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AIR FORCE

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MAGAZINE

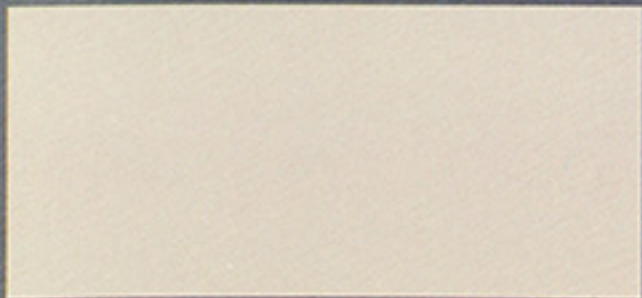


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About the cover: Vintage warbirds fly with USAF's current fighter aircraft. See "Heritage Flight," p. 40. Photo by Erik Hildebrandt.



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By John T. Correll, Editor in Chief

The Doctrine of Intervention

WHEN the NATO nations took action in Yugoslavia last year, they did more than set Slobodan Milosevic back on his heels. They intervened in the affairs of a sovereign nation on behalf of an ethnic minority.

The point here is not whether NATO was justified but rather that it set a precedent. It broke with the tradition of national sovereignty that had prevailed since 1648, when the Treaty of Westphalia ended the Thirty Years War in Europe.

National sovereignty was further codified at the founding of the United Nations in 1945. Three of the seven principles in its charter were about sovereignty. The UN and its member states would not interfere in the internal affairs of any nation.

Since Kosovo, a different concept has been gathering momentum.

Speaking to NATO troops at Skopje, Macedonia, last June, President Clinton said that "whether you live in Africa, or Central Europe, or any other place, if somebody comes after innocent civilians and tries to kill them en masse because of their race, their ethnic background, or their religion, and it's within our power to stop it, we will stop it."

In September, UN Secretary-General Kofi Annan declared a "new commitment to intervention." He told the General Assembly that "if states bent on criminal behavior know that frontiers are not the absolute defense, if they know that the Security Council will take action to halt crimes against humanity, then they will not embark on such a course of action in expectation of sovereign impunity."

This Doctrine of Intervention establishes a whole new category of righteous wars, but some wars are more righteous than others.

The world disapproved of the Russian slaughter in Chechnya but decided, in a practical flashback to the Westphalian model, that Russia was too dangerous to challenge.

In early December, Russian Prime Minister Vladimir Putin warned the world against "interfering into affairs of independent states," and Presi-

cent Boris Yeltsin reminded us that Russia has nuclear weapons.

In similar fashion, China said that national sovereignty and noninterference are "the basic principles governing international relations." It remains to be seen whether the world will help Taiwan if China attacks.

The Doctrine of Intervention reached its present position mainly

We are walking more or less in step with Kofi Annan down a perilous path.

on the wings of moral justice. That is a notoriously subjective standard. Depending on how it is interpreted and applied, the dividing line between "just intervention" and aggression can be uncomfortably thin.

In 1938, Hitler used the grievances of ethnic Germans to justify his seizure of the Sudetenland from Czechoslovakia. The Russians claim to see a parallel between Chechnya and Kosovo.

Even those who support the concept of just intervention disagree on how to define it. Kofi Annan complains, for example, that "in Kosovo, a group of states intervened without seeking authority from the United Nations Security Council."

Had the proposed action against Yugoslavia come before the Security Council, it would have been vetoed by Russia and probably by China.

The chief prosecutor of the UN war crimes tribunal disclosed in December that she was evaluating evidence compiled by her staff that NATO commanders and pilots may have violated international law in conducting airstrikes against Yugoslavia. Press reports of the investigation led to its sudden termination.

Civil war is a major fact of life around the world. According to the US Institute of Peace, about 95 ethnic groups are involved in some sort of violent conflict. The current total of refugees is 21.5 million. Indonesia's violent suppression of East Timor last August made headlines, but most of us have never heard of conflicts like the one in Sri Lanka that has claimed 60,000 lives so far. Intervention in more than a fraction of these struggles is not possible. In a culture that supposes there is a solution to every problem, this is a difficult proposition to accept.

For good reason, the United States resists the role of global policeman. Nevertheless, when the international community acts—or when it doesn't—a special responsibility seems to accrue. In December, a UN report faulted the UN in general and the US in particular for not stopping the genocide in Rwanda in 1994.

We are walking more or less in step with Kofi Annan down a perilous path. By the very nature of it, interventionism raises the probability that we will be engaged in armed conflict. At the same time, it stimulates changes in the global balance of power. It has, for example, pulled Russia and China closer together.

For some advocates, though, the declared Doctrine of Intervention does not go far enough. Bernard Kouchner, the UN governor of Kosovo (and a founder of Doctors Without Borders) said in October that "now it is necessary to take the further step of using the right to intervention as a preventive measure to stop wars before they start and to stop murderers before they kill."

There will come times when intervention is inevitable, but we should curb our enthusiasm for making it a wholesale practice.

It behooves us to be careful, and to pick our interventions on the basis of where our national interests lie. It would also be a mistake to shed the last vestiges of the Westphalian model unless we have a solid replacement in hand. ■

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Drawn and Quartered

I absolutely agree with John T. Correll's analysis in his editorial "Lessons Drawn and Quartered" [*December, p. 2*]. US Army supporters feel it imperative to play down the role of airpower and the results in Operation Allied Force. The real reason the Army supporters want to defuse the effectiveness of airpower over Kosovo and Serbia is to avoid a reprioritization of Army manpower over to USAF and the US Navy in a future review.

Growing the US military is most likely not an option with the election right around the corner, but a redistribution of DoD manpower is feasible. The high operational tempo for USAF and USN must be reduced to maintain readiness. A lot of people are suggesting that a redistribution of DoD manpower from the Army to USAF and Navy would really help. Let's face it: Airpower has become the force of choice around the globe.

Col. Jim Havard,
USAF (Ret.)
Puyallup, Wash.

About Those C-5 Engines

I have been reading and hearing a lot about re-engining the C-5 lately. [See "Airlift Reality Check," *December, p. 30*.] Somewhere in this process we have lost sight of the real issue that needs to be addressed. The aircraft has been a workhorse for getting our services' outsize and oversize cargo moved around the globe for the last 30 years. It has been doing this with a 41,000 pound thrust engine that doesn't get asked to deliver more than 35,000 pounds of thrust very often, because the airplane normally cubes out before it grosses out. Even at that, the wings have had to be beefed up twice.

Once, under my watch at Travis [AFB, Calif.], the current engine cut loose from a pylon and went flying down the runway all by itself.

What I'm hearing out there is that there are a few folks who are ignoring the real problem of reliability and Mission Capable rate deterioration in favor of hanging 60,000 pound thrust engines on the old bird.

We've always known it took a strong aircraft commander to get the Galaxy through the channel mission because of the many things that could slow it down. We are going to have the opportunity to tackle some of the reliability issues with the C-5 modernization program, but we may create as many problems as we solve if we try to overdo the thrust portion. I understand that areas at risk are the fuselage, horizontal tail, and flaps, just to mention a few.

I really hope our acquisition guys don't get led down the primrose path with the lure of excess thrust. I guess the bottom line is that there's a proven 43,000 pound thrust engine available for this program that gives a significant performance increase of over 10 percent more thrust for those few hot days and few percent of heavy loads that we can get for 60 percent of the cost of a 60,000 pound thrust engine. It makes a lot of sense to consider that option so the rest of the money can be used to fix more systems and get the MC rate closer to the level that we had when the bird first came into the Air Force.

Let's leave all that excess thrust and weight on the ramp and fly with an engine suited to the original design of the airplane, so we don't create more problems than we solve.

Maj. Gen. Ralph Saunders,
USAF (Ret.)
San Antonio

Fine Print on the F-22 Deal

While I'm not a fan of Rep. Jerry Lewis (R-Calif.), I agree with his hinging of

F-22 production directly to successful flight of an F-22 incorporating sophisticated Block 3.0 avionics software. [See "Fine Print on the F-22 Deal," *December, p. 11*.]

As a 33-year avionics maintenance manager and technician on numerous USAF aircraft, I can assure you that effort and money spent on an avionics suite prior to aircraft production makes the difference in combat capability and maintainability. Look at all the iterations, modifications, updates, and technical orders that were necessary for the F-16. This aircraft was prematurely rushed into production from a prototype technology demonstrator before the avionics suite had been completely defined, much less debugged. Besides, the YF-22 first flew in [September 1990] and had been on the books for years prior. That's more than enough time to solidify hardware and software, even in times of rapidly evolving technology. Supercruise is one thing; fighter weapons-control system capability and reliability is a critical thing!

SMSGt. Rob Lentini,
Arizona Air National Guard
Tucson, Ariz.

Was It First?

Your December issue reported that the successful hit of an ICBM-representative Re-entry Vehicle by a National Missile Defense interceptor on Oct. 2, 1999, "marked the first demonstration of hit-to-kill technology at the speed and range of an ICBM." [See "Aerospace World: DoD Chalks Up First Successful NMD Test," *p. 15*.]

Actually, the Army has demonstrated direct-impact-kill of ICBM-class RVs on two previous experiments. The first impact-kill of an ICBM RV was achieved on June 10, 1984, when an Army-developed Homing Overlay Experiment interceptor, launched from Kwajalein Missile Range, impacted and destroyed a threat-representative RV launched from Vandenberg AFB [Calif.] on a Minuteman ICBM. The hit-to-kill feat was repeated by the Army on Jan. 28, 1991, when its KMR-launched exo-atmospheric RV interceptor subsystem

Do you have a comment about a current article in the magazine? Write to "Letters," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. (E-mail: letters@afa.org.) Letters should be concise and timely. We cannot acknowledge receipt of letters. We reserve the right to condense letters. Letters without name and city/base and state are not acceptable. Photographs cannot be used or returned.—THE EDITORS

(a more tactically sized configuration) impacted and destroyed a Minuteman-boosted RV from Vandenberg in a countermeasures environment. These successes resulted from years of research and development following the Army's pioneering ICBM intercept on July 17, 1962, when a KMR-launched, radar-guided Nike Zeus interceptor closed to within the lethal radius of its warhead capability against an Atlas-boosted RV, also launched from Vandenberg.

