. Kevin P. Chilton, commander of US Strategic Command.

Yet when Sen. Byron L. Dorgan (D-N.D.) threatened the Bush Administration's modest \$10 million request to start planning for such a Reliable Replacement Warhead, almost nobody complained. The same was true last year when Congress excised an \$88 million proposal. In both cases, the money was for studies only, yet even that innocuous step was too extravagant for lawmakers.

The tug-of-war over the RRW is

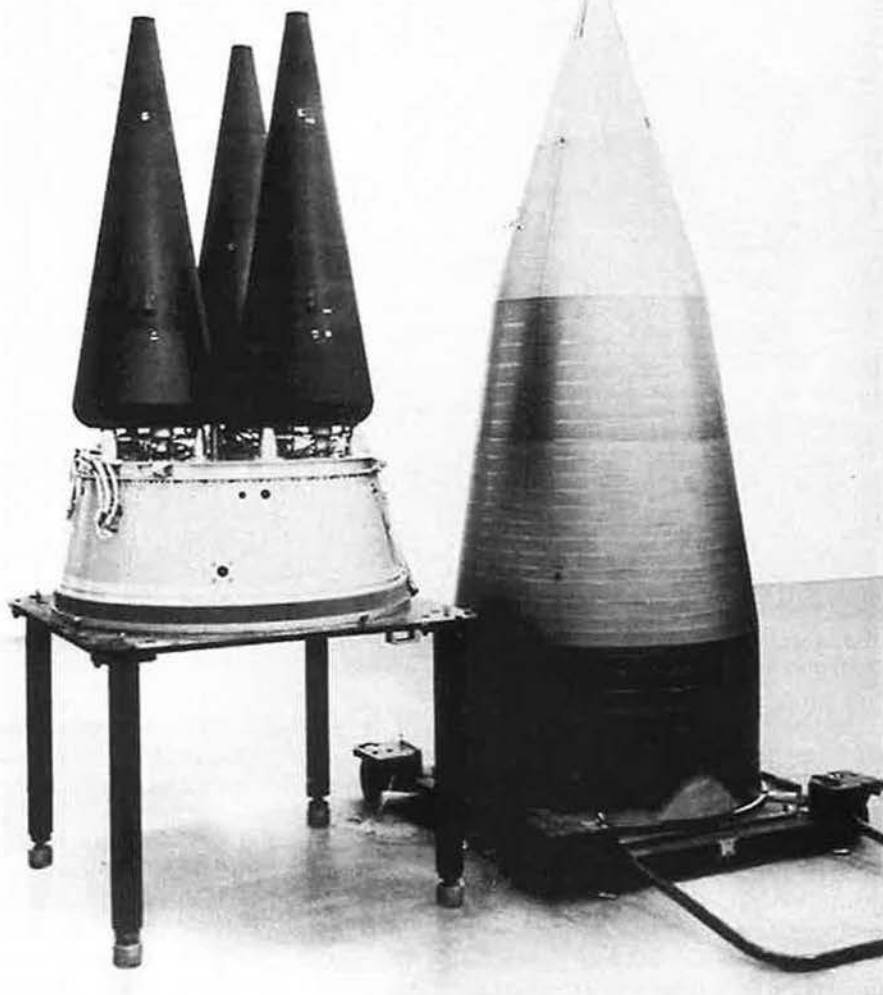
shaping up as a pivotal battle between two rival political camps espousing very different views about the future of the nuclear arsenal. Because the sums in question are so small, the RRW may seem an afterthought, but, to the interested parties, it is anything but.

On one side are the Bush Administration and the US armed forces, which believe a nuclear deterrent will be needed far into the future. They see problems sticking with the aged arsenal. All of the nuclear warheads in the current stockpile were designed and built during the Cold War. They are not as rugged, safe, and reliable as military planners would like them to be. Of course, the age of the weapons causes concern; small but untested changes are piling up, adding to operational uncertainty.

## Nuclear Opposition

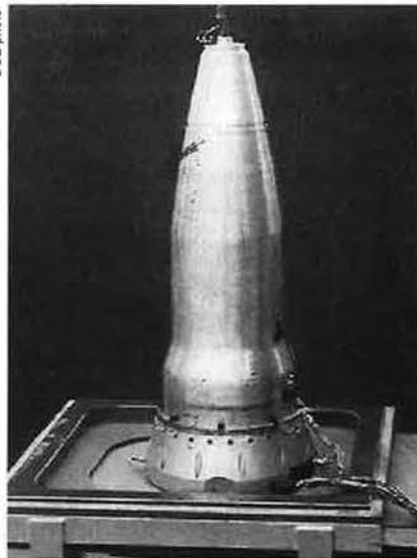
On the other side of the RRW debate are arms control and nonproliferation advocates, religious groups, and assorted national security luminaries—namely, former Senate Armed Services Committee Chairman Sam Nunn, Former Secretaries of State Henry A. Kissinger and George P. Shultz, and former Secretary of Defense William J. Perry. These

DOE photo



Above: W78 warheads inside Mk12 re-entry vehicles, and shroud. Right: a W89 warhead.

DOE photo







DOD photo

**Trident II missiles such as this one carry the W76 weapon.**

critics say that international disarmament can help rein in the spread of nuclear weapons. In their view, the US should move faster toward the goal of nuclear abolition and stop modernizing the arsenal altogether.

In short, this tiny budget item serves as a proxy for large and explosive strategic disputes about the proper role of nuclear weapons in today's defense equation.

That a mere study of a new warhead can excite such passions speaks volumes about the charged political atmosphere surrounding nuclear weapons. Congress has created a strategic arms review commission, and Democrats vow to block RRW moves until the commission reports at the end of this year. Congress also has tasked DOD to submit next year the results of a comprehensive nuclear weapons review.



DOE photo



DOE photo

**Top: A shallow underground nuclear explosion in Nevada in 1962. Above: Craters from previous tests.**

As both studies will no doubt make clear, the RRW program is intimately related to sensitive US nuclear problems. Among them:

- An aged arsenal, byproduct of Washington's controversial 1992 decision to end all production of new weapons.
- A ramshackle nuclear weapons production base, the result of slack work over the past decade and a half.
- A crisis in competence, as the last

of the generation of nuclear scientists who actually designed, fielded, and tested real nuclear weapons depart the workforce.

Complicating the situation is the collapse of a bipartisan political consensus on nuclear weapons that held throughout much of the Cold War. That consensus fractured in the 1980s, probably forever. Today, the split up is manifest in Democrat opposition to Bush Administration proposals to study





*Re-entry vehicles strike Kwajalein Atoll in the Marshall Islands, after a 4,753-mile flight from Vandenberg AFB, Calif.*

a new bunker-busting nuclear weapon and similar efforts.

The arguments are complex, the stakes high. However, the true starting point for today's clash of nuclear visions is clear enough. You can locate it in a dusty moonscape on the edge of the Great Basin out west, in a place that, for years, served as America's ground zero in the nuclear arms race.

A prominent waypoint is a dry Nevada lake bed called Frenchman Flat, site of early nuclear blasts at the Nevada Test Site. Skeletons of cement-block buildings lie in twisted ruin, their walls long ago stripped bare by nuclear winds. The so-called "survivor village" was where scientists once measured the effect of nuclear blasts on habitats in the above-ground tests of the early 1960s. Nearby, just across a ridge, lies Yucca Flat, where the Atomic Age left its footprints in the form of hundreds of giant craters, testament to 30 years of underground nuclear tests. This area was once the nexus of the Cold War arms effort. More than 8,000 federal scientists, engineers, and contractors worked in the nearby base camp Mercury, a boomtown that boasted its own bowling alley and where people not only "thought the unthinkable," they prepared for it.

Today, the entire area has the look and feel of a long-bygone era. America has not tested a nuclear weapon in more than 15 years—not since President George H. W. Bush in 1992 signed off on a moratorium halting new underground explosions. Related to that fact is another one: The nation has not designed or manufactured a new nuclear warhead in nearly 20 years.

America's once vast nuclear production complex—which included no fewer than seven major production facilities—now is roughly a fifth its former size. Under a "complex transformation" initiative, the National Nuclear Security Administration—overseer of the weapons efforts—plans to shrink the footprint of the nuclear complex by another third, and cut the number of workers directly supporting nuclear weapons activities by an additional 20 to 30 percent.

### Vanishing Breed

Fast disappearing is the small corps of experienced nuclear scientists and engineers still working at the Los Alamos, Sandia, and Lawrence Livermore National Laboratories (the first two in New Mexico, the third in California). NNSA estimates that, in under five years, the last of the nuclear designers who have actually tested weapons will either have retired or otherwise departed the scene.

Thus, the keys to the American nuclear deterrent force are passing into the hands of a new generation of scientists who have never designed or tested an actual weapon. Their experience of the past 15 years has been rather different; they have monitored the effect of time on an aging stockpile. To do this, they have used a series of high-tech laboratory and computer experiments cumulatively dubbed "Science-based Stockpile Stewardship."

Though many failed to grasp it at the time, Washington's decision to forgo nuclear testing and production marked a radical departure from the

norm. The four other major declared nuclear powers—Russia, China, Britain, and France—also embraced the test moratorium. Unlike the US, however, they all have continued to produce new weapons based on old designs validated by historical nuclear tests. In this way, these nations kept intact their nuclear production bases and thus eliminated concerns about the effect of aging on their stockpiles.

Today, US officials concede certain uncomfortable truths about the decision to indefinitely rely on legacy nuclear weapons maintained under a scientific monitoring regime.

They note that this momentous decision was as much about budgets and politics as it was about actual strategic necessity and scientific capability. At the end of the Cold War, defense budgets were in sharp decline, and defense officials were more or less forced into a trade-off. They could have a cutting-edge nuclear science and research base, or they could have a strong nuclear weapons manufacturing base, but not both. They chose the science and research base.

Said NNSA head Thomas P. D'Agostino, "The end of the Cold War was a welcome event, but it has had enormous implications for our nuclear weapons programs and the infrastructure of the nuclear weapons complex."

In signing on to Stockpile Stewardship, Congress committed itself to one of the largest science programs since the original Manhattan Project that produced the World War II atomic weapon. The more than \$50 billion expended thus far has led to creation of highly advanced scientific tools such as the world's most advanced particle accelerator, lasers, and supercomputers.

Energy Department officials hoped that the opportunity to work with such state-of-the-art scientific tools would attract a new, post-Cold War generation of nuclear scientists, even though the Soviet threat had disappeared and work on "weapons of mass destruction" had largely lost its allure on college campuses.

"A strategic decision was made at the time to sustain and strengthen scientific and technical activities in order to ensure a future capability to certify the [existing] stockpile," D'Agostino said. "While this was a reasonable decision given the limited resources, in effect we mortgaged the present to ensure the future."



The downside came into clear view in 2003, when officials from NNSA and the national laboratories gathered to take stock of things after a decade of Stockpile Stewardship.

They realized that the United States was now in possession of a small and still shrinking warhead inventory, the smallest since the Eisenhower Administration. Nuclear experts worry that a small arsenal of few warhead types becomes progressively more vulnerable to problems that can crop up in any one warhead design.

They cite, as a cautionary example, the W76 warhead, which sits atop the Navy's Trident D5 missile and comprises a sizeable percentage of the firepower resident in America's sea-based nuclear force. The W76's planned life extension program was delayed when NNSA ran into problems restarting a vendor base shut down many years before. If serious problems had been discovered, the nation would have lacked a manufacturing base to quickly replace the warhead. That would have undermined the credibility of one leg of the strategic nuclear triad.

The earliest design studies for a possible Reliable Replacement Warhead centered on replacing the W76, but with a new design that could also serve as a backup for ICBM-mounted weapons in the event they experienced problems. As Air Force officials note, current non-RRW plans call for the nation to deploy in the 2020s many of the same ICBM warheads that were first put into operation in the 1970s.

Though the Stockpile Stewardship program has not yet identified any anomalies associated with age that would prompt a crisis of confidence, experts emphasize that they have found problems sufficient to generate operational restrictions of some weapons.

"My ... long-term concern is the continuing accumulation of change to the stockpile," said Michael R. Anastasio, director of the Los Alamos National Laboratory, testifying recently before Congress. "These changes will increase performance uncertainties, and pose increasing risk in a low-margin, legacy Cold War weapons stockpile."

Indeed, in taking stock in 2003, laboratory and NNSA officials thought long and hard about the uncertainties that would be added to an already complex nuclear equation by successive life extension programs.

As a result of their deliberations, NNSA officials and national laboratory directors all endorsed the RRW concept, which would bring about a resumption of nuclear weapons production. They included in the proposal the bluntest stockpile reliability warnings anyone had heard since the start of the moratorium. Said D'Agostino, "The main conclusion was that, as we continue to draw down the stockpile, we have become concerned that our current path may pose an unacceptable risk ... over the long term."

With every life extension program on a weapon, he noted, scientists move further away from the designs that were certified with underground nuclear tests.