ICBM hit-to-kill technology, although still challenging in the strategic environment, has been in hand since first demonstrated by the HOE. Those dedicated government and civilian personnel who worked so long and hard to achieve this critical capability deserve to have the historical record set straight to acknowledge their accomplishments.

Joe L. Thurman
Huntsville, Ala.

■ *Thanks for the information. The Pentagon press release was misleading.*—THE EDITORS

About Warrior Week

This old soldier applauds the Air Force's Warrior Week initiative. [See "Warrior Week," December, p. 52.] The photo of a flight apparently performing a tactical halt on a dirt road compels this letter. I realize that photos should not be taken out of context and that this could be posed to cram all members of the flight into the photo.

It is a human tendency to bunch up under stress. Perhaps the most unnatural act that must be taught to those who may come under fire is to disperse. However, dispersion must be taught, and it must be instilled in trainees from first to last, until it overcomes the herding instinct. A bad guy overwatching that formation could not resist such a lucrative target.

Lt. Col. Mike Finn,
Texas Army National Guard
Belton, Texas

I applaud the work Gen. [Lloyd W. "Fig"] Newton is doing to teach basic infantry skills to airmen. I think it is necessary and timely. I would just caution that a little knowledge is a dangerous thing.

The picture on p. 57 shows a section-sized element kneeling along either side of an unpaved road. It is totally unclear what they are doing. If this is a security halt, they need to get weapons, spread out, take cover, have sentries posted, including rear security (people looking toward the rear instead of the camera). My point is this: If you teach people bad habits, inflate their ideas of proficiency, or fail

to follow up on the initial training, you will [develop] faulty reaction patterns that will kill them in time of stress.

Perhaps there should be a joint training exercise procedure prior to service selection that everyone goes through that would standardize the procedures of field operations. This would make sure that everyone would have the minimum skills necessary to survive in the field.

Gregg Nakano
The Fletcher School of Law and
Diplomacy, Tufts University
Medford, Mass.

I was a little surprised that Bruce Callander didn't point out that the Air Force is once again reinventing the wheel. While exposing basic trainees to field conditions is an excellent idea, it's not a new concept for the Air Force. In the early and mid-1950s the basic training curriculum included three days of small arms training and five days in the field.

Those of us who went through Sampson AFB [N.Y.] did have one advantage over today's trainees at Lackland [AFB, Texas]. When you're sleeping in a pup tent in the rain and mud of an early spring in upstate New York, you don't really notice the absence of artificial air conditioning.

CMSgt. George Reeve,
USAF (Ret.)
Fair Oaks, Calif.

More Lessons and the New World

Capt. Gregory D. Bova's letter [December, p. 5], in reaction to mine, seems based upon his personal prejudices rather than an objective analysis. Although initially resentful, I felt complimented after reading December's "New World Coming" [p. 59] [since it] cited numerous incidents which seemed to agree with points I had made.

For example, the Hart-Rudman Commission stated as one of its conclusions that "the emerging security environment ... will require different military and other national capabilities." Moreover, it adds, "In some ways, next-century conflict will fulfill the predictions of science fiction fantasists." Or Hollywood screenplays?

The commission further noted future forces will be required "that are stealthy, fast, accurate, lethal, mobile, and smart ... with a portion of our weapons being placed in space." This certainly will necessitate an extensive downgrading in size of present Naval and Army forces. Most particularly, it will preclude any utilization of large, slow weaponry systems, such as aircraft carriers, heavy tanks, etc. Bova also made some naive state-

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ments, such as "our military forces are already dangerously small" and "cutting our military further is suicidal." This is based upon old Navy and Army Cold War thinking.

We spend 10 times as much on defense as any other nation and are so far advanced and superior in both technology and militarily that our only real threats are from potential terrorists and small rogue nations. We most certainly don't need 14 huge, immensely costly aircraft carriers to contain or to deter these threats. One of our biggest military problems is caused by Congress wasting our military budgets on pork.

No one, however, seems willing to state the obvious for our nation's future defense strategy. That is that the Navy and Army must be relegated to a secondary status with the Air Force assuming the primary command role.

Lt. Col. Louis J. Kaposta,
USAF (Ret.)
Southlake, Texas

On the Rise of Air Defense

Thank you for the article "The Rise of Air Defense" [December, p. 72]. It was most interesting but needs a bit of correction and to be placed in context of what followed Air Defense Command.

First, the F-104 was not retired in 1960. The F-104 was still standing alert with the 331st Fighter-Interceptor Squadron, Webb AFB, Texas, through 1966 and into the following year under the 683rd Aircraft Control and Warning Squadron, Sweetwater, Texas. The F-104 had a tactics package not taught in any formal school due to its unique flight dynamics, which also made it highly dependent on the weapons controller. Both the 331st and 683rd were unique in that they were part of the Okalahoma City Air Defense Sector, which was the last manual air defense sector during the SAGE heyday.

In the mid-1960s, ADC weapons controllers took their skills, particularly manual techniques of controlling interceptors rather than relying on automated information, to Southeast Asia and adapted them to offensive air operations. Precision air intercept tactics were adapted to controlling pre- and poststrike air refueling, which involved reverse air mass positioning to turn the tankers (target) to roll out in front of low fuel, battle damaged fighters so they could avoid any unnecessary maneuvering.

Additionally these controlling skills were used by weapons controllers at Da Nang and Dong Ha [South Viet-

nam] to control Tiny Tim Arc Light [combat air patrols], precise, closely timed operations coordinating B-52s, F-102s, and F-105 Wild Weasel operations near the DMZ.

It was all command and control but we didn't call it that. Today, the ADC weapons controllers (now referred to as air battle managers) of the 1960s are retired, but many are carrying their skills and experiences forward as contractors, helping their active duty successors.

Lt. Col. Lou Walter,
USAF (Ret.)
Hampton, Va.

I enjoyed the article, [but] there is one inaccuracy. The White Alice communication system was a point-to-point communication system to establish reliable communications between radar sites and NORAD, not to link airborne warning and control aircraft with the DEW line. [High Frequency] was the primary method of communications from AEW aircraft.

I was stationed at a NORAD surveillance station at Cape Romanzof, Alaska, in 1981. During my stay I did a little research on the abandoned White Alice station located at the site. The system went active at this site in February 1958, replacing unreliable HF communications. In 1962 direct-dial telephone capability was added to the system—[this] was the only way of relaying radar information to NORAD. In 1965 the semiautomatic track data inserter at the site provided crude computer plotting of tracks at the Alaskan NORAD headquarters. Data on tracks were manually inserted and updated by radar surveillance technicians and [were] relayed by teletype through the White Alice and later the SATCOM system. In the early 1980s these surveillance sites became automated and new radars installed under the Seek Igloo program. Raw radar data are sent directly to NORAD, now.

Maj. Eric Fenstermaker,
USAF (Ret.)
Edmond, Okla.

You have a nice picture [p. 72-73] of a couple of F-4 Phantoms escorting, at that time, a Soviet Bear bomber. In the caption you state that the aircraft is a Bear-H on a reconnaissance mission. The Bear in the photo isn't a Bear-H; it is a late-model Bear-F, which is an anti-submarine warfare aircraft. You will notice that there is a magnetic anomaly detector boom extending from the tip of the vertical stabilizer, the key identification fea-

ture for the Bear-F. These Bear routinely flew long-range patrol missions to see if they could detect our ballistic missile submarines and then try to track them. Great photo nonetheless!

TSgt. Phillip Kiphuth,
Joint Imagery Analysis Course
Goodfellow AFB, Texas

■ *We misread our own photo file caption. Thanks.*—THE EDITORS

Tricare: What's Real?

In the December issue, Marie Martin of Austin, Texas, commented: "I understand Dallas County is void of providers for Tricare." [See "Letters: Real World 2," p. 5.]

While I am aware of Tricare's problems and horror stories and strongly believe improvements are necessary, I am happy to report Dallas County has plenty of providers that will accept Tricare. My wife and I reside in Hunt County (65 miles northeast of Dallas). She recently was extensively treated for breast cancer. All her providers, even those here in Commerce, Texas (a board-certified family practitioner who also happens to be an Air Force reservist), accepted Tricare. This includes her Dallas surgeon, radiation radiologist, her chemo physician, and, of course, Baylor Hospital. All did an outstanding job.

Further, I am able to report, the multitude of bills has flowed through the Tricare folks and our supplemental [The Retired Officers Association] (Mediplus) agents with no serious problems. We are most grateful. (I used to be a health care advisor.)

Capt. John F. Biggerstaff,
USAF, MSC (Ret.)
Commerce, Texas

[On the letter] submitted by John Triantafyllou, Ogden, Utah: Bravo! This makes absolute sense, and I think [it] is the answer to the Tricare problems. Why do the providers and retirees suffer for problems of the contractors? The contractors want the business and the money they make, so it only makes sense that they are responsible to the providers and the retirees [for providing] a decent plan that works for all concerned.

They must pay the providers in 30 days, with no arguments, and they must identify providers for all retirees in all areas. If not, get out of the business and let someone in who can and will do the job. We ask no less of anyone we do business with in our daily lives, so why are we forced to accept a policy that does not work for all? The DoD hierarchy has bought



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into a medical plan that does not work, needs to be fixed, and this would be a good start in taking care of some of the problems.

CMSgt. Gerald J. Grovhoug,
USAF (Ret.)
Mountain Home, Ark.

Recon on the Wing, Part 2

I am writing in response to the letter by [ANG] Brig. Gen. [Arthur] Cornelius, regarding the RF-100A, in the December issue ["Letters: Reconnaissance on the Wing," p. 6]. The four remaining RF-100As did not actually continue to serve until Jan. 5, 1961. They had been placed in storage for a short period before they were transferred to Taiwan. Three of them arrived in Taiwan on Jan. 1, 1959, while the fourth, 53-1546, did not arrive until March 18, due to mechanical problems in transit. They were assigned to the No. 4 Squadron of the Republic of China Air Force at Taoyuan AB. However, due to their low Mission Capable rates and the poor quality of the photographs they took, these No. 4 Squadron RF-100A had never flown any operational mission. They were officially withdrawn from RoCAF service on Dec. 1, 1960.