### Long-Term Confidence

"These inevitable accumulations of small changes over the extended lives of these highly optimized and complicated systems have given rise to concerns about the reliability of the weapons over time," he said. "While we are confident that today's stockpile is safe and reliable, it is only prudent to explore alternative means to ensure stockpile reliability over the long term. After all, we are dealing with nuclear weapons, and any error or slight uncertainty is an unacceptable risk."

The Secretaries of Defense, Energy, and State last year declared to Congress that the RRW program is key to preservation of long-term confidence in the United States nuclear deterrent capability.

That, in a nutshell, was the impetus for the new warhead.

Fully aware of the inhospitable political climate they faced, NNSA and laboratory officials have been at pains to avoid characterizing the RRW as a "new" nuclear warhead, though there is no doubt it would be. Instead they have emphasized that RRW's attributes are consistent with American environmental and nonproliferation goals, and would replicate—but not improve upon—the military capabilities of existing warheads. It would not, for instance, carry an increased nuclear "yield." Put in automotive terms, the US would endeavor to build a safer, more reliable, but no more powerful, 1988 Chevy Caprice.

Proponents pointed out that a replacement warhead might actually allow

for additional stockpile reductions, in that the nation would no longer need to keep large reserves of warheads in storage in case problems are discovered in deployed weapons systems. A modernized and much-consolidated nuclear production base would serve as insurance against unanticipated problems, and permit officials to phase out the use of beryllium oxide and other extremely toxic materials associated with the Cold War arsenal. Moreover, the RRW would incorporate state-of-the-art security technology that makes the warheads virtually impervious to detonation even if one were to fall into the wrong hands. Finally, NNSA officials insist that state-of-the-art Stockpile Stewardship tools will allow them to design, build, and deploy the RRW without the need for underground testing.

Even so, anti-nuclear political forces are skeptical.

"The interesting thing ... is that we have a lot of nuclear weapons, we talk a lot about them, [yet] we can't possibly use one ever, without catastrophic results for our planet," said Dorgan, chairman of the Senate subcommittee with jurisdiction over DOE's weapon complex. "We've signed up as a country to go to zero nuclear weapons at some point in the future. We will not do that, of course, until it is ... determined to be safe and secure for our country, ... [but] nuclear nonproliferation is very important."

As part of the Presidential directive establishing the Stockpile Stewardship program, an annual certification process is conducted by the keepers of the nuclear flame at the Departments of Energy and Defense—including the directors of the three weapons labs. In recent years, they have affirmed the safety and reliability of the stockpile, even while simultaneously voicing increasing concern about the long-term viability of an arsenal that is already decades old.

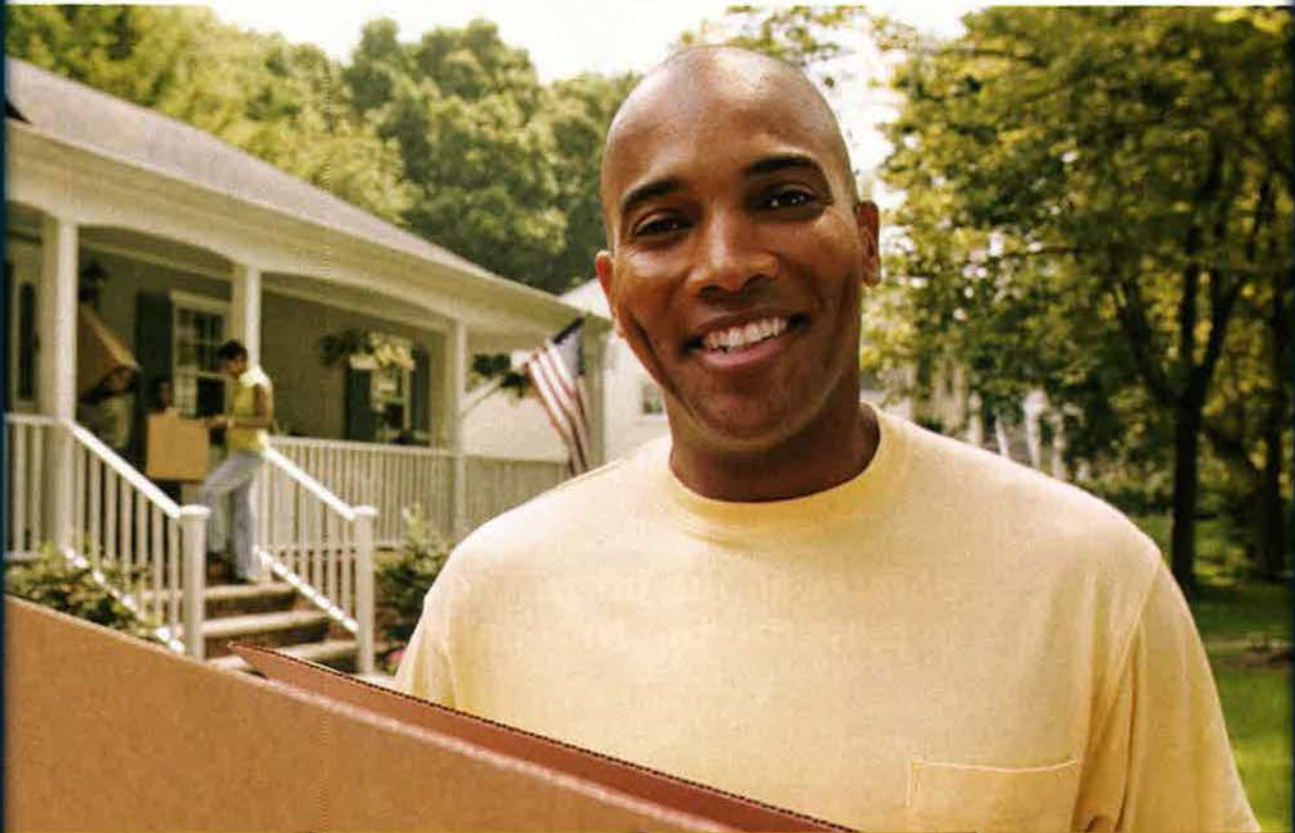
Those concerns could conceivably lead at some point to a decision against certification. At that point, the President, by law, would be required to invoke a "supreme national interest" claim and resume nuclear testing. Then, the contentious debate about the Reliable Replacement Warhead and the nuclear stockpile will shift back to the familiar ground where it all began, the cratered landscape of Nevada. That time might not be far off. ■

*James Kitfield is the defense correspondent for National Journal in Washington, D.C. His most recent article for Air Force Magazine, "On African Ground," appeared in the February issue.*



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# *The Big*

**Berlin was the prize. The Allies paid a fearful price to pulverize the Nazi capital.**



By Rebecca Grant



# At

midnight, the room lights came on, awakening Lt. Herb Altman and the crew of the B-17G bomber, *Bouncin' Baby*. "How much gas today?" was everyone's first question. The fuel tanks, they soon saw, were full. Such topped-off tanks, suitable for a deep raid, probably meant a specific destination. "Big B, sure as hell," everyone thought.

The Big B was Berlin, capital of the Third Reich and pride of the Fuehrer. In World War II's hard-fought bomber war, Berlin was in some ways the ultimate target. It wasn't as far away as Ploesti, nor as heavily defended as Leuna. However, for sheer political significance, Berlin could not be matched.

"This was Hitler's town," noted one B-17 gunner. In the words of the Air Chief Marshal Arthur T. Harris, head of the RAF's Bomber Command, "It was the target which above all the Luftwaffe was bound to defend."

Berlin would remain throughout the war a difficult technical and operational challenge for Allied airmen.

First to bomb the German capital were the French, mounting a small raid on June 7, 1940 as French lines were collapsing under the weight of the Nazi blitzkrieg.

However, serious attacks on Hitler's capital had to wait until the technology of airpower sufficiently matured. It would take the mass production of new aircraft such as the RAF's four-engine Lancaster bomber and the American P-51 long-range escort to make attacks on Berlin effective. And the US Army Air Forces' daylight attacks on Berlin did not begin until March 4, 1944.

The assault on Berlin had four main phases, beginning with the RAF strikes on the capital that changed the course of the Battle of Britain.

The bombing of Berlin began with a mistake—a Luftwaffe mistake. On the night of Aug. 23, 1940, a segment of a German bombing formation that had been dispatched to strike at aircraft factories and oil tanks outside London drifted off course and launched a ferocious attack on the English capital itself.

Britain's new Prime Minister, Winston S. Churchill, was only too happy to use the incident as an incentive to remind Hitler about British will power. "The War Cabinet were much in the mood to hit back, to raise the stakes, and to defy the enemy," Churchill later wrote. "I was sure they were right."

The British counterattack itself was hampered by limited range of its bombers. A force of 81 RAF bombers hit Berlin on

the night of Aug. 25, 1940. Clouds covered the target and the bombing itself amounted to a series of pinpricks.

Still, the psychological effect was enormous. The American journalist William L. Shirer, who was then broadcasting from Berlin on the CBS radio network, saw the flash of the searchlights and "the terrific din of the flak." Three days later, when the RAF launched a stronger attack, "the Nazi bigwigs were outraged," Shirer wrote in his diary. That is because they knew that, for all the success of Germany's armies, the war was not over.

The bombing of Berlin "spread great disillusionment," reported Shirer. The Nazi leadership, including Luftwaffe chief Hermann W. Goering, did not think it could ever happen. In fact, said Shirer, "Goering assured them it wouldn't."

### Fitful Attacks

On Sept. 4, 1940, Hitler announced his plan for retaliation. "When they declare that they will increase their attacks on our cities, then we will raze their cities to the ground," Hitler said. The fateful decision took pressure off the beleaguered airfields and forces of the RAF, and none too soon. The shift to attacks on London ended the Luftwaffe's best chance to prevail in the Battle of Britain.

London, however, paid the price. Between Sept. 7 and Nov. 3, the city absorbed the force of almost daily bomber attacks, raids that left the ancient English city aflame in many areas.

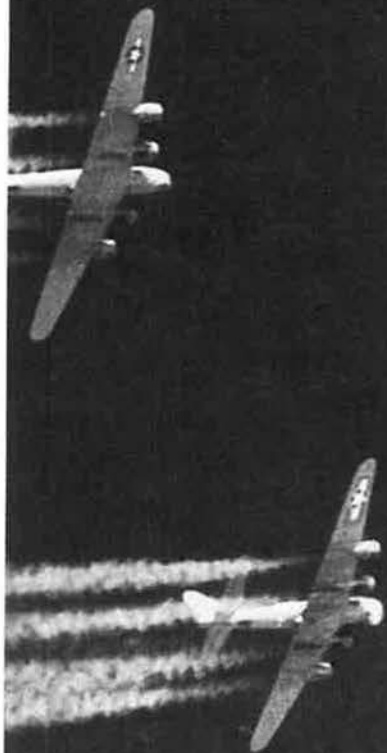
Well into 1941, RAF Bomber Command could mount only fitful counterattacks, with scant result. One such raid against Berlin in late 1941 led to the loss of 20 bombers (out of 160 in the formation) and brought about the sacking of Air Marshal Richard E.C. Peirse as the head of Bomber Command.

Things were different—very different—after Harris took command. He bided his time. The pinprick attacks halted while Harris dealt with other targets such as German U-boat facilities and, more important, waited for more four-engine Lancaster bombers. During all of 1942, there were only nine air raid alerts in the Reich capital.

The reason was tactical. Berlin was a city of four million, and its built-up zones sprawled across 18,000 acres. According to Harris, "No noticeable impression could be made on it except by a strong force of heavy bombers." He resisted pressure to attack Berlin until the RAF was ready.

In early 1943, Harris had a force sufficient to restart probing attacks. From

# B



During WWII, USAAF B-17s leave vapor trails over Germany.





**Smoke plumes rise in the aftermath of a B-17 raid on the Daimler-Benz tank works, Berlin, in March 1945.**

January through March, he sent Lancasters and other bombers to attack Berlin. Snow and haze affected bomb aiming and, on moonlit nights, Luftwaffe night fighters mauled the bomber stream. Twenty-two bombers were lost on one night in January 1943.

Still, Bomber Command advanced. The RAF under Harris successfully applied radar bombing techniques and even tried a night low-level attack with swift, wooden Mosquito bombers. Overall the RAF sustained 4.6 percent attrition between January and March 1943, which Harris viewed as "light, considering the target."

The RAF kept up the sporadic raids until the lengthening days of spring made it impossible for crews to complete a full round-trip journey under cover of darkness.

After the RAF destroyed downtown Hamburg in a firestorm in July 1943, Harris tried the same tactic on Berlin. RAF bombers flew 1,647 sorties in three mass attacks in a 10-day period in late August. The biggest single attack on Berlin to that point came on Aug. 23, 1943, when 727 RAF bombers attacked.

However, Harris was not yet free to concentrate on Berlin. The RAF was alternating the strikes on Berlin with priority attacks on V-1 "buzz bomb" facilities and other targets.

The true "Battle of Berlin" began on Nov. 18, 1943. In some 16 raids (through February 1944) the RAF attempted to deal German industry and morale a knockout blow.

More than 400 Lancasters, led by a few intrepid Mosquitos, attacked the city in a stream. The bombers marshaled, then proceeded to their targets. Pathfinder

aircraft marked the target area, often with the help of radar navigation and bombing aids, which were best at painting coastal contrast and built-up city areas.

### Shaken, Not Stirred

Intense attacks followed on the night of Nov. 22-23, 1943. More than 2,300 tons of bombs hit across the city, destroying everything from the former British Embassy to the Waffen SS Administrative College.

Reich armaments minister Albert Speer was in his office when the air raid warning sounded. Excited to witness the attack, he drove to a nearby flak tower. "But I scarcely reached the top of the tower when I had to take shelter inside it; in spite of the tower's stout concrete walls, heavy hits nearby were shaking it," Speer later recorded.

When the raid ended, Speer ventured out onto the tower to see his nearby Ministry ablaze in "one gigantic conflagration." His private office was now a bomb crater.

The Berlin raids gave warning that the Allies were extending their fighter cover. Speer told of an exchange between Goering and the Luftwaffe fighter commander, Adolf Galland. The latter told the Nazi air chief that American fighters had made it as far as Aachen, inside of German airspace. An incredulous Goering refused to believe it.

"Herr Reichsmarschall," Galland replied, "they will soon be flying even deeper."

The Big B soon began to take a toll on Bomber Command. By December 1943, nine percent of the force was nonoperational for re-equipping, due to combat losses. Harris expected losses. About 500 aircraft failed to return from raids between November 1943 and March 1944.

This represented an average loss rate of 6.2 percent, which Harris said "could not be regarded as excessive in relation to the magnitude of the task."

Unfortunately, operational results of the RAF's Battle of Berlin were a disappointment. Berlin was Bomber Command's most important target, but one of the most difficult to crack.

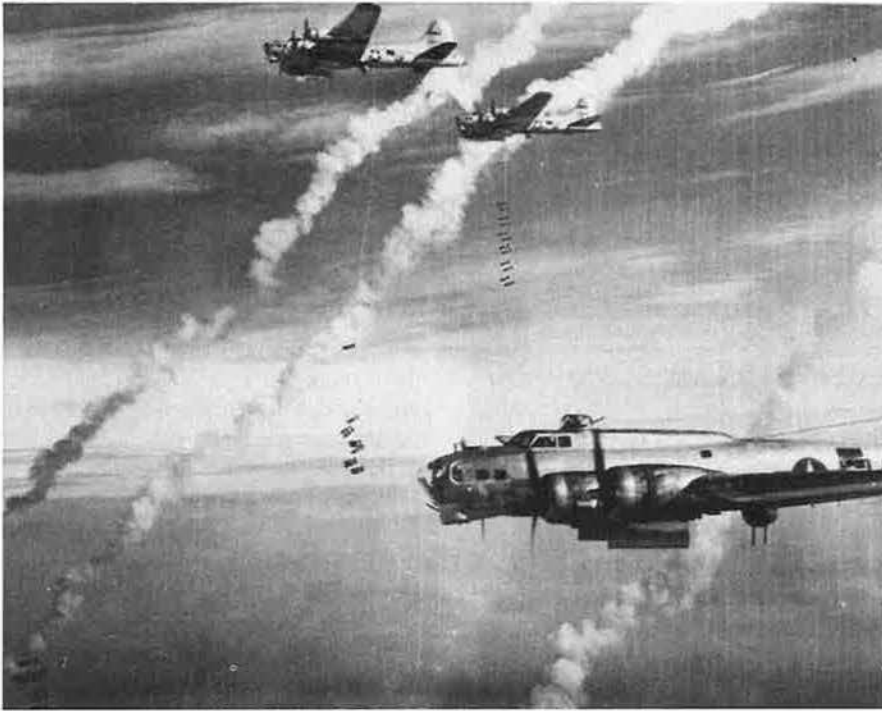
For one thing, Berlin's size and lack of radar-visible landmarks forced the RAF to rely on blind skymarking, usually over full clouds, which also eliminated night photoreconnaissance.

Weather was "invariably poor on all 16 occasions," admitted Harris. Churchill



**The commander of US Strategic Forces in Europe, Lt. Gen. Carl Spaatz (center), Maj. Gen. Ralph Royce (left), Maj. Gen. Hoyt Vandenberg (standing), and Maj. Gen. Hugh Knerr (right) pore over a target map.**





**B-17s of Eighth Air Force drop bombs on Berlin in 1945.**

grumbled that good aerial photographs were not obtained until March.

Harris tallied 2,180 gross acres of devastation, mostly in the western half of the city. The Daimler-Benz, BMW, and Siemens factories producing tanks, engines, and other war materiel were all damaged in the night bombing, but shorter spring nights and new priorities forced the RAF to lay off the offensive.

The city had not been on the initial target list for American bombers because it lay so far beyond fighter escort range. But soon Berlin would be back on the list.

To Generals Henry H. "Hap" Arnold, Ira C. Eaker, and Carl A. Spaatz, daylight bombing was the only proven method for effective attack. Soon they all realized that good daylight bombing required three things: brave crews, good visibility at the target, and fighter escort.

Churchill was skeptical about daylight operations. In 1942, he had seen "many gallant and costly attacks" on occupied Europe firsthand and concluded that bombers, even in close formation, "could not fight their way in daylight through an efficient fighter defense without over-heavy casualties."

It took an official directive from the Combined Chiefs of Staff—that top-ranking body of British and American military chiefs who made all major strategy decisions for the Allies in the war—to sanction American daylight precision bombing in February 1943 at Casablanca. In June, they clarified air war policy with the "Point-blank" directive in specifying destruction

of the Luftwaffe as the most important near-term objective of the air war.

### **Baiting the Luftwaffe**

Fighter cover was still a problem—the Schweinfurt attack of Oct. 14, 1943 cost the USAAF 60 bombers out of a force of 291—an appalling loss rate of 20 percent. For the remainder of 1943, "daylight penetrations beyond fighter escort were sharply circumscribed," noted the *United States Strategic Bombing Survey*, a massive compendium published after the war.

Preparation for the D-Day invasion and

the arrival of the P-51 Mustang with wing tanks changed all that. The P-51 debuted in theater in December 1943. By March, its combat radius extended 850 miles with two 108-gallon drop tanks.

In mid-February 1944, a new directive went out to air commanders calling for: "Depletion of German Air Force with primary importance upon German fighter forces by all means available, including attacks against precision targets and industrial areas and facilities supporting them to create air situation favorable to Overlord."

The USAAF went to Berlin to attack industrial targets, but also to bait German fighters into the air.

Three mass raids were carried out on March 4, March 6, and March 8, 1944. Each raid was planned "without any attempt at deception," following a route to lure as many of the Luftwaffe fighter pilots into the skies as possible.

Poor weather disrupted the first attack. Only one bomber wing located Berlin in scattered clouds and bombed a Bosch plant under radar conditions. Little damage was done.

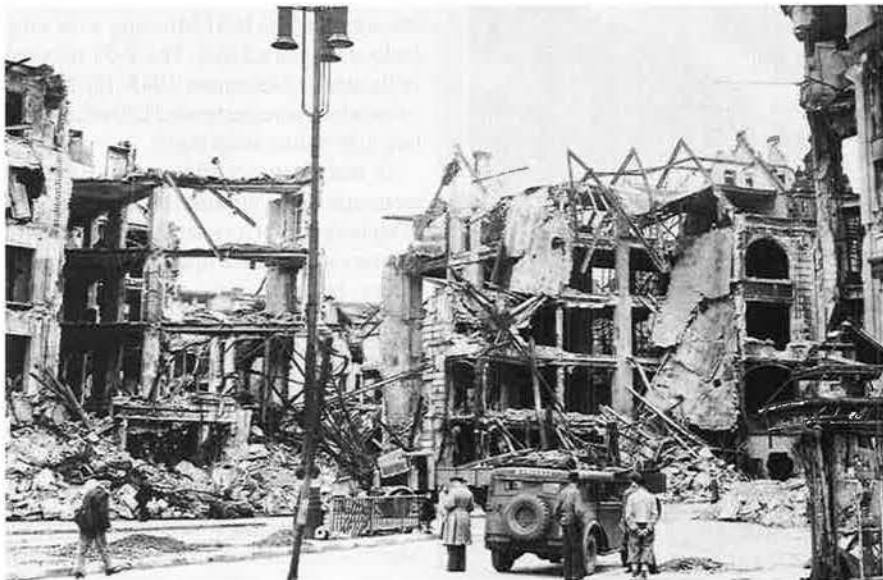
March 6, 1944 was a different story. Nearly 800 aircraft took off for the missions that day. More than 150 P-51 Mustangs met and escorted 660 bombers into the target area, where they dropped high explosives and incendiaries on industrial targets in good conditions.

Swarms of German fighters rose up to defend the Reich. Escort relays provided continuous fighter cover but could not prevent the loss of 69 bombers to fighters and flak. Fifteen aircraft were lost by the 100th Bomb Group alone, con-



**RAF aircrews return from a successful mission against Berlin, as mechanics swarm a bomber to ready it for another mission.**





**The Berlin business district in July 1945, after the air raids had devastated the capital of Hitler's Third Reich.**

tributing to its nickname "The Bloody Hundredth."

Pilot C. B. Harper of the B-17 *Buffalo Gal* recalled how German fighters exploited a short gap in fighter coverage and struck his group head on, in pairs. Fifteen bombers fell in less than 10 minutes before escorting P-47s closed the gap. According to historian Donald L. Miller, half the B-17s that landed after the March 6 attack on Berlin came back with battle damage.

Still, the plan was working. As many as 400 Luftwaffe fighters took the bait, setting up a terrible duel over Berlin. The 4th Fighter Group described how Germans and Americans "dropped wing tanks like two boxers shedding robes at the sound of the gong."

Eighth Air Force bombers returned to Berlin on March 8. Many crews from the same units had attacked just two days earlier. This time, visual bombing conditions were excellent. Fighter opposition was weaker and 462 bombers flying in "tight formations" hit their targets.

The three strikes on Berlin encouraged Spaatz to cable Arnold that while the "heavy air wastage" could not yet be calculated, he was "confident that the air battle is in our hands." The attacks cost Luftwaffe fighter commander Galland, in the single month of March, 20 percent of his experienced pilots.

Poor weather closed in after one more raid. The spring of 1944 brought US and British concentration on new targets, especially those in soon-to-be-invaded France.

After the attacks on Berlin, daylight precision bombing was an established weapon of war. From the Allies' perspec-

tive, the big air battles around the daylight bomber formations worked. Losses were sustainable, the targets were being hit effectively, and the Luftwaffe's pilots and aircraft were slowly but surely being ground down.

#### **USAAF's Biggest Raid**

Even Churchill put to rest the "prolonged and obstinate technical argument" against daylight bombing.

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. Bombarriers aiming from 24,000 to 27,000 feet scored good accuracy amidst "murderous" German flak. Just 21 bombers were lost as the P-51s kept away the tattered remnants of the Luftwaffe.

Although marshaling yards and railways were top targets, the list of additional targets had some interesting sites. The official USAAF history listed them as the Reichschancellery, Air Ministry, Foreign Office, Ministry of Propaganda, and Gestapo headquarters.

This raid cost Berliners between 20,000 and 25,000 dead. Then, the bomb lines moved inside Berlin as advancing armies shortened the lines of communication. The attacks on transportation facilities inside cities were coordinated with efforts to stop repositioning of troops as the Red

Army pressed in. They were "missions which the Russians had requested and seemed to appreciate," noted the USAAF official history.

The bombing of Berlin showed perhaps better than any other target how technical limits and campaign imperatives shaped the bomber war.

Looking back, the lens of history is smudged by brilliantly effective Nazi propaganda that recorded every attack in the most dramatic and graphic terms. It turned the bomber war against Germany into an ongoing debate scrutinized far more than bombings carried out by the Nazis earlier in the war ever were.

In part because of the efforts of Nazi propaganda minister Joseph Goebbels, tales of the bombing of the Reich and debate over its morality have lingered to this day. The analysis of the bombing tends to blend RAF and USAAF results with little distinction between the very different methods, motives, and objectives of the two air forces' campaigns.

For the USAAF, bombing "Hitler's town" always followed a campaign-level imperative—destroying the Luftwaffe, or wrecking ground lines of communication.

The RAF, threatened with destruction by the Luftwaffe as early as 1940, showed a different character. Statistics compiled by Harris demonstrate how hard the RAF pursued Berlin. RAF Bomber Command figured it had devastated 6,427 acres in Berlin. This damage was caused by 24 "main force" raids.

It was the single highest acreage-devastation count of any European city in the war, although, owing to sprawling Berlin's size, as a percentage the destruction was in the lowest quartile (33 percent destroyed).