Wei-Bin Chang
Cholan, Miaoli
Taiwan

In the December issue, a letter [p. 6] from R.J. Pejsar is an affront to the dedicated professional and heroic airmen who fly the unheralded, always secret, missions in the reconnaissance world. He obviously doesn't know what the real recon game is all about.

Total reconnaissance is an integrated mission which requires a variety of platforms and associated sensors, used to gather information which will be reduced and evaluated to produce usable intelligence.

The SR-71 was designed for one purpose only, high and fast, with the capability of gathering photo, radar, and Elint data of an extremely large strategic area quickly. Due to its speed and fuel consumption, it had little loiter time without tanker support. The U-2 was a high flier with integrated sensor capability and a ground link which could provide timely tactical and strategic information. It was not meant to be fast but had loiter time. Both the U-2 and SR-71 routinely flew over [North Vietnam] in daylight and dark hours. Hundreds of sorties were flown over Hanoi, as well as Laos, Cambodia, and other areas farther south.

I am particularly disturbed that Pejsar attempts to equate the loss of life in one aircraft with the loss of life in any other. The gallant airmen who

do battle with the enemy, whether high and fast, high and slow, or low, slow, and trolling, all have guts.

I was also a member of the "Fightin' 55th" (55th Strategic Reconnaissance Wing) and was a crew member on both the RB-47 and RC-135 aircraft. [Pejsar states] that the 55th went in harm's way. But then [he] states that "it was nothing like an RF-4 night mission, alone, over Hanoi, subsonic, on a long, straight-line run, wings level, low altitude," etc.

How about a night mission alone in the Barents, low, slow, and trolling, wings level, subsonic on a long, straight-line run, and two armed MiGs on your butt? By the way, the Soviets knew exactly where you were and where you were going. Just as an added attraction, the water temperature was about 50 degrees and air-sea rescue response time was about 10 hours.

During the meat of the Cold War the RB-47, SR-71, U-2, and RC-135 were flying mission after mission around the periphery of the Soviet and Sino-Soviet countries, as well as Vietnam (Combat Apple). You might guess that there were some casualties, and there were.

By the way, I have the greatest admiration for any professional flier, no matter what his lot in life may be. We're all members of the same band and as such should march to the same drummer.

Maj. George V. Back,
USAF (Ret.)
Cleveland

Corrections

In the January issue, the "Aerospace World" item titled "A Marine Takes the Helm at Air and Space" [p. 17] implies that helicopters are not aircraft. Not so. Thanks to retired Maj. Hoyt B. Hurt, Lake Park, Ga., for catching the faux pas.

Also in the January issue, a news note [p. 20] in "Aerospace World" incorrectly has USAF selecting master sergeants for promotion to chief master sergeant. Thanks to CMSgt. William M. Poe, Niceville, Fla., and Tex Houston, Colorado Springs, Colo., for pointing out that error.

Again in January, in "Air Force Medics in Peace and War" [p. 68], "venerable four-engine C-47 Skytrains" really only have two engines. Thanks to George A. Holmack, El Paso, Texas, retired Col. Frederic A. Stone, Henderson Harbor, N.Y., and Tex Houston for spotting this goof.

The Chart Page

By Tamar A. Mehuron, Associate Editor

Defense Shortfalls in the Out-years

The steady decline in post-Cold War defense budgets is projected to continue through 2004. Fig. 1 shows that the outlays for defense programs will register a decline of 9 percent in Fiscal 1994–2004.

By contrast, the other two broad federal budget categories, mandatory programs (Social Security, Medicare, Medicaid, and other entitlement programs) and discretionary programs, continue to increase throughout this same period, by 32 percent and 7 percent, respectively.

Fig. 1, The Drop in Outlays, Fiscal 1994–2004

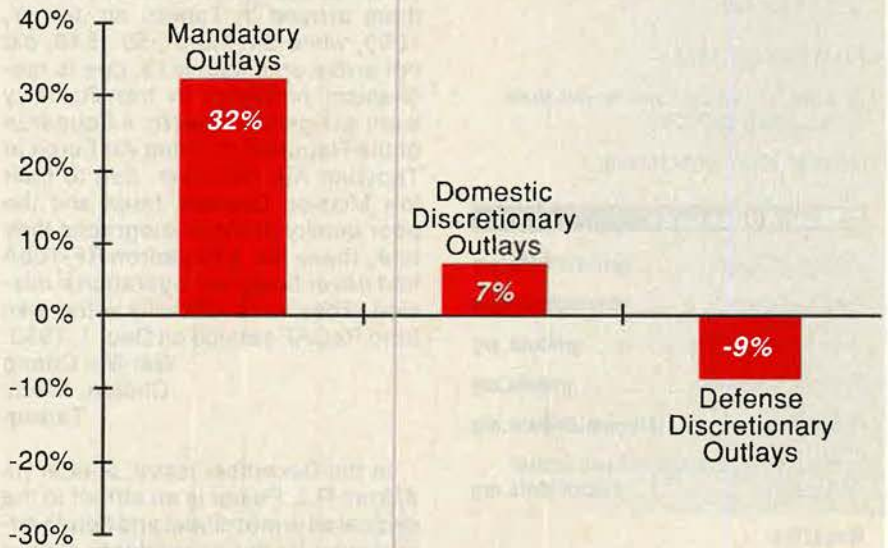
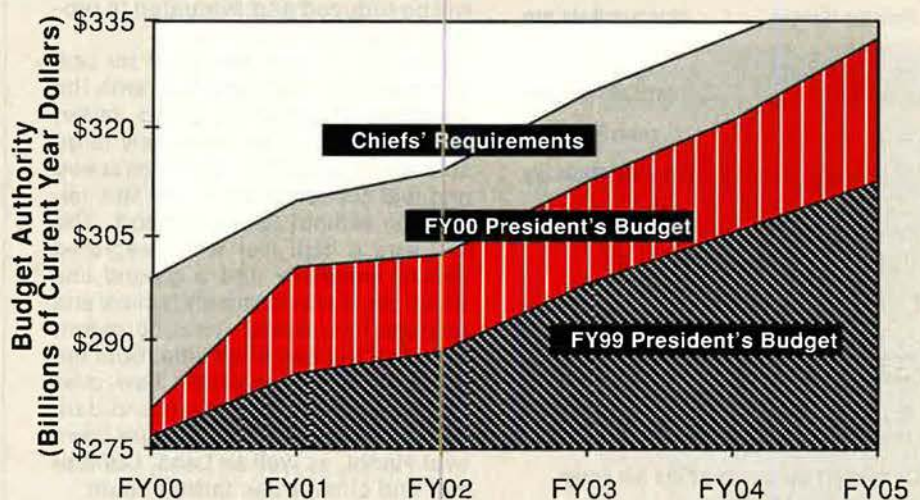


Fig. 2, The Requirements Gap Continues

Fig. 2 shows the continuing chasm between what the service chiefs say they need to meet their requirements and what the President's budget provides. For Fiscal 2000, the gap in requirements funding reaches a high of nearly \$18 billion in budget authority. None of the subsequent budgets overcome the shortfall. In Fiscal 2005, the gap is slightly more than \$8 billion. The cumulative amount of shortfalls from Fiscal 2000 through Fiscal 2005 is nearly \$70 billion.



Source: Rep. Floyd D. Spence (R-S.C.), chairman, HASC, "Defense Accomplishments of the 104th, 105th, and 106th Congresses," November 1999.



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Aerospace World

By Peter Grier

Pentagon Releases F-22 Funds

The Department of Defense released \$1.2 billion for the F-22 program Dec. 10, following an internal review of the program's status led by DoD acquisition chief Jacques S. Gansler.

The money will allow the Air Force to buy six more F-22 airframes, currently designated as production representative test vehicles, at a cost of \$805 million. Air Force officials will also be able to plunk down \$275 million for long-lead items for a follow-on batch of 10 more aircraft.

The bottom line of the action is that the efforts by some in Congress to eliminate or alter the F-22 program have come to naught, for the moment. The program must meet a number of demanding criteria if it is to continue on track for next year, however.

Delivery of the production representative test vehicles is scheduled to continue through 2002. The follow-on aircraft, the first F-22s designated as production airframes, are scheduled to begin rolling off the assembly line in early 2003.

Fighting Forces Ready, Says Cohen

US forces that would be first sent to a conflict are indeed ready to fight, said Secretary of Defense William S. Cohen in late November.

Low readiness ratings for two Army divisions—the 1st Infantry and the 10th Mountain—reflected the fact that some of their units were deployed in Bosnia and Kosovo, said Cohen. Commanding officers were worried that these elements would not be able to disengage from their Balkans

duties and move to another trouble spot, as needed to meet war requirements.

"All our forward deployed forces still are in a very high state of readiness, the highest, because they are the ones who may be called upon to go into battle," Cohen told the American Forces Press Service.

The Army is changing its reporting procedures to take dual-mission units into account, said officials. The Defense Department is also drawing up plans to compress the time it takes to retrain and redeploy units.

Balkans commitments have worn on the Air Force, as well. Air Force units will not have fully recovered from the exertions of Operation Allied Force for almost a year or even longer.

Last October Gen. John P. Jumper,

UN Tribunal Drops Investigation of NATO for War Crimes

The staff of the UN war crimes tribunal spent four months studying whether NATO commanders and pilots violated international law in their conduct of air operations against Yugoslavia last year.

The investigation and its preliminary report came to light Dec. 26 after the chief war crimes prosecutor, Carla Del Ponte of Switzerland, told a British newspaper that she was evaluating the report and was prepared to seek indictments if the evidence was incriminating.

A tribunal spokesman, Paul Riskey, told *The New York Times* that "it is very important for this tribunal to assert its authority over any and all parties to the armed conflict within the former Yugoslavia."

The *Times* described the report as "a legal analysis of the basis for bringing charges of war crimes for NATO activities like the bombing of civilian power stations and bridges, which NATO said had military uses." The allegations also cite instances when civilians were killed or injured.

On Dec. 29, the White House denounced the investigation, saying that NATO had taken "extraordinary efforts to minimize collateral damage" and that "any inquiry into the conduct of its pilots would be completely unjustified."

On Dec. 30, Del Ponte backed away from her earlier readiness to seek indictments and issued a statement saying that "NATO is not under investigation" and that "there is no formal inquiry into the actions of NATO."

Officials at tribunal headquarters at The Hague in the Netherlands sought to minimize the importance of the report. According to Riskey, it will be filed for historians if Del Ponte does not press charges.

Michael Mandel, a law professor at York University in Toronto, said that in November, he and his colleagues gave

Del Ponte "three thick volumes of evidence" against NATO leaders, who he said "are as guilty" of war crimes as Serbian leader Slobodan Milosevic is.

The Pentagon said the prosecutor's office had not sought any information from the Department of Defense in preparing its report.

The tribunal staff began its inquiry in August at the direction of the former chief prosecutor, Louise Arbour, who is an appeals court judge in Ontario and was formerly a law professor at York University. The staff has received accusations against NATO from the Serbs, Western journalists and academicians, and members of the Russian Duma.

The war crimes tribunal was set up in 1993 by the UN Security Council. Its charter is to bring charges against individuals, not governments. There is considerable enthusiasm in the international community for establishing more such bodies, but the Arbour-Del Ponte affair will probably intensify resistance in the United States.

Ninety-two nations have already signed a treaty to create a UN International Criminal Court modeled on the war crimes tribunal. Even though the United States has not signed this treaty, US citizens would be subject to arrest and trial. Of special concern is the possibility of politically motivated prosecution of members of the armed forces stationed abroad.

In an action filed formally with yet another UN organization, the International Court of Justice, Yugoslavia on Jan. 4 accused the NATO nations of interfering with its internal affairs and violating its national sovereignty. The United States does not recognize the jurisdiction of this court. The other NATO nations have until June to respond to Yugoslavia's suit.

—John T. Correll

commander of US Air Forces in Europe, told a House Armed Services subcommittee, "The Air Force is expected to return to full strength again by March 1, 2000, barring any new contingencies."

Then, in late December, Gen. (sel.) Gregory S. Martin, who replaced Jumper at USAFE last month, told *Defense Week*, "We're another six months away from seeing the majority of the force begin to see a climb [in mission capable rates]."

Martin agreed that at that rate the Air Force will not return to its pre-Kosovo readiness levels until fall 2000. Thus, it will have taken the service 16 months to retrain and replenish stocks following a conflict that was just over two months long.

NATO Details Kosovo Progress

Though instances of ethnic violence are still occurring in Kosovo, NATO says significant reconstruction progress has been made in the nominally Serbian province since the end of Operation Allied Force in June.

The presence of allied troops is what has made progress possible, said German Lt. Gen. Klaus Reinhardt, commander of the Kosovo peacekeeping operation, at a NATO defense ministers meeting in Brussels, Belgium, on Dec. 2. The Kosovo force is now made up of almost 50,000 personnel, from 24 different countries.

NATO's winterization project—which aims at enabling all Kosovar families to heat at least one room of their homes—is 70 percent complete, said Reinhardt. In addition, more than 810,000 refugees had returned to the province as of early December. At the height of Serb forces' cleansing campaign against ethnic Albanians in Kosovo, some 1.4 million people had fled or were hiding in the hills.

NATO troops have removed mines and unexploded ordnance from 544 schools. Ordnance teams had cleared 7,400 bomblets, 6,130 anti-personnel mines, and 3,400 anti-tank mines by last November.

Revenge attacks against Serbian Kosovars continue. But the situation is much improved, claimed Reinhardt. When NATO moved in last summer the murder rate in Kosovo was an estimated 190 per 100,000 people. Today the rate is 25 per 100,000, Reinhardt said.

Tensions Persist in Balkans, SACEUR Says

Kosovo may be quieter, but tensions persist in other parts of the Balkans, US Army Gen. Wesley K.

Honk if You Hate Tricare

Long waiting lines. Few doctors. Slow pay. Oceans of red tape.

Everybody, it seems, has a complaint about Tricare, the Defense Department's embattled managed care health system. In the Dec. 20 *Washington Times*, one could find these comments:

Sen. Trent Lott (R-Miss.), majority leader, in a December letter to President Clinton:

"The military medical and dental care system still does not provide benefits to all that have earned them and is possibly the single most important item affecting the quality of life of our service members, their families, and our retirees. ... Today, there are the same number of potential beneficiaries, some 8 million, as when we began the downsizing almost 10 years ago. But the resources allocated to military health care have decreased dramatically. We can no longer squeeze blood from this stone. Our servicemen and -women, their families, and our retirees deserve better."

Col. Chuck Partridge, USA (Ret.), legislative counsel for the National Association for Uniformed Services:

"The government has broken its promise. As an officer, I used to talk the troops into staying beyond their two-year commitment. 'You have this great health care program you never lose.' I figured I was telling the truth and I wasn't."

Capt. Stephen Pietropaoli, spokesman for Army Gen. Henry H. Shelton, Chairman of the Joint Chiefs of Staff:

"It [Tricare] is certainly in the sights of the Chairman and the service chiefs for the year ahead because we see it as having a direct effect on our overall readiness, based upon retention and recruiting. ... There's no clear plan on this yet. We're working closely with the Secretary of Defense. ... If there's a lightning rod for concern and criticism from the troops, it's the Tricare system. It's not so much the quality of care once you break the code and get in the system. ... We've got really good health care providers. ... But when the system makes it so difficult to access your own medical care, there is something wrong."

Clark, Supreme Allied Commander Europe, noted at a Dec. 9 Pentagon press conference.

New trouble is brewing in Montenegro, a pro-Western republic of the rump Yugoslavia that is south of Bosnia and west of Kosovo. Montenegrin leaders have taken steps aimed at greater independence from Serbia, Yugoslavia's largest republic. Serb leader Slobodan Milosevic responded initially with intimidation tactics.

On Dec. 8, Milosevic sent Serb troops to seize control of Montenegro's main airport. Trucks blocked the runway and soldiers seized the control tower, briefly banning all flights.

"We are seeing a whole series of low-level, but worrisome, developments as we watch the pattern of Serb activities in this area," said Clark. "We don't pretend to know what Mr. Milosevic's final intent is. We are certainly watching very closely."

In late December, news reports

stated that Milosevic said Montenegro may leave Yugoslavia if its citizens vote to do so. Montenegrin officials had announced plans for a referendum in 2000.

Bosnia—riven by civil war and now controlled by an allied peacekeeping force—remains stable. Armed forces from the country's two entities, the Serb-dominated Republic of Srpska and a Bosnian/Croat-populated federation, are working together in a more cooperative manner than ever before, said Clark.

"They've just agreed on a 15 percent reduction in their armed forces, and the initial reductions toward that have been taken," he said.

Some 60,000 Bosnian refugees returned in 1999. NATO forces took 28 war criminals into detention, and more surrendered voluntarily.

Electoral and security problems remain.

"Economic development and illegal institutions are two areas that are

Twenty Questions and the F-22

In its Dec. 20 issue, *Defense Week* published an interview with Maj. Gen. Claude M. Bolton Jr., the Air Force acquisition program executive officer for fighters and bombers. He had this to say about the F-22's avionics, a focus of concern and criticism on Capitol Hill:

"I mentioned the avionics bird, 4004. The avionics that goes into it has already been flight-tested today on the flying test bed, a converted [Boeing] 757. Prior to that, it was in a ground-based laboratory, one in Seattle and the other one down in Fort Worth [Texas]. Prior to that, it was in subcontractors. And everything's coming along so well that we are maintaining schedules that people told us a year ago, 'You can't do, you're going to slip, you're going to have problems.'

"Every time we sit down with folks who have been through this many, many times, with a great deal of experience, people I highly respect, they do the old 20 questions. They go through it all, and they just cannot find anything that we have not done and done correctly. So as a consequence there's a good possibility that we'll end up going through the avionics portion of this with far fewer problems than we ourselves even anticipate today."



of the greatest concern right now," said Clark. "The unemployment rate's over 40 percent."

When NATO troops entered Bosnia after the signing of the Dayton peace accords in December 1995 they numbered some 60,000. Since then they have been reduced to 30,000 and are scheduled to fall to 20,000 in spring 2000.

About 6,200 US troops remain in Bosnia. That number is slated to drop to 3,900 by spring.

Navy and Marines Need to Grow, Think Tank Says

The US Navy and Marine Corps need more weapons platforms if they are to be contributors to future military operations, according to a new study from the Lexington Institute in Arlington, Va.

"Naval strike is executed by a variety of sea-based, air, surface, and submarine platforms, a third of which are routinely forward deployed," said the study. "But increasingly, there are not enough platforms. No matter how capable the submarine, aircraft carrier, destroyer, or plane, they cannot be in two places at once," said the study.

The Navy's carrier fleet, at 12, is three short of meeting minimum forward presence requirements, claimed the study. It urged the Navy to increase shipbuilding rates so that it can maintain at least a 300-ship fleet.

Yes, Yes, But What Else Have You Done?

Darleen A. Druyun, top USAF acquisition official, appeared Dec. 7 before a House subcommittee. She was asked whether the F-22 actually had been ready for production at the time that the House defense appropriations subcommittee was voting last summer to delay the program. She said:

"Yes, it [the F-22] absolutely was ready to enter into low-rate initial production of six airplanes. We have demonstrated supercruise. We have conducted weapons-bay open testing. By the end of December, it will have 500 flight-hours of testing. ... Thousands of hours of subsystem and component and subcomponent testing ... have taken place to date. We've been able to demonstrate high angle of attack, post-stall flight with thrust vectoring. We've demonstrated flight at 50,000 feet, and we've greatly expanded the flying envelope of the F-22. The fact remains, all of the criteria established in 1998 [by DoD officials], we satisfied."