The spread of destruction is better told by the statistic that 19,423 acres suffered at least 40 percent destruction at the hands of the RAF—a figure more than double acreage of the next highest city, Hamburg.

For their attacks on London, Churchill noted, the Germans were repaid "tenfold, twentyfold, in the frightful routine bombardment of German cities, which grew in intensity as our airpower developed, as the bombs became far heavier and the explosives more powerful. ... Alas for poor humanity!" ■

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*Rebecca Grant is a contributing editor of Air Force Magazine. She is president of IRIS Independent Research in Washington, D.C., 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, "Vulnerability in Space," appeared in the April issue.*



## Keep 'Em Flying

"We can never forget that our gains on the ground are possible because of our superiority in the sky. Our Air Force is essential to that different form of warfare that we have had to learn—or perhaps I should say re-learn—in recent years."—**Secretary of State Condoleezza Rice, speaking at Air University, Montgomery (Ala.) Advertiser, April 15.**

## Reverting to Volatility

"In the years before the Cold War, ... peacetime defense spending typically claimed only one percent of gross domestic product. Back then, it was typical for weapons outlays to spike upward by a thousand percent in a few years as the nation mobilized for war, and then to rapidly retreat back to previous levels once the danger had passed. The volatility of weapons outlays became less pronounced during the Cold War because the danger didn't go away for 40 years, but even then it was common for weapons accounts to swell or contract by 50 percent in a few years, depending on perceived changes in the threat. ... We may be gradually reverting to the more volatile demand dynamics of the pre-Cold War period."—**Loren B. Thompson, Lexington Institute, April 22.**

## Joint Assets

"I don't view any of our [intelligence-surveillance-reconnaissance] assets as Air Force assets. I view them all as joint assets for wherever the theater commander wants them. That's where they go. We do not have Air Force ISR targets that we service for our own needs."—**Lt. Gen. Donald J. Hoffman, USAF's top uniformed acquisition official, Senate Armed Services AirLand subcommittee, April 9.**

## Crimebusters Alert

"Patriotic people of Tibet strongly condemn and vehemently denounce the litany of crimes committed by the 14th Dalai Lama and his followers."—**Tibet Daily, published by the Chinese government, as quoted by Reuters May 4.**

## Super Bowl

"Every day when you wake up here, it's the Super Bowl. There are no practice games. There is no preseason. There is no training camp. When you get on the ground in the AFCENT area of responsibility, no matter where you're at, the day you hit the ground, it's game on. You got to be mentally, physically, emotionally, and spiritually ready to go, and you have to be technically sound at what you do."—**CCMSgt. Scott H. Dearduff, 9th Air Force and US Air Forces Central, to airmen in Southwest Asia, April 25.**

## Hanging by a Thread

"While US military forces are getting by, painfully, and performing today's missions despite readiness shortfalls, we are simply not prepared for the emergence of a new conflict. Experience tells me that we cannot assume another crisis won't come our way. In my 31 years in Congress, the US has been involved in 12 significant military conflicts, none of which were predicted beforehand. Because we can't know with complete certainty what dangers lurk around the corner or when they might strike, we need the insurance policy military readiness provides for America's security."—**Rep. Ike Skelton (D-Mo.), House Armed Services Committee chairman, May 1.**

## Reminder

"This deployment has been planned for a long time. I don't think we'll have two carriers there for a protracted period of time. So I don't see it as an escalation. I think it could be seen, though, as a reminder."—**Secretary of Defense Robert M. Gates, about a second carrier in the vicinity of Iran, Reuters, April 29.**

## Major Debacle

"Measured in blood and treasure, the war in Iraq has achieved the status of a major war and a major debacle. ... Our efforts [there] were designed to enhance US national security, but they have become, at least temporarily, an incubator for terrorism and have emboldened Iran to expand its influence throughout the Middle East."—**Joseph J. Collins,**

*former deputy assistant secretary of defense for stability operations, in a paper released by the Institute for National Strategic Studies at National Defense University, April.*

## Fat Russian Generals

"The new military uniform should match what is inside it."—**Vyacheslav Sedov, Russian Defense Ministry spokesman, on the design of a new uniform for the Russian Army, a third of whose top officers are overweight, London Daily Telegraph, April 11.**

## Enough for Deterrence

"You don't really even need to have a nuclear weapon. It's enough to buy yourself an insurance policy by developing the capability, and then sit on it. Let's not kid ourselves—90 percent of it is insurance, a deterrence."—**Mohamed El Baradei, director general of UN International Atomic Energy Agency, on spread of nuclear capability, Washington Post, May 12.**

## Evolution in Spying

"Since 1990, offenders are more likely to be naturalized citizens, and to have foreign attachments, connections, and ties. ... Two-thirds of American spies since 1990 have volunteered. Since 1990, spying has not paid well: 80 percent of spies received no payment for espionage, and since 2000, it appears no one was paid. Six of the 11 most recent cases have involved terrorists. ... Many recent spies relied on computers, electronic information retrieval and storage, and the Internet."—**Department of Defense report on changes in espionage by Americans since 1947, March 2008.**

## One Stop Shopping

"In a democracy, I realize you don't need to talk to the top leader to know how the country feels. When I go to a dictatorship, I only have to talk to one person and that's the dictator, because he speaks for all the people."—**Former US President Jimmy Carter, questioned about his meeting with Khaled Mashal, head of the Palestine terrorist group Hamas, Wall Street Journal, April 15.**



**Common-sense ideas that improve Air Force operations—the concept is finally sinking in.**

# AFSO21 Progress Report

By Megan Scully

**AFSO21**—the efficiency drive once widely regarded as a grab bag of lofty goals and fuzzy concepts—has turned into something very different. For airmen and civilians alike, it has become a way of life.

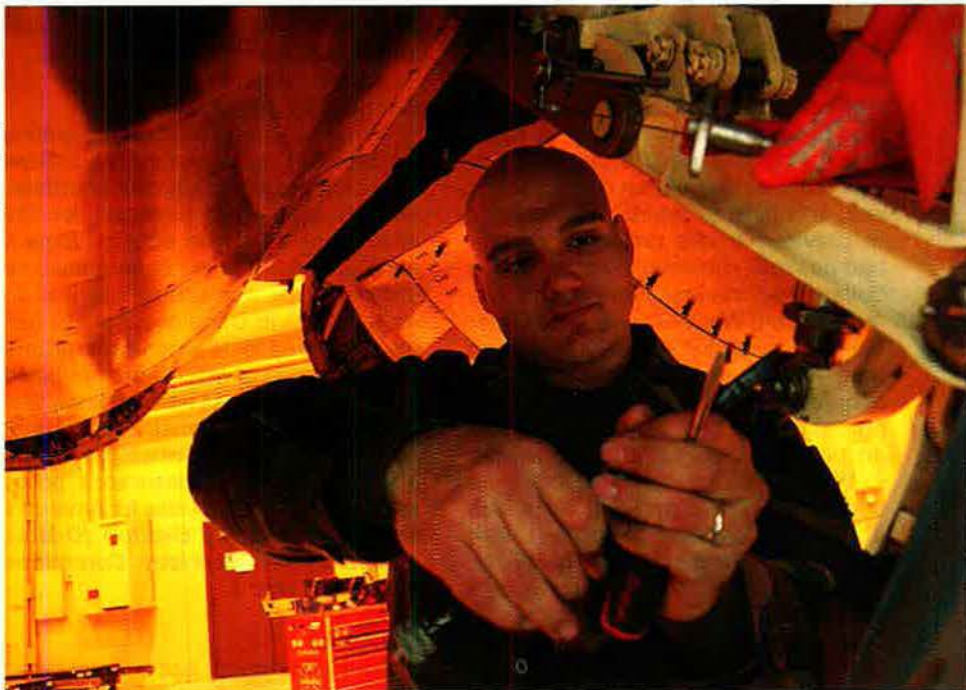
The subject is “Air Force Smart Operations for the 21st Century.” At times, an AFSO21 project comes down from on high—say, a general orders a massive overhaul of some process that could have significant positive effects across the force. Others have more humble provenance. Officials note, however, that small changes total up to something big, and that is why airmen at all levels are encouraged to look for efficiencies everywhere.

For example, one officer at Davis-Monthan AFB, Ariz., noticed the existence of old abandoned railroad tracks around the base. Sensing potential paydirt, 1st Lt. Cynthia Darnell combed the desert, taking detailed inventory of the tracks. The result: a sale of scrap metal that fetched \$100,000—money the Air Force will plow back into the base itself. Cleaning up the unused tracks is also considered an environmental success story.

It was precisely the hope for such simple, common-sense ideas that induced then-Secretary of the Air Force Michael W. Wynne to launch AFSO21 in early 2006. Greater efficiency was needed, he observed, if the Air Force was to make the most of its budget and shrinking manpower pool.

One need only walk into the project’s modest offices in Arlington, Va., to see that AFSO21 could not succeed without the enthusiastic buy-in by many of USAF’s

USAF photo by SSGT Matthew Rosline



**SrA. Scott Rodrigues removes a tail hook dampener from an F-15E at Elmendorf AFB, Alaska. The inspection was streamlined by seven days as a part of AFSO21.**

700,000 military and civilian personnel. On a good day, the AFSO office has only about 20 workers on hand, far too few to carry the project load on their own.

“You don’t think we’re going to force this Air Force to do something it doesn’t want to do, do you?” asked Ronald C. Ritter, special assistant to the Secretary of the Air Force for AFSO21. “Our job is to understand what the goals—the real objectives—are, and help these people do what is already basically in their heads.”

It is true that, despite Wynne’s efforts to make AFSO21 a service priority, there

has been pushback from some airmen. After all, terms such as “lean six sigma” (a widely used business management strategy), in isolation, are unlikely to mobilize the rank and file to find ways to streamline their jobs, AFSO21 leaders admit.

Brig. Gen. John D. Posner, AFSO21 director, said the initial resistance paralleled the Air Force’s experience a decade earlier when it moved to create Air Expeditionary Forces. Posner also acknowledged that past efficiency crusades often have not worked, a fact that





USAF photo by Joe B. Willes

**SSgt. Chris Moore prepares to inspect an aircraft part. He stands on a cargo door platform work station, which was an AFSO21 idea.**

makes some longtime personnel skittish about uprooting policies and processes for something new.

“My experience is, initially, people kind of resist a little bit—‘We’re doing OK now, why do we need to change?’” said Posner, who took over as director of the AFSO21 office earlier this year. “I think that is just human nature.”

Simply put, Air Force personnel want to see results—and judge for themselves the effectiveness of AFSO21. Airmen “don’t get excited about a well-run program,” Ritter said. “We do.” To the airmen in the field, he added, “the fact that we have a perfectly smooth and glitzy AFSO program is a side note.”

The changes have surprised Posner, who initially thought it would take an entire generation for the Air Force to accept and adopt a system for reforming the service’s business processes. AFSO21 has caught on, he now says. There are a thousand stories of skeptical airmen who became big fans.

The challenge, Ritter said, is in broadcasting local success stories to far-flung personnel.

Several examples came from Robins AFB, Ga., and its Warner Robins Air Logistics Center. Center personnel, who already had been streamlining operations for the last decade, quickly embraced Wynne’s March 2006 directive. They have since been able to eliminate unnecessary tasks and improve output, saving millions of dollars.

An illustrative success story concerns the C-5 transport depot maintenance line.

Technicians have been working hard to make processes more efficient. In Fiscal Year 2001, the number of C-5s in maintenance at any given time averaged 15. By Fiscal 2006, that number had decreased to seven. This has the direct combat effect of increasing the size of the operational fleet.

### Broad Application

“Nowhere is this more evident than in the theaters of operation,” said Maj. Paul Ashley, maintenance operations officer for the 559th Aircraft Maintenance



USAF photo by TSgt. Scott Wakefield

**SrA. Jason Benchich (left) and SrA. Lester Delvalle (center), at RAF Lakenheath, Britain, test an AFSO21 initiative: an assembly-line approach to restocking chaff and flare cannisters.**

Squadron. In Afghanistan and Iraq, he said, increased C-5 availability has freed up other airlifters for different kinds of duties.

Moreover, Robins officials have been able to reduce the C-5 maintenance workforce by 90 people, with cost avoidance of about \$7.2 million.

Success at Robins has not been limited to its aircraft depot lines. The center has reinvented information technology processes, with particular attention to the center’s help desk capabilities.

Instead of keeping 17 different help desks positioned around the base, officials decided to establish a “zone help desk.” This essentially created a centralized office to monitor the activity of several geographic zones, said Carl Unholtz, deputy chief information officer at Warner Robins. Centralizing the help desk operations allowed IT officials to monitor their entire workload and shift personnel as necessary.

The result was an exponential improvement in the desk’s responsiveness to needs around Robins. The help desk chalked up 2,000 more calls, on average, in March 2008 than it did in March 2007, but the average length of those calls decreased from 18 minutes to just five. And the average time before calls were answered dropped from nearly a minute-and-a-half to 16 seconds.