A possible shortage of attack submarines leads the study to suggest conversion of some retiring ballistic missile "boomers" into tactical missile shooters.

The Marines, for their part, need more V-22 Osprey tiltrotor aircraft to speed movement from carriers inland. A gunship variant of the V-22 would be particularly useful, said the report.

Anthrax Program Faces More Problems

The Pentagon's controversial effort to vaccinate all members of the US military against anthrax just keeps running into problems.

First, it was some service personnel refusing the shots, saying they believed the vaccine's efficacy and safety remain unproven. Now, a new anthrax vaccine production plant has failed to pass an FDA inspection—leading the Department of Defense

to postpone the second phase of vaccinations for at least six months.

On Dec. 13, DoD officials announced that only troops deploying to the high-threat areas of Korea and the Persian Gulf will receive shots. It could take up to a year for the sole US producer of the vaccine, Bioport Corp., of Lansing, Mich., to bring its new high-volume facility on line.

"Frankly, it has been more difficult than the department and Bioport expected to move from a small state-regulated production facility to a large, modern production facility that meets the state-of-the-art FDA requirements," said Sue Bailey, assistant secretary of defense for health affairs.

The old facility—since torn down

to make way for the new one—rolled out only 2,000 doses per month. The new one is expected to produce a maximum of 400,000 per month.

An FDA inspection found about 30 deficiencies in the new plant that must be addressed before it can be certified. Until then, the Pentagon will use a stockpile of one million doses produced at the old facility for high-priority inoculations.

So far 383,000 personnel have received the anthrax shots, according to DoD. Officials estimate the Pentagon is currently using about 75,000 per month to handle troops deploying to the high-threat areas.

Boeing Unveils JSF Demonstrators

Boeing showed off its X-32 Joint Strike Fighter concept demonstrators in public for the first time Dec. 14. An estimated 5,500 people watched via



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live satellite feed when the gray aircraft—not yet ready for flight—were rolled out at Air Force Plant 42 in Palmdale, Calif. (Photo on p. 17.)

The X-32A flight demonstrator will be used to test conventional landing and takeoff capabilities for the US Air Force and carrier approaches for the US Navy, said Boeing officials. The slightly different X-32B will be used to demonstrate short takeoff/vertical landing requirements for the US Marines and the Royal Air Force and Navy.

The airplanes will be ready for flight this spring, said Boeing, following engine and flight-control tests.

Boeing and Lockheed Martin are both working on JSF demonstrators. The Defense Department is scheduled to select a winner in early 2001 for a program that could be worth upward of \$750 billion over the next 30 years.

Cohen Puts Off Cuts in Army Guard, Reserve

On Dec. 20, Secretary of Defense William S. Cohen announced that he is deferring implementation of a further 25,000-person reduction in Army Reserve component end strength called for by the 1997 Quadrennial Defense Review. QDR—recommended cuts of 17,000 people in the Army National Guard and 3,000 in the Army Reserve have already been carried out. Three factors compelled him to make his decision, Cohen said.

For one, the Guard and Reserve are playing an increasingly important role in Total Force operations. Today the Defense Department cannot sustain operations anywhere in the world



USAF photo by SSgt. Angela Stafford

TSGT. Scott Gregg, a recruiter in Glendale, Calif., talks to Oscar Lomeli, a high school band member from Gardena, Calif., at Rose Bowl activities in January. USAF's Total Force Band participated in the parade, and a B-2 flew overhead.

without calling on the National Guard and Reserve, said Cohen.

Another factor was new Army Chief of Staff Gen. Eric K. Shinseki's re-examination of his service's structure and missions, with an eye toward constructing an Army of the future. He is also redesigning Army Guard divisions. Any cuts to Guard and Reserve forces could hinder these initiatives, noted Cohen.

Finally, another QDR is coming up—results are scheduled for release in 2001—and will “provide another opportunity to analyze existing circumstances and future requirements.”

The prospective reductions had been drawing increasing opposition from a wide spectrum of sources. Senate Majority Leader Trent Lott (R-Miss.) sent Cohen a letter in November opposing the reductions. If the Defense Department insisted on asking for the cuts, wrote Lott, he would insist on proportionate reductions—in other words, the active force would suffer, along with the Guard and Reserve.

A bipartisan group of 58 senators sent a similar missive on Dec. 7. The National Governors' Association also opposed the plan.

Military associations were pleased at Cohen's deferral decision.

“Defense Secretary William Cohen's reasons for delaying the cuts of 25,000 were the same ones contained in a historic letter from the three associations to him this summer,” noted Gen. Gordon R. Sullivan, USA (Ret.), president of the Association of the United States Army.

Deal Offered in Chinese Embassy Bombing

US officials struck a bargain with the Chinese government Dec. 16 that calls for the payment of \$28 million in compensation for the bombing of the Chinese Embassy in Belgrade, Yugoslavia, during Operation Allied Force.

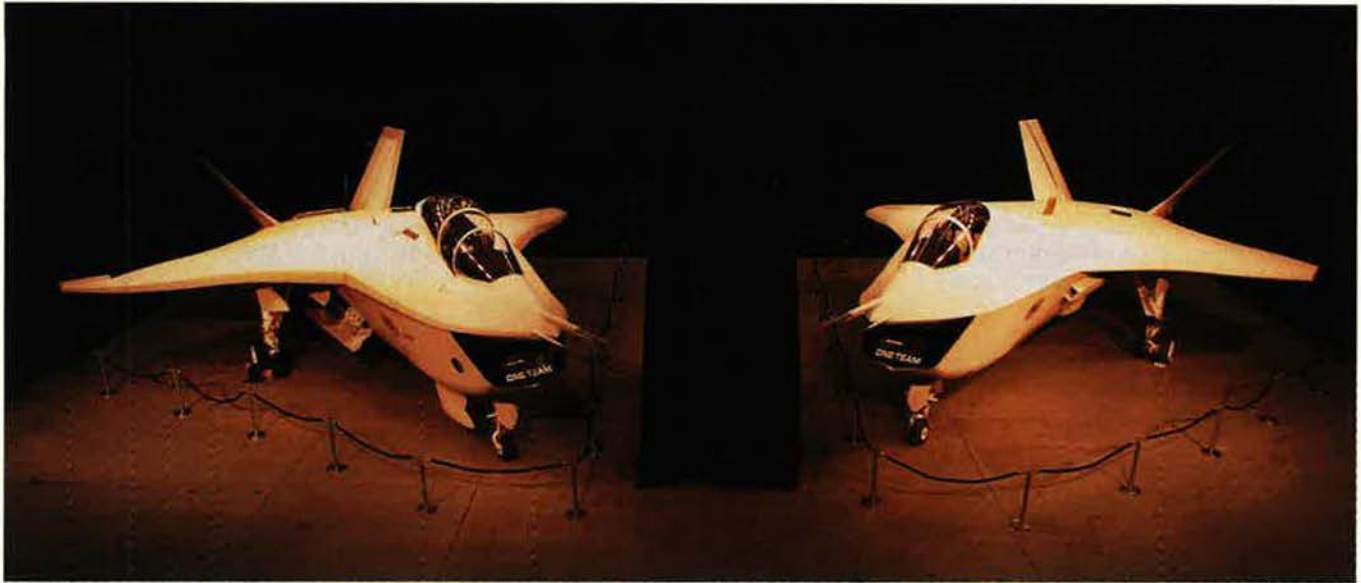
China, in turn, agreed to pay the US nearly \$2.9 million for damage done to the US Embassy in Beijing by anti-American demonstrations in the wake of the bombing.

Three people were killed and 27 wounded in what was one of Allied Force's worst instances of collateral



USAF photo by TSgt. Charles Ramey

At Soto Cano AB, Honduras, US personnel guide a water purification trailer onto a C-130 from Little Rock AFB, Ark. The C-130 transported personnel and equipment to Caracas, Venezuela, to assist in disaster relief.



Boeing unveiled its X-32 Joint Strike Fighter concept demonstrators at Palmdale, Calif., on Dec. 14. The X-32A (left) is aimed at demonstrating capabilities needed by USAF and the US Navy, while the X-32B (right) is to demonstrate capabilities required by the US Marines, the RAF, and the Royal Navy.

damage. The US has already settled on a separate \$4.5 million payment to the families of the deceased.

US officials called the bombing a tragic mistake, saying out-of-date maps and a chain of human error led to targeting a building that should have been off-limits for allied bombs. The Chinese government has been reluctant to accept this explanation, and anger over the incident remains widespread in China.

DoE Says Stockpile Stewardship Is OK

A Department of Energy review released Dec. 10 said that DoE's stockpile stewardship program—an effort to maintain the safety and efficacy of the nation's nuclear arsenal without nuclear testing—has proved effective.

Stockpile stewardship officials have completed both specific science tasks and developed a management structure that improves the certification process, said the report.

"Every year we've seen important advances in the science and capabilities needed to maintain these weapons without nuclear testing, and we believe this progress will continue," said Secretary of Energy Bill Richardson.

Among the accomplishments the stockpile stewardship report cites are:

- Delivery of refurbished W87 Peacekeeper warheads to DoD.
- Development and deployment of the B61-11 bomb, replacing the less-safe B53.
- Renewed production of neutron generators, a component of all nuclear weapons.
- Initiation of life extension stud-

ies for the W76 Trident missile warhead and W80 strategic cruise missile warhead.

- Assurance of a continued supply of tritium, a radioactive gas used in nuclear weapons that must be occasionally replenished.

Among the tasks still ahead are recruitment of a new generation of scientists to work in DoE's nuclear programs, said the report.

USAF Releases Review of Launch Failures

A premature shift in attention from existing launch programs to the next-generation Evolved Expendable Launch Vehicles is one of the underlying causes of the recent string of US space launch failures, according to an Air Force-led review.

Both the US government and the contractors involved curtailed essential fly-out activities as they began looking to future systems, concluded the broad area review, which was headed by retired Gen. Larry D. Welch, former Air Force Chief of Staff.

Yet the US cannot afford such a "going out of business" mind-set, said officials involved in the review. Some \$20 billion in national assets is still scheduled for launch on older expendable launch vehicle systems.