Unholtz added that the help desk changes, combined with other improvements to IT services, have reduced by 200 the number of IT professionals needed on the base, which has produced a huge sav-





USAF Photo by Abner Guzman

**With C-17s in the background at McChord AFB, Wash., airmen replace an integrated flight-control module on another. Maintainers are incorporating AFSSO21 recommendations to shorten the time for an engine-running crew change.**

ings. “This is well worth the investment,” Unholtz said. “With lean [operations], you get a smarter solution sooner.”

Robins has therefore freed up 290 positions just by improving its C-5 maintenance and IT help desk operations. This has been one of AFSSO21’s drivers all along—the need for the Air Force to do more with fewer dollars.

With its sprawling depot lines and 25,000 military and civilian personnel, Robins was a logical place to seek additional efficiencies. The base is now deemed to be on the cutting edge of AFSSO21, but success stories—in varying degrees—can be seen at Air Force bases around the world.

As AFSSO21 advocates tell it, these successes have sweeping implications for the service.

“When you get 700,000 airmen all working the same agenda, ... they’re going to generate enormous amounts of resources [by] freeing them up,” Ritter said.

The AFSSO21 campaign has been aided by the constant influx of airmen recruits. The newcomers do not recall a time when the push for constant improvement and efficiency was not a normal part of Air Force life. For the new airmen, AFSSO21 is “just the way you do business,” Posner said.

The Air Force has decided to push AFSSO21 training into every training level above basic training. Already, various levels of command and occupational special-

ties have in place formal AFSSO21 training structures, ranging from one-week courses to intense, three-month courses.

### Constant Effort

Every general officer, Senior Executive Service civilian, and command chief in the Air Force must go through a brief immersion course that includes a full-day classroom session on AFSSO21 basics, management tools, and implementation ideas. The immersion also includes meetings with industry to illustrate similar successes in the private sector.

Posner asserts that “this has to be a continuing, consistent, persistent, ongoing, enduring process” that lasts for the entirety of an airman’s career. Without constant effort, the force would relapse into old ways and innovation could cease.

Posner and Ritter acknowledge that the Air Force must do a better job pushing successful programs throughout the service. They also worry that there isn’t enough information sharing going on between the Air Force and the other services and across the federal government. “We are not very good at cross-flowing best practices, to put it mildly,” said Ritter, who has worked in the private sector and said USAF’s problems are similar to those of large corporations.

Ritter pointed to a project at Vandenberg AFB, Calif., to replace many of the installation’s lightbulbs with more energy efficient lights. Vandenberg has set goals to reduce energy consumption by three percent per year and use renewable energy sources to power at least 25 percent of the base by 2025.

If the light project were adopted across the Air Force, the service could save between \$20 million and \$30 million a year, Ritter said. Much larger savings would be realized if such changes were adopted throughout all Defense Department military installations or across the government.

“We are taking way too long” to carry out that expansion, said Ritter. “The guys at Vandenberg ... want us to be responsive and jump on it.” They argue that slow progress cheats the Air Force of resources. “We’re missing all the opportunities of this thing because it takes forever” for improvements to be agreed upon and implemented, Ritter said. “This cross-flowing is our biggest opportunity to significantly ratchet up the good work that’s being done out there.”

The AFSSO21 office has an official dedicated to that issue and to determining how best to speed changes across the service. Expanding local programs across the service will become a central focus for the top-level AFSSO21 Process Council, which meets quarterly to review AFSSO21 programs, Posner added.

Posner wants to dispel concerns that AFSSO21 is merely an offshoot of the service’s belt-tightening efforts, which had included sweeping personnel reductions. “There has been an unfortunate linkage to resource cuts,” he said. “And we cannot emphasize enough that AFSSO21 is not about resource cuts. AFSSO21 is about improving performance.”

The point of AFSSO21, officials say, essentially is to coordinate efforts and focus the Air Force on continual improvement. “We’ve been doing this ever since we had an Air Force,” Ritter said.

In any event, there’s no going back. As Unholtz puts it: “When we’re not completely reinventing and transforming ... some aspect of our business, then we’re using lean [processes] to continually improve. I’m not sure we can even remember how to do business any other way.” ■

*Megan Scully is the defense reporter for National Journal's CongressDaily in Washington, D.C., and a contributor to National Journal and Government Executive. Her most recent article for Air Force Magazine, "Volunteers in a Time of War," appeared in the December 2007 issue.*



Late in the Vietnam War, a top-secret program gave US pilots an edge in air combat.



Photo by Bruce Chavis via Warren Thompson

# The Teaball Tactic

By Walter J. Boyne

In spring 1952, the Air Force established a listening operation on the island of Cho-do, off the east coast of Korea. The mission at Cho-do was the monitoring of Chinese, North Korean, and Russian communications. The site, staffed with teams of linguists and tactical air control center personnel, gave US air crews almost real-time information as they prepared for battle over North Korea.

This timely intelligence contributed much to the American ability to dominate "MiG Alley," for it informed pilots of the best opportunities to engage enemy forces, given the handicaps of distant basing and limited fuel supply.

Despite the success from feeding signals intelligence directly to the combat



Photo by Jerry Paiks via Warren Thompson

*Above: A U-2 and B-52s at U Tapao AB, Thailand. Right: An EC-121M takes off from Da Nang AB, South Vietnam, for a mission over the Gulf of Tonkin.*



pilots, the system withered after the war. As a result, the US had to reinvent the wheel during the Vietnam War while also dealing with new bureaucratic roadblocks. It wasn't until July 26, 1972 that intelligence specialists, using the call sign "Teaball," began operations with a system comparable to that used in the Korean War a generation earlier. It provided something close to a composite air picture.

In Vietnam, US airborne assets were used for specific intelligence needs, but airmen for many years overlooked the desirability of getting current information directly to pilots engaged in a mission. Old airframes and new equipment were blended together for the task. Still, the intelligence was so guarded, channeled, and compartmentalized that little of it reached aircrews in flight over enemy territory. This would contribute to the long years of frustration for US fighter forces over Vietnam as the lack of real-time intelligence about enemy aircraft compounded the myriad other handicaps the airmen dealt with.

The frustrations in dealing with enemy fighters mounted steadily throughout the war. In early 1972, Gen. John W. Vogt, head of USAF's 7th Air Force, said the Air Force was actually losing the air war.

During the period between US involvement in the Korean and Vietnam Wars, however, there was remarkable progress in the science of electronic warfare, especially for use by airborne platforms. An emphasis on getting intel into USAF's fighter cockpits, led by the highly classified Project Teaball, helped to turn the tide in the war's waning days. Combining the evolving technology with political will was a difficult task.



Photo by Jim Wood via Warren Thompson

New and more versatile equipment appeared continually, expanding America's theoretical capability to listen in on enemy communications, locate and pinpoint radar installations, and learn the characteristics of enemy systems. US contractors developed entire arrays of specialized equipment and aircraft, designed specifically to obtain varied forms of electronic intelligence.

### Green Door Barriers

Dedicated crews often elicited more from their equipment than had been anticipated by designers. But this progress was masked by a growing bureaucracy and a welter of security barriers. These were the familiar "green doors" and "stovepipes" that compartmentalized the data yield and prevented its full exploitation for most of the Vietnam War.

The Sigint—or signals intelligence—side of the Vietnam War was character-

ized by a serial and overlapping addition of electronic signal interpretation techniques that were not well-integrated. Further complicating the situation, American advances in elaborate electronic intelligence equipment and techniques were matched by a parallel growth of stifling bureaucracy. A focus on genuine security concerns set limits on the distribution of vital information to the people who needed it most—US combat pilots flying over Vietnam.

The United States, faced with a new North Vietnamese regular offensive in spring 1972, resumed bombing operations in North Vietnam on May 10, 1972. During the next 80 days, the US lost 48 aircraft, 21 to MiG fighters and 27 to surface-to-air missiles and anti-aircraft fire. During the same period, US pilots succeeded in shooting down only 31 MiGs. Two major factors were the effectiveness of ground-controlled North Vietnamese pilots and the lack of American radar warning to pilots about to be attacked.

In June and July, the North Vietnamese Air Force shot down 13 US aircraft in aerial combat while losing just 11. The tiny North Vietnamese Air Force



*Above: An RC-135 prepares to refuel over Southeast Asia. At left: Feeding data into the Teaball system were a variety of sensor platforms, including RC-135M Combat Apple aircraft. Combat Apple preceded Teaball and completed its 1,000th mission in 1969. Shown here celebrating the event at Kadena AB, Okinawa, were (l-r) Lt. Col. Doyle Larson, commander of the 6990th Security Squadron; Lt. Col. Robert Nicholl, pilot and commander of the 82nd Strategic Reconnaissance Squadron; and Maj. Victor Prislusky, the aircraft commander.*





**Gen. John Vogt, head of USAF's 7th Air Force, was determined to improve pilots' access to real-time information. Vogt's support was instrumental in getting Teaball up and running.**

was allowing its pilots to become ever more efficient in its preferred tactic: use of a single high-speed pass from the rear, capped by the launch of an Atoll missile.

At the same time, the Air Force was repeatedly giving up its combat proficiency. The service's rotational policy continuously pushed out veteran pilots and brought in less-experienced pilots for their first combat tours. Before the era of Red Flag combat training, it was these initial missions against live enemies that cost the US most of its pilots. They were forced to learn on the job—or die trying.

The situation was made all the worse by the broadcast of intelligence using the "Bull's Eye System." This technique harkened back to the earliest airborne artillery registration tactics of World War I, simple signals indicating "long" or "short" and later amplified by clock code signals. It was used to give pilots vector and distance information via a "bull's-eye" drawn around the target. It was inaccurate, especially for single-pass missions.

Vogt knew the pilots' lack of access, via their radios, to real-time information left them vulnerable. He informed USAF Chief of Staff Gen. John D. Ryan of the problem, and Ryan reacted immediately to Vogt's concerns. He told his Air Staff that he wanted action—not a plan, and not a study, but action. Ryan established a three-man action group consisting of Lt. Col. William L. Kirk, Maj. Ernie Short, and Delmar Lang (representing the National Security Agency, or NSA).

Lang had previously volunteered to replicate the Cho-do setup in Vietnam, but had been repeatedly refused. As a result,

the team was not surprised when their efforts, although mandated by the Chief of Staff, were initially turned down by some at 7th Air Force because of opposition to giving "raw data" to aircrews.

#### **NKP Operation**

Finally, with Vogt's support, the objections were overridden. Kirk and his team moved to Nakhon Phanom AB, Thailand—also known as NKP. There, working with the 6908th Security Squadron, they could tap into the network of radios monitoring North Vietnamese air operations. They established a control van where map displays could chart the air battle and where the necessary command and control equipment was readily available.

RC-135C (Burning Pipe) and RC-135M (Combat Apple) aircraft orbited over the Gulf of Tonkin and Laos, gathering communication and electronics intelligence. The ubiquitous U-2 soared high above the RC-135s, receiving their transmissions and then resending the data to Teaball's operation room at NKP.

At NKP, these freshly collected Sigint data were then combined with ground-based radar data as well as with the radar data gathered by EC-121s. These aircraft had all been intercepting North Vietnamese ground controller transmissions and, to an extremely limited degree before Teaball, relaying the intel to Air Force, Navy, and Marine Corps aircraft.

EC-121K Rivet Tops carried intelligence specialists conversant in Vietnamese. They could monitor voice communications between the MiG pilots and their ground controllers. A more famous variant, the EC-121T, began operating

from Korat, Thailand, under the "Disco" call sign. Initially, only one Disco orbit was flown, over Laos. By 1972, however, the surge in proficiency and aggressiveness of MiG-21 operations called for the establishment of a Disco orbit in the Gulf of Tonkin.

Airborne coverage was supplemented by two key elements, one land- and one sea-based. Combat Lightning, which was launched at Monkey Mountain in South Vietnam, blended data input from Air Force, Navy, Marine Corps, and Army teams. By 1969, it had grown into a comprehensive data collection system. This information was supplemented by a naval signals intelligence ship, "Red Crown," operating in the Gulf of Tonkin. Working in cooperation with an E-2 Hawkeye, Red Crown's coverage extended to Hanoi. Red Crown, in turn, received information from USAF EC-121M Big Look and Navy EA-3B Deep Sea aircraft.

This mighty stream of data would be screened, combined, analyzed, and put into context by the Teaball specialists located at NKP. A few of these were accorded the privilege of using the NSA-owned "Iron Horse" classified computer system, devised for synthesizing and displaying the collected signals data.

Teaball was then able to relay the locations of both USAF and enemy aircraft to the pilots flying F-4 combat air patrols.

Kirk's improvised assortment of ground equipment was a tremendous contrast to the constellation of assets in his employ.

The information the Teaball team developed revealed the position, track, and altitude of both American and North Vietnamese aircraft. In addition to being an obvious boon to situational awareness, the capabilities allowed the controllers to suggest options to the pilots about how their battles could best be fought.

Teaball sent its updates and guidance to the American aircraft via "Luzon," a KC-135A radio relay aircraft that operated 300 miles away, using a line-of-sight UHF radio link.

As is often the case in radio communications, however, this simple UHF relay was the troublesome element of the system. The relay had a tendency to experience unexpected outages at the most inconvenient moments.

Establishing Teaball, with its elaborate concentration of intelligence gathering equipment, was just the first step in improving situational awareness. The Teaball team also had to get the pilots





**Gen. John Ryan, Air Force Chief of Staff, demanded immediate action once Vogt filled him in on the severity of the problem that USAF faced against the North Vietnamese MiGs.**

to “buy in” to the system and trust the information they would be given.

Even as the control van was being set up at NKP, Kirk personally briefed every wing in Southeast Asia on the value of Teaball. He gave explicit descriptions of the advantages its use conferred upon the generally disbelieving pilots. (Kirk’s credentials included shooting down a MiG-21 with a notable assist from information provided by an EC-121.) He was thereby able to overcome the general antipathy toward intelligence types, and the infamous green-door secrecy syndrome.

Kirk’s briefings were necessarily discrete. He knew a muzzling stove-pipe would have dropped around him if he inadvertently revealed technical material that might compromise Strategic Air Command’s nuclear mission.

Therefore, Kirk took the obvious step of removing all intelligence references from the comments passed to the pilots and only relayed details about threats and directional information.

“Pilots were not told specifically what sources of information were being exploited, but were admonished by Bill Kirk to ‘pay attention when I call you on your discrete UHF channel,’” retired Maj. Gen. Doyle E. Larson wrote in *American Intelligence Journal* in 1994.

The comments—mostly compass heading, speed, and vector information—were passed in the same format as those passed by the Navy’s Red Crown ship and the Air Force EC-121, making the intelligence feeds more understandable and palatable to the pilots.

Teaball had an immediate positive effect. From July 29 to war’s end, US aircraft shot down 30 MiGs, while losing only 10. This was a dramatic turnaround

in the victory ratio compared to just months before.

Teaball had some additional advantages.

#### “Queen for a Day”

“When intelligence revealed the specific US aircraft being targeted by the North Vietnamese fighters, a ‘Queen for the Day’ program was established,” added Larson, who served aboard several reconnaissance aircraft types in Vietnam. “The intended victim was notified that he was the target for the day.” Soon, pilots were calling Teaball even before takeoff to make sure Kirk was aware of their call signs.

Teaball also bolstered search and rescue efforts because all the data stored on its magnetic tapes could be reproduced, helping rescuers pinpoint the position of a downed aircraft.

Most important was that Teaball “allowed for postmission analysis since all radar plots and Sigint data could be displayed, allowing American planners to judge the tactics and engagement criteria of their North Vietnamese counterparts,” wrote Capt. Gilles Van Nederveen in a 2001 report, “Signals Intelligence Support to the Cockpit.” This ability, “now incorporated in most command and control systems, is vital in designing new and better air tactics,” he wrote.

“You can talk to our fighter pilots and they’ll tell you how they tightened up on their air discipline,” Vogt summed up

after Vietnam. “They cut down on their air chatter. They practiced air-to-air combat among themselves. They went from fluid four to something else.”

Not everyone believed in Teaball’s efficacy, however. Some postwar studies indicated that Teaball’s primary value was simply in providing pilots with an earlier warning of a threat.

But that was exactly Vogt’s intent in starting the chain of events that led to Teaball. He wished to give his F-4 pilots the initiative, allowing them to use their radar and their vertical combat capability to full advantage against the more maneuverable MiGs.

The relevant question is whether Air Force pilots today have the necessary real-time information available to them so that another Teaball-type operation will not be required in the future.

Some of the conditions are hauntingly similar, as seen decades ago. The US is engaged in a war that requires both the free exchange of information and limits on what can be revealed. The US is faced with enemies whose languages present severe interpretation problems, and it is difficult to find the necessary number of linguists to handle them.

And while the United States and its partner nations have general air-to-air dominance, the proliferation of modern surface-to-air-missiles, with their ultra high speed and long range, could make for an extremely hostile environment in the future. Both fighters operating over the battlefield and the large, lumbering intelligence aircraft working from longer range could be at risk from future air defenses, making quick access to the proper intelligence information more critical than ever.

There is no denying that after Teaball was introduced, victories went up and losses went down. Rapid dissemination of intelligence to the cockpit works.

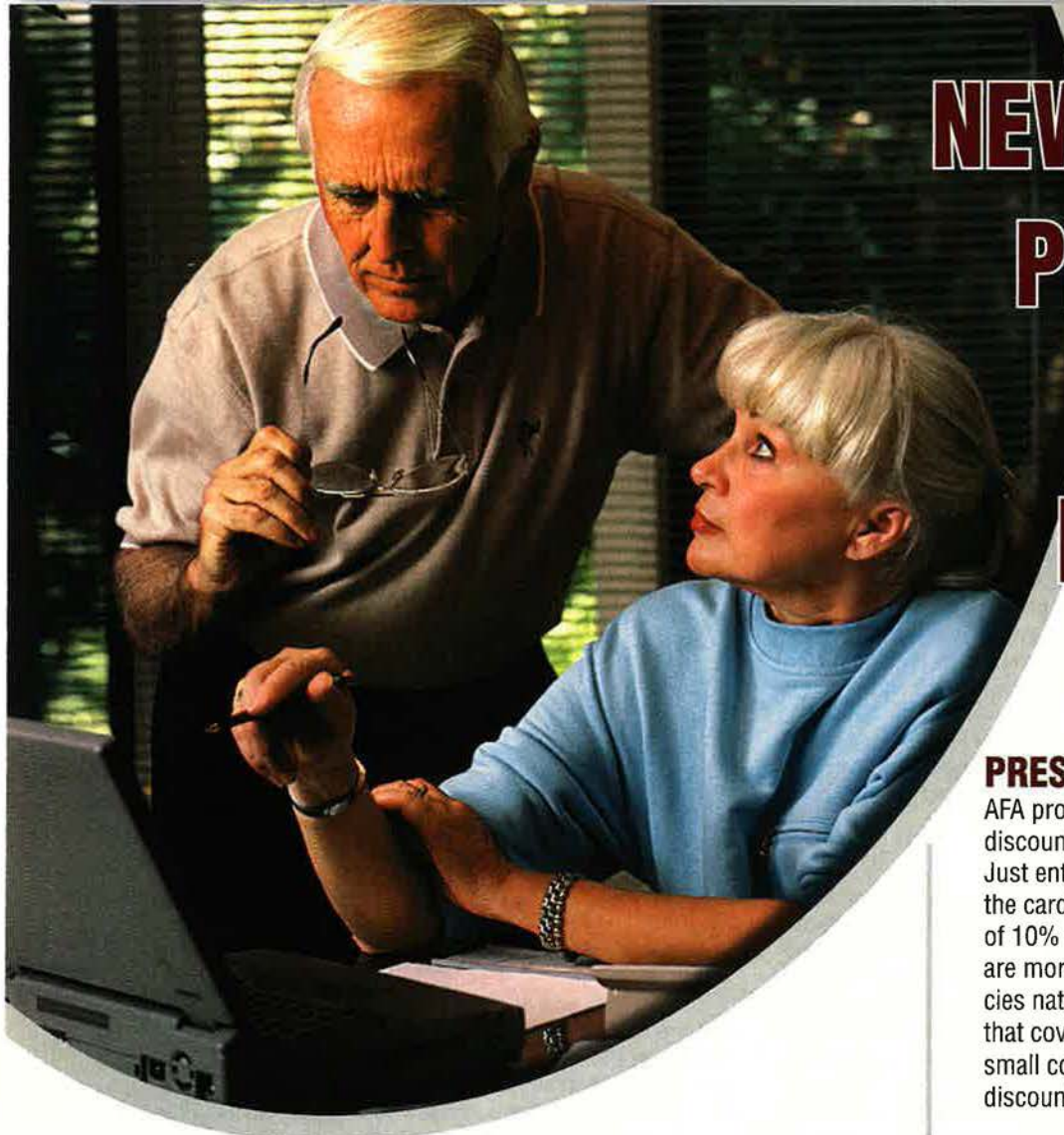
All three of the Air Force’s Vietnam War aces—Capt. Charles B. DeBellevue (weapons system officer, six kills); Capt. Steve Ritchie (pilot, five kills); and Capt. Jeffrey S. Feinstein (WSO, five kills) benefited from improved intelligence distribution.

Vogt noted that, before the advent of Teaball, none of the Air Force’s intelligence measures had worked. However, he said, “they all worked after Teaball.” ■

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*Walter J. Boyne, former director of the National Air and Space Museum in Washington, is a retired Air Force colonel and author. He has written more than 600 articles about aviation topics and 40 books, the most recent of which is Roaring Thunder. His most recent article for Air Force Magazine, “The Robin Olds Factor,” appeared in the June issue.*





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# Keeper File

## “The Bomber Will Always Get Through”

*Few famous speeches have been more misunderstood than that by Stanley Baldwin, Britain's once and future Prime Minister, on the eve of Armistice Day 1932. The debate concerned disarmament. In his remarks, Baldwin spotlighted airpower, warning, "It is well ... for the man in the street to realize that there is no power on earth that can protect him from being bombed, whatever people may tell him. The bomber will always get through." He was right: There was as yet no effective defense against air attack. The mix-up concerned Baldwin's motive. Airpower theorists, promoting the bomber as a war-winning weapon, often appropriated Baldwin's words to bolster their own claims. Some misread Baldwin's words as endorsing air war. Nothing could be more untrue, as the text makes clear. He in fact was calling for tight constraints on the air weapon. Indeed, Baldwin fought to block any buildup of airpower throughout the 1930s, which brought him to criticism from, among others, Winston Churchill. Note: Thanks to Brett Holman of [airminded.org](http://airminded.org) for supplying the basic text.*

**W**hat the world suffers from is a sense of fear, a want of confidence; and it is a fear held instinctively and without knowledge, very often. But my own view—and I have slowly and deliberately come to this conclusion—is that there is no one thing that is more responsible for that fear ... than the fear of the air.

Up to the time of the last war, civilians were exempt from the worst perils of war. They suffered sometimes from hunger, sometimes from the loss of sons and relatives serving in the Army. But now, in addition to this, they suffered from the constant fear not only of being killed themselves, but, what is perhaps worse for a man, of seeing his wife and children killed from the air. These feelings exist among the ordinary people throughout the whole of the civilized world, but I doubt if many of those who have that fear realize one or two things with reference to the cause of that fear.

That is the appalling speed which the air has brought into modern warfare, the speed of the attack. The speed of the attack, compared with the attack of an army, is as the speed of a motor-car to that of a four-in-hand. In the next war you will find that any town within reach of an aerodrome can be bombed within the first five minutes of war. ...

I think it is well also for the man in the street to realize that there is no power on earth that can protect him from being bombed, whatever people may tell him. The bomber will always get through, and it is very easy to understand that if you realize the area of space. Take any large town you like on this island or on the Continent within reach of an aerodrome. For the defense of that town and its suburbs, you have to split up the air into sectors for defense. Calculate that the bombing aeroplanes will be at least 20,000 feet high in the air, and perhaps higher, and it is a matter of mathematical calculation that you will have sectors of from tens to hundreds of cubic miles.

Imagine 100 cubic miles covered with cloud and fog, and you can calculate how many aeroplanes you would have to throw into that to have much chance of catching odd aeroplanes as they fly through it. It cannot be done, and there is no expert in Europe who will say that it can. The only defense is in offense, which means that you have got to kill more women and children more quickly than the enemy if you want to save yourselves. ...

I will not pretend that we are not taking our precautions in this country. We have done it. We have made our investigations

### “The Air Threat”

Stanley Baldwin  
Lord President of the Council  
Remarks to House of Commons  
London  
Nov. 10, 1932

Find the full text on the  
Air Force Association's Web site  
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Air Force Magazine  
“The Keeper File”

... and hitherto without any publicity, but considering the years that are required to make preparations, any government of this country in the present circumstances of the world would have been guilty of criminal negligence had they neglected to make their preparations. The same is true of other nations. What more potent cause of fear can there be than this kind of thing that is going on on the Continent? And fear is a very dangerous thing. It is quite true that it may act as a deterrent in people's minds against war, but it is much more likely to make them want to increase armaments to protect them against the terrors that they know may be launched against them.

We have to remember that aerial warfare is still in its infancy, and its potentialities are incalculable and inconceivable. How have the nations tried to deal with this terror of the air? I confess that the more I have studied this question the more depressed I have been at the perfectly futile attempts that have been made to deal with this problem. ...

As far as the air is concerned, there is, as has been most truly said, no way of complete disarmament except the abolition of flying. We have never known mankind to go back on a new invention. It might be a good thing for this world, as I heard some of the most distinguished men in the air service say, if men had never learned to fly. There is no more important question before every man, woman, and child in Europe than what we are going to do with this power now that we have got it. ...