"A significant amount of resources and operational capability remain associated with the fly-out programs," concluded the review.

President Clinton has already ordered Secretary of Defense William S. Cohen to implement the recommendations of the DoD Assessment of Space Launch Failures report. These include:

- The government must make sure

that industry fixes the technical causes of the failures and improves systems engineering and process discipline.

- There must be clear accountability for mission success.

- The government needs a well-defined and disseminated plan for the transition to EELV use.

Ryan Praises Pacific Air Forces

Pacific Air Forces will stay just the way it is, according to Chief of Staff Gen. Michael E. Ryan. PACAF is vital to stability in a part of the world that is critical to US national security—and becoming more important by the day.

That means no major changes in force structure.

"The ability to rapidly reinforce, particularly in Korea, from PACAF bases is critical and will be for a long time to come," said Ryan on a December visit to Hickam AFB, Hawaii.

The roll out of the Expeditionary Aerospace Force is going well so far, the Chief added.

Four Aerospace Expeditionary Forces had deployed or were in the process of deploying by mid-December, he said. It is a concept that continues to be refined.

"AEFs five and six will be the first to use team effort in our expeditionary combat support elements," said Ryan. "That is, instead of having Palace Tenure select people from all over the world and show up as 35 individual firefighters, we will have units come forward [that] have worked together before." (Palace Tenure is the program that manages the selection of individuals, as opposed to units, needed to support contingency operations.)

The Chief said he continues to work on bolstering combat support for expeditionary units, via use of both Guard and Reserve, as well as active duty, personnel.

"We're adding 3,200 manpower positions to the combat support piece of our Air Force so that we don't take too large a chunk away from a base at any one time," he said.

The Charter Chiefs Remember

Charter chiefs celebrated the 40th anniversary of the establishment of the rank of chief master sergeant in the Air Force at a reunion dinner at Offutt AFB, Neb., last November.

Before Dec. 1, 1958, the highest grade that any enlisted person in the military could attain was E-7. But Congress, concerned about promotion stagnation, passed a career compensation act that allowed all the services to promote 2 percent of their enlisted force into a new E-8 grade and 1 percent into E-9.

Thus senior master sergeants and chief master sergeants were born.

Retired CMSgt. James Flaschenriem began his military career as an Army Air Corps corporal. He never expected to last long in the armed services—but in 1958 he was one of the chosen few.

He was 31 years old and had 11 years of service. At first, no one knew what to make of his new rank.

"We were just another sergeant," Flaschenriem said. "We weren't addressed as chiefs. At that time, there were still [Air Force] warrant officers on duty and they were referred to as 'chief.'"

Retired CMSgt. Theodore Brewer was another charter chief, one of the first selected. At the time he was with the 2nd Air Force inspector general team at Laughlin AFB, Texas.

The evening the first list came out, the base commander had all of Brewer's uniforms taken to the parachute shop for his new stripes to be sewn on. He walked out of his door, resplendent in his new rank, early the next day.

Not that his colleagues were necessarily impressed. "When we first made chief, they didn't know what to do with us," Brewer said.

Dyess Gets Upgraded B-1 Bombers

The first Block D upgraded B-1 bombers have started to arrive at the 28th Bomb Squadron, Dyess AFB, Texas. The improvements, carried out at the Oklahoma Air Logistics Center, Tinker AFB, Okla., give the Lancer near-precision weapons and advanced secure communications capabilities.

"This means more to us than just a Block D upgrade," said Col. Douglas Raaberg, 7th Operations Group commander. "This is the biggest change since Dyess received the first B-1 more than 13 years ago."

Without the improved weapons and targeting systems of Block D, Lancers are capable of dropping only dumb iron bombs. With near-precision capability, the B-1 becomes a much more flexible tool for national command authorities. Minor upgrades in the future will also give the aircraft the capability to carry precision 2,000-pound Joint Direct Attack Munitions.

In addition to the Block D upgrade, the B-1s will receive a towed decoy system that deploys in flight and is intended to lure incoming missiles away from the aircraft.

The first Block D aircraft was delivered to the 28th Bomb Squadron in November. Dyess was projected to have four Block D B-1s, with the new decoy system already installed, by the end of January. All Lancers based at the Texas installation are scheduled to be upgraded by May 2004.

The 28th is the B-1 community's only formal aircrew training unit, and it will soon have the opportunity to spread its Block D knowledge around the coun-

Don't Ask, Don't Tell: "Out of Whack"?

In a Dec. 11 interview with CBS News Radio, President Bill Clinton said the controversial Defense Department policy on homosexuals in the military, "don't ask, don't tell," is not working as intended.

"The reason that I went for don't ask, don't tell [in 1993] is that it's all I could do, because I had a clear signal from the Congress that, if I implemented my policy, they would reverse it by overwhelming majorities. I didn't implement don't ask, don't tell until the Senate voted 68-32 against the policy that I wanted. So I think it's very important—for me, what's important is that the policy, as implemented, does not work as I announced it and as the leaders of our military at that time in '93 pledged to implement it. ... So what I would like to do is to focus on trying to make the policy that we announced back in '93 work the way it was intended to, because it's way—it's out of whack, now, and I don't think any serious person can say it's not."

His statement came four days after First Lady Hillary Clinton told a group of gay campaign contributors in New York that if she is elected to the Senate, she will work to allow gay men and lesbians to serve openly in the armed forces.

Secretary of Defense William S. Cohen announced Dec. 13 that the Pentagon Inspector General would conduct a spot-check survey to determine whether a harassing climate exists in the armed forces in regard to gay members and whether this is condoned by the command. The IG is to report back within 90 days.

Although harassment will not be tolerated, Cohen said Dec. 15 that "do not expect the policy to be changed, certainly not during this Administration." In two media opportunities in December, Cohen expressed the policy as "don't ask, don't tell, don't harass."

The major Presidential candidates all took positions on the issue. Vice President Al Gore and former Sen. Bill Bradley would allow homosexuals to serve openly. Sen. John McCain and Texas Gov. George W. Bush support the present don't ask, don't tell policy.

Gore initially went even further, saying twice on Jan. 5 that he would "insist, before appointing anybody to the Joint Chiefs of Staff, that that individual support my policy. And, yes, I would make it a requirement." He backtracked from that position Jan. 7, saying that he had been misunderstood.

The controversy has been the subject of newspaper editorials from coast to coast, with the overwhelming majority of them calling for an end to discrimination against gays and lesbians in the military.

By amazing coincidence, the Labor Government in Great Britain told *The Times* of London on Dec. 13 that it would move to end the ban on homosexuals in British armed forces, which it did officially on Jan. 12.

—John T. Correia



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Lockheed Martin's Joint Strike Fighter concept demonstrator, the X-35A, had its first flight engine installed at the Lockheed Martin Skunk Works in Palmdale, Calif., on Dec 9. The X-35A's first flight is scheduled for spring.

try. "The other B-1 bases are asking us to send them Block D qualified people," said Maj. Matt Bartlett, chief of wing standardization and evaluation. "Having the upgraded planes here allows us to train these aircrews and send Ellsworth AFB [S.D.], Mountain Home AFB [Idaho], McConnell AFB [Kan.], and Robins AFB [Ga.] Block D qualified people."

Crash Landing in Kuwait Kills Three

Three Air Force members were killed and 17 others injured when an Air Force C-130 attempted to land at Al Jaber AB, Kuwait, on Dec. 10. It made an emergency landing at Kuwait City IAP, instead.

Killed were Capt. Michael D. Gerasosian, 66th Rescue Squadron, Nellis AFB, Nev.; A1C Benjamin T. Hall, 9Cth Transportation Sq., F.E. Warren AFB, Wyo.; and A1C Warren T. Willis, 55th Transportation Sq., Offutt AFB, Neb.

The aircraft, from the 61st Aircraft Squadron, Little Rock AFB, Ark., was carrying 86 US military personnel and had a crew of eight. It was on a routine mission ferrying troops between two bases in Kuwait.

According to a Dec. 20 Air Force news release, the three airmen, sitting in the fuselage area where the main landing gear attaches to the frame, were fatally injured when the C-130 hit the ground off the runway at Al Jaber.

"The aircraft, for reasons yet to be determined, impacted the ground approximately 2,895 feet short and about 40 feet left of the runway centerline," stated the Air Force. The crew got

the aircraft airborne after the impact, but the C-130 had received "extensive damage to its main landing gear assemblies and to the adjacent fuselage areas. Part of the left main landing gear detached from the aircraft shortly after the impact."

After the aircraft regained altitude, the aircrew declared an emergency and diverted to the country's only international airport, where crews sprayed foam on the runway prior to an emergency belly landing.

Air Force officials credited quick

action on the part of Kuwait emergency response crews for preventing further loss of life from the crash.

Both Kuwait and the United States are continuing to investigate the accident.

C-130J Fate Up in Air

The fate of the C-130J was uncertain in mid-December as Air Force officials mulled pushing the program back in favor of such high-priority projects as the F-22.

Air Force Secretary F. Whitten Peters said he sees no requirement for the C-130J until 2011 and that existing models of the workhorse Hercules won't have to start retiring for a decade—but added that he wouldn't be "thrilled" to see the C-130 line close—the likely result if the program is substantially delayed.