If it is possible, the air forces of the world ought to be abolished, but if they are, you have got civil aviation, and in civil aviation you have your potential bombers. ... In my view, it is necessary for the nations of the world concerned to devote the whole of their mind to this question of civil aviation, to see if it is possible so to control civil aviation that such disarmament would be feasible. ...

It has never really been much discussed or thought out, and yet to my mind it is far the most important of all the questions of disarmament, for all disarmament hangs on the air, and as long as the air exists, you cannot get rid of that fear of which I spoke and which I believe to be the parent of many troubles. ■



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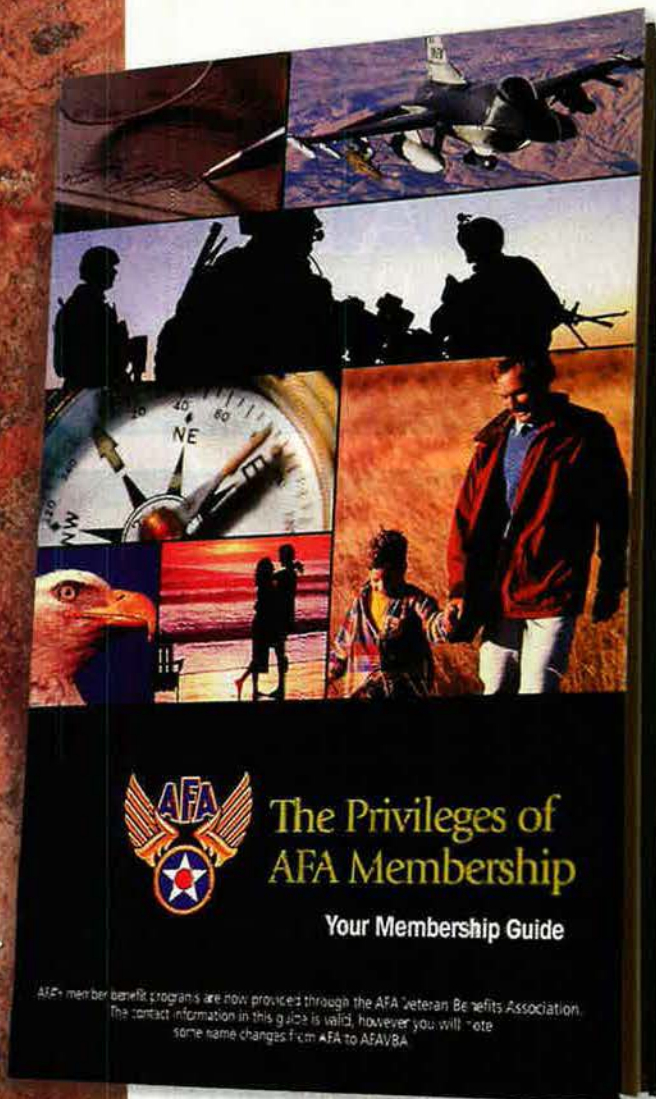


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# AFA National Report

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By Frances McKenney, Assistant Managing Editor

## Field Trip!

Backed by an AFA Chapter Matching Grant, the **Gen. Bruce K. Holloway Chapter** in Tennessee helped offset the cost of a field trip that students from Knoxville made to the US Space and Rocket Center in Huntsville, Ala., in April.

The grant provided \$700 to help pay the cost of transportation for 245 eighth-graders from South-Doyle Middle School, as they traveled some 200 miles to the center, which claims one of the most comprehensive collections of manned spaceflight hardware.

Derick E. Seaton, chapter secretary, went along on the trip. He said some of the science teachers told him that the annual field trip had always been a huge success over the past 17 years, but rising gasoline prices had made the cost seem out of reach for many of their students.

Seaton pointed out that the school uses the field trip not only to encourage the study of science, technology,



AFA Board Chairman Bob Largent (far right) joins retired CMSAF James McCoy (far left) and current CMSAF Rodney McKinley in congratulating MSgt. Linda McCoy. She received the Senior NCO Academy's top academic award for Class 08-C at Maxwell AFB, Ala. She is from Sheppard AFB, Tex., and is not related to Jim McCoy, a former AFA Board Chairman for whom the award is named.



Double Trouble Two was the main attraction at the Tidewater Chapter's Gala, held in Virginia Beach, Va. The P-51 is owned by Gerald Yagen (center). Chapter Community Partner Charlie Hackworth (left) sponsored a demonstration flight of the vintage warbird. At right is Scott Van Cleef, Virginia state president.

engineering, and math, but also to motivate students to attend school, follow school rules, and strive for success.

AFA's matching grants program helps chapters promote aerospace and math educational activities in their communities.

## Normandy Jubilee

In April, the **Long Island Chapter (N.Y.)** held a Jubilee of Liberty Medal Ceremony, honoring seven veterans of the June 1944 Normandy invasion.

US Rep. Tim Bishop (D-N.Y.) presented the medal to William Heagney of Mineola, N.Y., and to families of five other veterans: Vincent Berardi, Gustav Bruggemann, Frank Hassman, and Saul Riter. Antonio Imperial and the family of Metro Mitchell were to receive their medals later. All seven were soldiers.

The Jubilee of Liberty Medal was first minted for the Regional Council of Normandy, France, in 1994, to be presented to American veterans attending the 50th anniversary remembrance of the D-Day landing. The French government later asked the US to arrange for presentation of the





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medals to other Normandy veterans who weren't able to attend the anniversary. The Long Island Chapter has conducted the presentation ceremony 18 times, recognizing more than 300 local veterans.

This latest ceremony took place at the American Legion Post in Fiverhead, N.Y., and was covered by a local newspaper and cable TV station.

Cathy T. Ward, chapter secretary, said that the chapter received requests for more medal presentations because of the coverage, and Fred DiFabio, New York state chief of staff, noted that even though 64 years have passed since the landing on the beachheads of France, the ceremony remembering Normandy still fills the audience with emotion.

### Vintage Aircraft on Display

The Tidewater Chapter in Norfolk, Va., called their event a "gala," but it was much more than dinner and dancing. There were also warbirds to see on static display. A mint-condition World War II aircraft even took to the air for a flight demonstration, and one chapter member had a chance to fly in the jumpseat of the P-51.

The gala took place at the privately owned Virginia Beach Airport, home to the Fighter Factory, where Gerald Yagen, owner of a national chain of vocational schools for aircraft mechanics, maintains, displays, and flies a collection of old and replica airplanes.

The gala attracted more than 250 guests. In the late afternoon, they toured the Fighter Factory. Yagen then took chapter member Edwin C. Spencer, a World War II veteran, up in the P-51 named *Double Trouble Two*.

The Navy's Fleet Forces Band's jazz ensemble, based in Norfolk, provided the music for the dinner.

### We're Back

Under the headline "Air Force Association Is Back," the Web site for Keesler AFB, Miss., announced the first meeting of the **John C. Stennis Chapter** since Hurricane Katrina hit the base in 2005.

Maj. Gen. Michael C. Gould, commander of 2nd Air Force at Keesler, was guest speaker for this welcome-back luncheon meeting May 8. Keesler was the hardest hit of USAF's Gulf Coast bases; it suffered extensive property damage caused by storm surge from the hurricane.

Capt. Richard R. Parent and Capt. Michael P. Zink put in what Parent called "months of hard work" to "bring the chapter back on its feet."

AFA leaders at this first meeting of the revitalized chapter included South Central Region President Leonard R. Vernamonti, Mississippi State President Roy Gibbens, and Alabama State President Mark Dierlam.

### More Chapter News

■ Could this be a repeat? Col. Lance Young hopes so. President of the **Strom Thurmond Chapter** in Clemson, S.C., he presented the chapter's Teacher of the Year award in April to Nancy LeMaster, who has taught science at D. W. Daniel High School for 25 years. The school's faculty includes physics teacher Patrick A. Welsh, who was AFA's National Teacher of the Year in 2005.

■ The Air Force's deputy chief of staff for manpower and personnel, Lt. Gen.



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### Col. G. Barney Rawlings, 1922-2008

Retired Col. G. Barney Rawlings, an AFA national director in the 1960s, died May 8 in Las Vegas, a city that called him an "ambassador extraordinaire." He was 86 years old.

He enlisted in the Army in October 1942 and served in Europe from July 1944 until the following January, flying 282 combat hours in the B-17. After the war, he became a performer, emcee, and executive director of the Las Vegas Convention and Visitors Authority. Most recently he headed his own production company.

Born in Provo, Utah, he was a member of the Northern Utah Chapter and had entered the Retired Reserve in 1974 at the rank of colonel. ■

### Have AFA News?

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Richard Y. Newton III, was guest speaker for the **Ak-Sar-Ben Chapter's** annual Scholarship and Awards Banquet at Offutt AFB, Neb. Six \$1,000 scholarships went to high school students and ROTC cadets from the University of Nebraska at Omaha. The chapter also recognized its Teacher of the Year, Jan Elliott, who teaches physics at Bellevue West High School.

■ In New York, the **Iron Gate Chapter's** May luncheon featured AFA's President and CEO, retired Lt. Gen. Michael M. Dunn, as guest speaker. Chapter President Frank Hayes said that Dunn gave the chapter members a "fresh outlook" on national security, backed by facts and figures. The luncheon also served to honor chapter Teacher of the Year Julia Weisser, a science teacher from New York City.

■ **RedTail Memorial (Fla.) Chapter** President Michael H. Emig presented AFA's 2008 national-level W. Randolph Lovelace Memorial Award in April to cadet Tyler F. Holley of Det. 150 at the University of Florida in Gainesville. It was the detachment's second consecutive win of the same award. Last year's winner was cadet Maureen A. Hartney. The award is named for Lovelace, a NASA director of space medicine in the 1960s and also the first Chairman of the Board of the Aerospace Education Foundation, AFA's former affiliate. (The two entities merged in 2006.)



At the latest Jubilee of Liberty Medal Ceremony sponsored by the Long Island Chapter, US Rep. Tim Bishop (D-N.Y.) chats with William Heagney (left). Heagney was among those presented with the medal, which honors veterans of the June 6, 1944 D-Day invasion at Normandy.

### AFA Conventions

Aug. 2	Massachusetts State Convention, Boston
Aug. 9	Georgia State Convention, Robins AFB, Ga.
Aug. 9	Pennsylvania State Convention, State College, Pa.
Aug. 12	Michigan State Convention, Mount Pleasant, Mich.
Sept. 13-14	AFA National Convention, Washington, D.C.
Sept. 14-17	AFA Air & Space Conference, Washington, D.C.



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## Reunions

[reunions@afa.org](http://reunions@afa.org)

**4th Emergency Rescue Sq (WWII).** Oct. 15-19 at the Guesthouse Inn & Suites in Nashville, TN. **Contact:** Robert Roy (615-459-4635).

**28th Wg Assn.** Sept. 4-8 in Rapid City, SD. **Contacts:** Al Leenknecht (605-348-7244) or 28th Wg Assn, P.O. Box 3092, Rapid City, SD 57709.

**29th FIS.** Sept. 23-25 in Fort Worth, TX. **Contact:** John Jobe (817-279-6283) (overpar@esagelink.com).

**38th BG (WWII), Pacific.** Oct. 1-5 in Dayton, OH. **Contact:** Jack DeTour (808-487-2842) (jackdet@hawaii.rr.com).

**49th FG Assn.** Aug. 27-31 in Seattle. **Contact:** George Smith, 3604 26th Pl. W, #202, Seattle, WA 98199 (206-283-1675) (gas98199@comcast.net).

**62nd and 87th FIS, K.I. Sawyer AFB, MI.** July 12. **Contact:** Lani Duquette, 193 Sunset Dr., Negaunee, MI 49866 (906-475-7179) (nolan359@charter.net).

**71st and 341st Air Refueling Sqs, SAC, Dow AFB, ME.** Aug. 27-31 in Bangor, ME. **Contact:** Ron Atwood, P.O. Box 7, Whitefield, ME 04353 (207-549-3327) (atwood9@verizon.net).

**75th Air Depot Wg, Kelly AFB, Korea, Japan,**

**Europe (1952-55).** Sept. 25-28 in Charleston, S.C. **Contact:** Walt Walko, 13616 Paradise Villas Grove, Colorado Springs, CO 80921 (719-488-1106) (wawlaw2@juno.com).

**81st TFS.** Sept. 26 at the Hilton Inn in Lewisville, TX. **Contact:** Kelso Jackson (425-392-3321) (kelsosr@gmail.com).

**86th FBG (WWII).** Sept. 4-6 at the Holiday Inn Downtown/Market Square in San Antonio. **Contact:** Sid Howard, 211 Brownstone Dr., La Habra, CA 90631-7397 (714-992-2504) (whisperingsid@sbcglobal.net).

**361st FG Assn.** Sept. 23-26 at the Holiday Inn in San Antonio. **Contact:** Bill Street, 1103 Henry Dr., Alabaster, AL 35007 (205-663-0326).