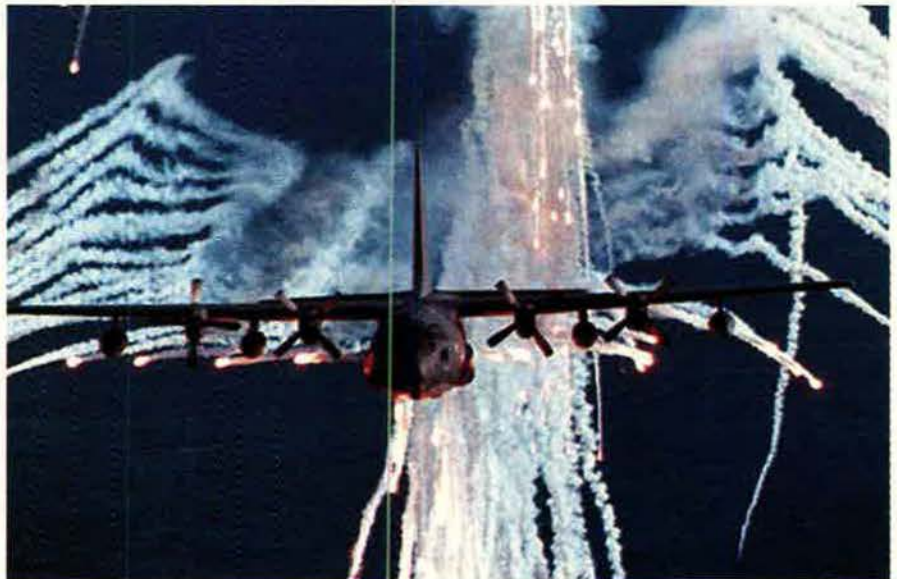
"It's just a question of: It's a lot of money," Peters told *Defense Week*.

One hundred fifty new C-130Js would cost about \$8 billion.

By contrast, Lockheed Martin has been pushing for the Air Force to start buying the C-130J in 2001, one year before the current schedule calls for. Lockheed Martin officials have been offering discounts of up to 15 percent per airplane if the Air Force commits in 2001 to a multiyear procurement.

USAF Looks at Fixes for C-17 Airdrop

It will be at least two years before the Air Force can fix problems that currently prevent C-17 airlifters from



MC-130P aircraft from RAF Mildenhall, UK, drop flares over the North Sea during the 67th Special Operations Squadron's first Air Rodeo. As part of a training mission, three Combat Shadows flew in formation and were judged on landing on a specific mark at a specific time. Adding competition to the mission helped build esprit de corps in the squadron, said unit officials.

USAF photo by Capt. Alex E. Carothers

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dropping a brigade of paratroopers as fast as Army requirements call for.

Defense Week reporters talked with Army and Air Force officials late last year about the problem.

The strategic brigade airdrop is supposed to be completed in 30 minutes, to allow the paratroopers to group quickly on the ground and thus minimize casualties from any resistance. Globemasters take 51 minutes to complete this maneuver, however. Due to the turbulence they produce, the large aircraft cannot fly close enough together to meet the 30-minute deadline. In addition, electronic systems limit the number of C-17s that can fly together in a paratroop formation.

Among the possible solutions the Army and Air Force are studying:

- Changing the airplane's station-keeping radar equipment to improve close formation flying.

- Dropping two rows of equipment from each airplane, instead of one.
- Reducing the space—currently set at 40,000 feet—between airplanes in formation.

Until C-17s can meet the 30-minute standard, C-141 Starlifters will continue to serve as the paratroop workhorse. The C-141 is set to retire in

2004—meaning the Air Force has only a few years to fix the problem.

News Notes

- The Joint Direct Attack Munition Systems Program Office, Eglin AFB, Fla., was named winner of the Gen. Bernard A. Schriever Award. The award honors the best Program Executive Office program in the Air Force for 1999. About 40 major PEO programs competed for the prize.

- The Air Force won the gold medal, its sixth title in the 18-year history of the Armed Forces Soccer Championship, last fall. USAF team members selected to the armed forces all-star team were Ryan Schaffer, Garrett Zindell, Chris Cole, Jarret Robinson, and Shayne Kiefer.

- Capt. Mark Gillem, an individual mobilization augmentee with the Air Force Center for Environmental Excellence, Brooks AFB, Texas, has been named the Air Force Reserve Outstanding Junior Officer for 1999. The Reserve Officers Association was scheduled to present Gillem with his award at its annual convention in Washington in late January.

- An A-10 pilot from the 81st Fighter Squadron ejected from his aircraft Nov. 22 after overshooting the runway and

landed in the dirt at Spangdahlem AB, Germany. First Lt. Nathan Connell was treated for abrasions after the incident.

- Northrop Grumman delivered the sixth production Joint STARS radar aircraft to USAF's 93rd Air Control Wing at Robins AFB, Ga., on Dec. 1.

- The US Air Force has purchased title rights to the Millrose Games, a prestigious indoor track and field competition. The one-day event takes place at Madison Square Garden on Feb. 4 and will be broadcast on NBC a day later. The US Air Force Millrose Games are a cornerstone event of USA Track and Field's "Golden Spike Tour," an eight-city series of events featuring the nation's finest track and field athletes.

- A Global Hawk Unmanned Aerial Vehicle was damaged Dec. 6 following a successful test flight. The aircraft veered off a runway at Edwards AFB, Calif., and its nose gear collapsed. An investigation board is looking into the cause of the incident.

- A Dec. 23 Air Force report of the investigation of the crash of Global Hawk No. 2 on March 29, 1999, revealed that the UAV, flying at China Lake Naval Weapons Center, Calif., had received a flight-termination test signal from a range at Nellis AFB, Nev. The signal caused it to enter a

Senior Staff Changes

RETIREMENTS: Lt. Gen. Frank B. **Campbell**, Brig. Gen. Gilbert J. **Regan**, Maj. Gen. Richard H. **Roellig**, Lt. Gen. John B. **Sams Jr.**, Maj. Gen. Gary A. **Voellger**.

CHANGES: Maj. Gen. John R. **Baker**, from Cmdr., AIA, Kelly AFB, Texas, to Dir., Jt. Matters, DCS, Air & Space Ops., USAF, Pentagon ... Brig. Gen. John L. **Barry**, from Cmdr., 56th FW, AETC, Luke AFB, Ariz., to Dir., Strategic Planning, DCS, P&P, USAF, Pentagon ... Maj. Gen. Scott C. **Bergren**, from Dir., Maintenance, DCS, Instal. & Log., USAF, Pentagon, to Cmdr., Ogden ALC, AFMC, Hill AFB, Utah ... Brig. Gen. Robert Damon **Bishop Jr.**, from Cmdr., 437th AW, AMC, Charleston AFB, S.C., to Dep. Dir., Ops. & Tng., DCS, Air & Space Ops., USAF, Pentagon.

Maj. Gen. John W. **Brooks**, from Vice Dir., Log., Jt. Staff, Washington, D.C., to Special Asst., CSAF, USAF, Pentagon ... Maj. Gen. Richard E. **Brown III**, from Dir., Jt. Matters, DCS, Air & Space Ops., USAF, Pentagon, to Cmdr., AFPC, Randolph AFB, Texas ... Brig. Gen. (sel.) Daniel J. **Darnell**, from Cmdr., 20th FW, ACC, Shaw AFB, S.C., to Cmdr., 31st FW, USAF, Aviano AB, Italy ... Brig. Gen. (sel.) Douglas M. **Fraser**, from Executive Asst., CINC, PACOM, Camp H.M. Smith, Hawaii, to Cmdr., 3rd Wg., PACAF, Elmendorf AFB, Alaska ... Brig. Gen. Terry L. **Gabreski**, from Dir., Log., USAF, Ramstein AB, Germany, to Dir., Maintenance, DCS, Instal. & Log., USAF, Pentagon.

Brig. Gen. Jonathan S. **Gratton**, from Cmdr., 3rd Wg., PACAF, Elmendorf AFB, Alaska, to Dep. Dir., Info. Ops., Jt. Staff, Pentagon ... Maj. Gen. Lawrence D. **Johnston**, from Dir., P&P, ACC, Langley AFB, Va., to Cmdr., AWC, ACC, Nellis AFB, Nev. ... Brig. Gen. (sel.) Timothy C. **Jones**, from Cmdr., 92nd ARW, AMC, Fairchild AFB, Wash., to Dep. Dir., Prgms., DCS, P&P, USAF,

Pentagon ... Maj. Gen. Donald A. **Lamontagne**, from Cmdr., AFPC, Randolph AFB, Texas, to Dir., Aerospace Ops., ACC, Langley AFB, Va. ... Brig. Gen. Daniel P. **Leaf**, from Cmdr., 31st FW, USAF, Aviano AB, Italy, to Dir., Operational Rqmts., DCS, Air & Space Ops., USAF, Pentagon ... Maj. Gen. David F. **MacGhee Jr.**, from Dir., Aerospace Ops., ACC, Langley AFB, Va., to Cmdt., AWC, Maxwell AFB, Ala. ... Brig. Gen. Duncan J. **McNabb**, from Dep. Dir., Prgms., DCS, P&P, USAF, Pentagon, to Dir., Prgms., DCS, P&P, USAF, Pentagon ... Maj. Gen. Glen W. **Moorhead III**, from Cmdr., AWC, ACC, Nellis AFB, Nev., to Dir., EAF Implementation, DCS, Air & Space Ops., USAF, Pentagon.

Brig. Gen. (sel.) Gregory H. **Power**, from Cmdr., 5th BW, ACC, Minot AFB, N.D., to Cmdr., 55th Wg., ACC, Offutt AFB, Neb. ... Brig. Gen. Bentley B. **Rayburn**, from IG, ACC, Langley AFB, Va., to Dir., P&P, ACC, Langley AFB, Va. ... Brig. Gen. (sel.) Arthur J. **Rooney Jr.**, from Associate Dir., Log. Resources, DCS, Instal. & Log., USAF, Pentagon, to Dir., Log., USAF, Ramstein AB, Germany ... Brig. Gen. Ronald F. **Sams**, from Cmdr., 55th Wg., ACC, Offutt AFB, Neb., to IG, ACC, Langley AFB, Va. ... Maj. Gen. Lance L. **Smith**, from Cmdt., AWC, Maxwell AFB, Ala., to Cmdr., AF Doctrine Ctr., Maxwell AFB, Ala. ... Brig. Gen. Robert P. **Summers**, from Vice Cmdr., Sacramento ALC, AFMC, McClellan AFB, Calif., to Dir., Nuclear Spt. & Ops., Defense Threat Reduction Agency, USD, Acq. & Tech., Sterling, Va. ... Brig. Gen. (sel.) James W. **Swanson**, from Cmdr., AF Legal Services Agency, Bolling AFB, D.C., to Staff Judge Advocate, AMC, Scott AFB, Ill. ... Brig. Gen. (sel.) Simon P. **Worden**, from Dep. Dir., Operational Rqmts., DCS, Air & Space Ops., USAF, Pentagon, to Dep. Dir., C², DCS, Air & Space Ops., USAF Pentagon.

pre-programmed, rolling, vertical descent from 41,000 feet.