**366th Wg.** Sept. 11-15 in Boise, ID. **Contact:** John France (817-860-2780) (luv\_2\_fly@sbcglobal.net).

**384th BG.** Oct. 2-5 at the Holiday Inn in Fairborn, OH. **Contact:** Frank Alfter (937-306-2142) (falfter@woh.rr.com).

**491st BG (WWII).** Sept. 24-28 at the Crowne Plaza in McLean, VA. **Contact:** Harry Mellinger (719-634-4215).

**506th FW.** Oct. 15-19 in Dayton, OH. **Contact:**

Bill Henderson (405-359-8558) (airpirate5054@optonline.net).

**526th FS.** Oct. 17-19 in Nashville, TN. **Contact:** Wayne Rebeschke (763-682-2685) (waynerebeschke@gmail.com).

**623rd AC&W Assn, including 624th, 851st Sq, 529th Gp, 305th Fighter Control Sq, 313th Air Div, 51st FIW, 2152nd Comm Sq,** and anyone engaged in air defense of Okinawa. Sept. 10-14 in Colorado Springs, CO. **Contact:** Jim Simpson (719-599-7919) (alnor1@juno.com).

**AACS Alumni Assn.** Sept. 24-28 at the Stone Castle Hotel in Branson, MO. **Contact:** Gene Sheridan (816-373-3027) (afvetretired@comcast.net).

**AC-119** gunship. Sept. 11-14 in Branson, MO. **Contact:** Jerry McDonald (417-385-6403) (jmsshadowvet6869@aol.com).

**Hq TAC Engineering & Services,** military and civilian. Sept. 26-28 at the Marriott in Newport News, VA. **Contacts:** Dick Aldinger (407-859-7436) or Wayne Hudson (757-754-0805).

**JCAFB Navigator Tng Class 63-01,** student officers and aviation cadets. Oct 2-5 in Dayton, OH. **Contacts:** Jerry Witt, 6347 Pheasant Valley Rd., Dayton, OH 45424 (937-233-7076) (gawitt@woh.rr.com) or Ken McNair, 12037 210th Pl. SE, Issaquah, WA 98027 (425-226-5501) (ken-mcnair@msn.com).

**Pilot Tng Class 49-B.** Oct. 2-5 at Wright-Patterson AFB, OH. **Contacts:** Jack Stolly, 11323 Cotillion Dr., Dallas, TX 75228 (972-681-8290) (flyingjack@juno.com) or Bob Skoog (937-393-4792).

**Pilot Tng Class 56-B.** Nov. 7-9 at The Plaza in Las Vegas. **Contact:** Larry Phillips (262-784-1498) (swimymca@aol.com).

**Pilot Tng Class 62-A.** Oct. 2-4 at the Crockett Hotel in San Antonio. **Contact:** Mike Intille (214-821-9813) (mintille@swbell.net).

Seeking pilots and navigators from the **6100th Operations Sq,** Tachikawa AB, Japan (1961-66), for a reunion in San Antonio. **Contact:** Chuck Davies, 4435 Monaco Dr., San Antonio, TX 78218 (210-653-1475) (cpmfd@sbcglobal.net).

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



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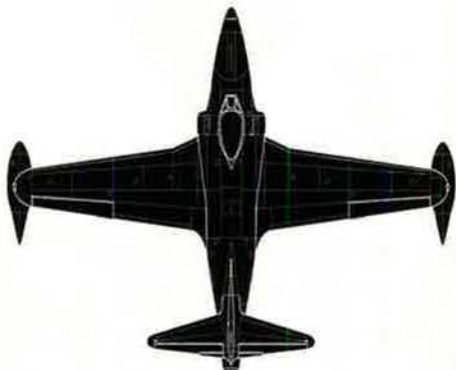
EMA



# Airpower Classics

Artwork by Zaur Eylanbekov

## F-80 Shooting Star



The Shooting Star was America's first operational jet fighter. Though it began life in World War II as the P-80, it was renamed the F-80 two years before the US went to war in Korea. It was the first product of the later-renowned Lockheed Skunk Works, headed up by Clarence L. "Kelly" Johnson. Johnson's team needed just 139 days to design and build the first jet aircraft, which went on to propel dozens of pilots into careers as top Air Force leaders.

Plagued initially by a high accident rate, the F-80 became a workhorse aircraft, both in aerial combat and air-to-ground operations. The Shooting Star was the first Air Force aircraft to exceed 500 mph in level flight, first US jet airplane to be manufactured in large quantities, and the first Air Force jet aircraft to

be used in combat. The Army Air Forces conceived it as a high-altitude, air superiority fighter to defeat German Me-262 adversaries, but the fighter did not see action until Korea.

In the Korean War, it made history in the close support role, armed with rockets, bombs, napalm, and machine guns. USAF's F-80C pilots flew more than 15,000 sorties in the first four months of the war. On Nov. 8, 1950, 1st Lt. Russell J. Brown, flying an F-80C, shot down a MiG-15 in the world's first jet vs. jet fighter combat (some Soviet sources dispute this claim). Though the F-80 was soon replaced by the swept-wing F-86 Sabre, the F-80 continued with ground attack, air defense, and photoreconnaissance. It had helped usher in the "jet age."

—Walter J. Boyne

This aircraft: F-80B-5-LO—#45-8568—as it looked in late 1947 when assigned to USAF's 94th Fighter Squadron.



### In Brief

Designed, built by Lockheed ★ first flight Jan. 8, 1944 ★ crew of one ★ number built 1,731 ★ **Specific to F-80C:** one Allison J33 turbojet engine ★ armament six .50-cal guns and either two 1,000-lb bombs or 10 5-in rockets ★ max speed 580 mph ★ cruise speed 437 mph ★ max range 1,380 mi ★ weight (loaded) 16,856 lb ★ span 39 ft 11 in ★ length 34 ft 6 in ★ height 11 ft 4 in.

### Famous Fliers

**Medal of Honor:** Richard I. Bong (killed in crash of August 1945 acceptance flight); Charles J. Loring Jr. **Notable:** Fred Borsodi, Frederick C. Blesse, Albert Boyd, Vermont Garrison, Mervin E. Gross, Donald Hillman, Bruce K. Holloway, Robin Olds, Bryce Poe II, David C. Schilling, Russell E. Schlee, Charles E. Yeager.

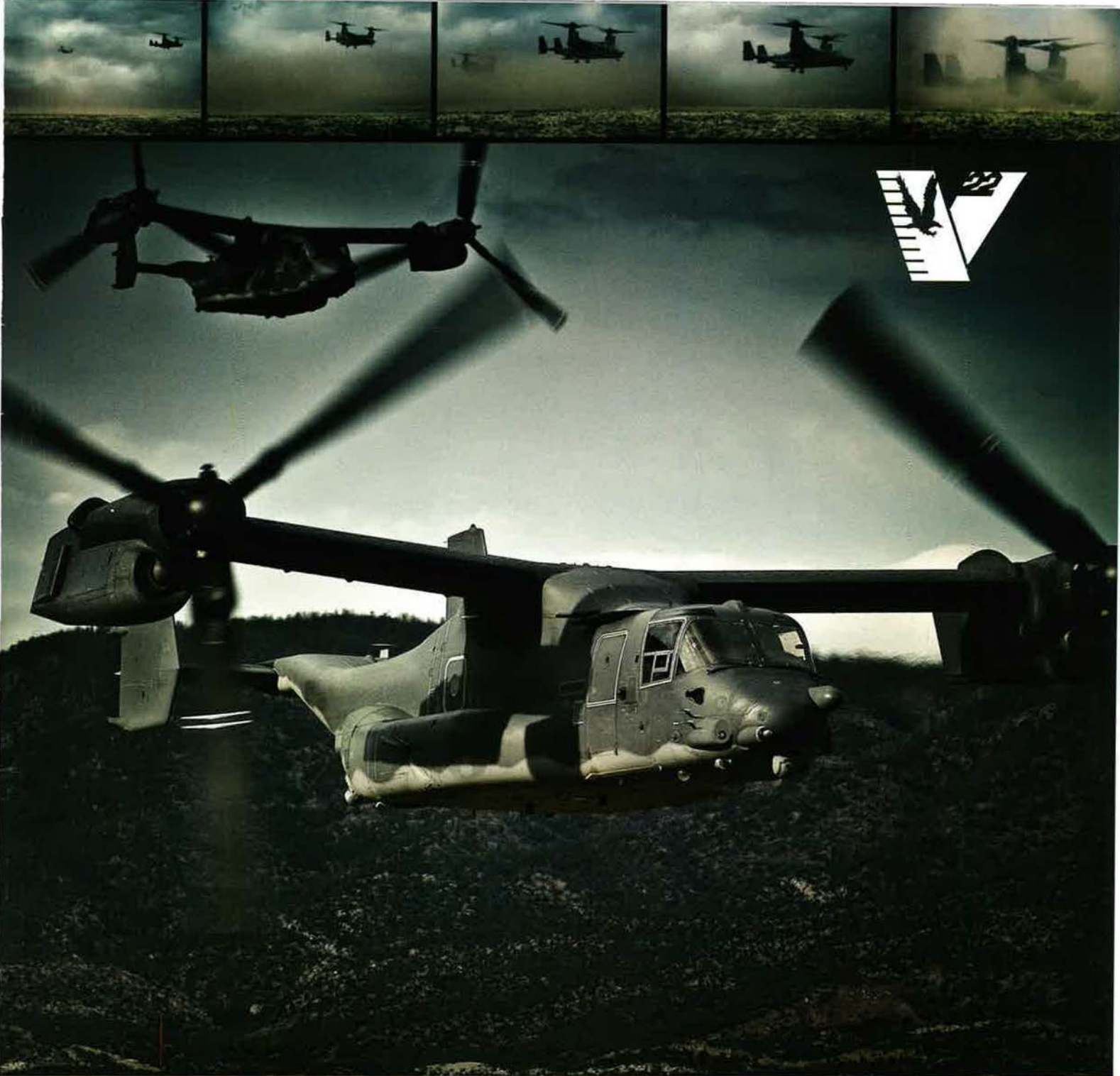
### Interesting Facts

Flown by the Acrojets, first USAF jet aerobatic team ★ made first overflight of Soviet Union May 10, 1949 ★ 277 F-80Cs shot down or otherwise lost in Korean War ★ operated by Navy as well as USAF ★ flown by air forces of Brazil, Chile, Colombia, Ecuador, Peru, Uruguay, Yugoslavia ★ served as basis for later F-94 interceptor and T-33 trainer ★ called (as prototype) *Lulu Belle* and *Green Hornet*.



Shooting Stars in rocket-assisted takeoff.





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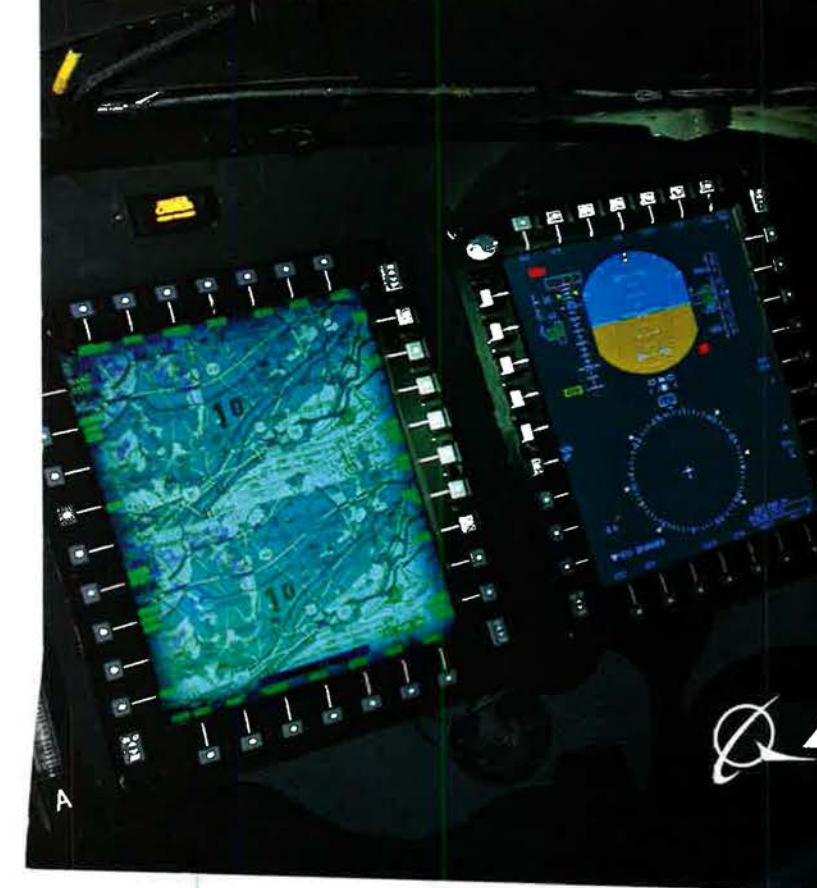
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