■ The Congressional General Accounting Office estimates that the Air Force's maintenance depots lost \$623 million between 1994 and 1998, despite raising labor charges 39 percent. Among the reasons for the loss were higher-than-expected material costs and lower-than-expected work productivity rates, said GAO.

■ Secretary of Defense William S. Cohen signed a defense cooperation plan with Ukraine at a ceremony in NATO headquarters in Brussels, recently. The agreement calls for joint exercises, a military medical exchange, and continued cooperation in counter-proliferation programs and help with professional military education.

■ The 1999 Air Force Athletes of the Year are 2nd Lt. Robert Dickie, a middle- and long-distance runner who is vehicle operations flight commander at Little Rock AFB, Ark., and Maj. Kimberly Markland, a world-class marathoner stationed at Bolling AFB, D.C.

■ Air Force Space Command released the results of its investigation into an Oct. 3 mishap involving a UH-1N helicopter near Cameron Pass, Colo. The crash was caused by flying too low and slow for the altitude, terrain, and atmospheric conditions, concluded an investigation board. The helicopter, from F.E. Warren AFB, Wyo., was taking part in the search for a missing three-year-old boy. Crew members sustained only minor injuries.

■ On Dec. 13, two AT-38 Talon jet trainers from the 435th Flying Training Squadron at Randolph AFB, Texas, collided during a training mission northwest of Castroville, Texas. Both landed safely and crew members were uninjured.

■ Russia successfully launched a



TSgt. Jim Strand inspects an F-16's F100-PW-220 engine for spots or cracks. Following a series of F-16 crashes, maintainers at Luke AFB, Ariz., worked with the contractor and San Antonio Air Logistics Center to develop a more comprehensive inspection, using improved cleaning procedures and an oil-based penetrant to find cracks that previously went undetected.

new strategic missile, the Topol-M, on Dec. 14. The ICBM lifted off from Plesetsk and flew eastward, hitting its target on the Kamchatka peninsula after traveling some 3,400 miles.

■ USO's Airman of the Year is TSgt. James L. Morrison II, assigned to the 16th Airlift Squadron, Charleston AFB, S.C. Morrison won the award for his disaster prevention actions when a phosphorous signal flare was accidentally launched inside the cargo compartment of a C-141B fully loaded with personnel and vehicles. He was honored at a USO Holiday Gala aboard New York City's Intrepid Sea-Air-Space Museum.

■ Walter Lipe, chief instrumenta-

tion engineer, 412th Test Wing Instrumentation Division, Edwards AFB, Calif., received the Pioneer Award from the International Foundation for Telemetry, recently. The 36-year Edwards AFB employee has helped develop instrumentation for test programs for everything from the F-4 to the F-22.

Obituary

John W.R. Taylor, 77, editor of *Jane's All the World's Aircraft* from 1959 to 1989 and arguably the foremost author and editor ever on the subject of flying machines, died Dec. 12 in Kingston, Surrey, England. He was also the author or co-author of more than 200 books.

Under his editorship, the annual editions of *Jane's* were recognized as the most authoritative sources in the world for detailed information about airplanes. Taylor said he preferred to concentrate on the "ironmongery" of aircraft and avoid political issues. Faithful to that direction, he established a reputation for both fairness and accuracy. To some extent, he even received data from the Russians at the height of the Cold War.

From 1971 until 1997, Taylor was contributing editor to *Air Force Magazine*. Among his other work for this magazine, he originated "Gallery of USAF Weapons," which appears each May in the Almanac issue. The gallery is now done by Taylor's daughter, Susan H.H. Young. ■

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By Theresa Foley



space: 20 Years Out

At US Space Command and Air Force Space Command, planners foresee a day when current military space systems—consisting of a fleet of satellites for communications, imaging, warning, and other support missions—will be augmented by a new generation of orbital vehicles and space weapons.

These space officials believe that, 20 or so years out, American space forces will be able to change the course of events on Earth in hours, minutes—even seconds. Being able to do so would require a whole new layer of space systems.

In the near term—during the next seven years or so—the focus will be on providing battlespace management to warfighters and improving present-day US superiority in information systems. Further out comes development of better sensors, improved launch vehicles, and space operations vehicles and space tugs.

Tight budgets could constrain space developments, but planning of new systems and concepts is under way at Colorado Springs, Colo., where US Space Command determines what the warfighter needs in space and Air Force Space Command does its best to acquire and deploy the capabilities. US Space Command encapsulates its planning for space in its Long Range Plan,

while Air Force Space Command lays out its objectives in the Strategic Master Plan. Both plans are constantly reviewed and updated.

Military space programs receive \$7.3 billion a year, said Brig. Gen. Russell J. Anarde, Air Force Space Command director of plans and programs, who added that Air Force Space Command gets the largest piece of the funding, more than 90 percent.

No nation has ever engaged in combat in space. However, all indications are that this kind of conflict eventually will occur, noted Gen. Richard B. Myers, head of US Space Command and soon to be Vice Chairman of the Joint Chiefs of Staff.

Myers observed that space now is starting to resemble America's old Wild West, becoming a lawless place with a gold rush mentality that might soon need a Judge Roy Bean to restore order. The US cannot afford to have only ad hoc responses when trouble comes to town, said Myers, who added, "We must establish some framework for space exploitation early, or risk ... uncertainty."

Some on Capitol Hill think the military isn't moving fast enough. In a May 1999 report, the Senate Armed Services Committee charged, "For the most part, DoD tends to treat space as an information me-

dium to support existing air, land, and sea forces, rather than the strategic high ground from which to project power. ... The committee believes that the United States must begin to take steps to exploit more fully space as a natural power center."

Threats From and In Space

The emerging space threat encompasses not only nations, which operate their own national space systems but subnational groups such as terrorist cells and criminal organizations. US adversaries can buy on the open market space capabilities that formerly were restricted to a few major powers.

"The US used to have an advantage [in space support] with respect to potential adversaries, but it is becoming diminished as the commercial market continues to grow," said Air Force Lt. Col. Jeff Vance, US Space Command's chief of integration. "Any nonspace actor who wants space capability can get it with a credit card over the Internet. Imagery, weather—those capabilities used to be limited to the major players. Our dominance in space is no longer a given."

In response, Air Force Space Command's Space Warfare Center at Schriever AFB, Colo., organized a Space Aggressor Team. The center's aggressors aim to help offset space capabilities now accruing to the newcomers.

For example, the new Ikonos satellite, a commercial remote sensing spacecraft, can produce Earth images with resolution down to one meter, a clarity that would clearly be useful for military purposes. The aggressor team is showing allies how vulnerable they are to that particular eye in the sky and other open sources.

Obversely, US space authorities express concern at the ease with which an adversary could jam, disrupt, or diminish signals from friendly commercial satellites, through which pass much of today's US and allied defense communications. This worry prompted the Space Warfare Center to seek ways that can be used in the future to counter third-party jamming of commercial satellites.

Space officials expect foes to make major efforts to neutralize the US edge. Myers anticipates that, in the future, an adversary will declare a space exclusion zone and try to keep US and other spacecraft out.





"Someone could disrupt spectrum, stand up electronic blockades through jamming or any number of other, nefarious measures to ensure their military and commercial advantage in an increasingly competitive environment," Myers said.

Myers cited recent Russian attempts to sell devices that can jam a signal from a Navstar Global Positioning System satellite. He further pointed to festering national disputes over allocation of geostationary orbit slots, commercial fights about allocation of frequency, and the emergence of information warfare.

"The strategic logic of space power says that the greater our motivation to use space for military purposes, the greater must be the motivation of our foes to deny us the ability to use space," write strategic affairs analysts Colin S. Gray and John B. Sheldon in a recent *Airpower Journal* article. "Space power and space warfare are coming. The only issues are how and when."

Space Control Requirements

To combat these threats, the unified and service space commands want to build partnerships with other federal agencies, industry, and allies to strengthen the nation's space control capabilities.

Congress in 1999 ordered the establishment of a space control program. Gen. Ralph E. Eberhart, the newly confirmed commander in chief, United States Space Command, recommended in Senate hearings in fall 1999 that money be spent on technology to address deficiencies in satellite vulnerability, protection methods, and capabilities such as low-power laser jammers.

US Space Command defines space

control as "the ability to assure access to space, freedom of operations within the space medium, and an ability to deny others the use of space." It is a condition that requires several capabilities.

Space Surveillance. Space Command wants to be able to monitor all vehicles as they move in and out of orbit. They plan to achieve this goal with a space-based ranging system, which is to become available in 2009.

Improved situational awareness means having an ability to determine the location of every orbiting satellite—whether dead or operational—and all pieces of debris.

The military also wants to know who controls each satellite and what it is doing in space. Just like in air combat, the space forces need to be able to tell "the good guys from the bad guys," said Air Force Col. Robert Ryals, Space Warfare Center vice commander.

Today, US Space Command can

track space objects with a diameter of at least 10 centimeters. The problem is about to expand greatly, however. Ryals said the new Low Earth Orbit satellite constellations being deployed by the commercial sector have hundreds of new satellites and greatly complicate efforts to achieve situational awareness in space.

Today, space surveillance is carried out largely by old radars and sensors based on Earth. Their usefulness will remain for a while, but the Air Force wants to move some surveillance systems into space itself, where they can get a clearer view of objects in High Earth Orbit.

Prevention. Another major thrust focuses on prevention of unauthorized access to and exploitation of US or allied space systems. US Space Command has concluded that enemies will try to make use of these systems either to acquire valuable data or insert bogus, misleading information. The concept of preven-

Allied Space Force

US Space Command's commander in chief, Gen. Richard B. Myers, appeared before the Senate Armed Services Committee on Oct. 27 and gave this report on the space contribution to Kosovo operations.

"In Kosovo, I think we took space support to the warfighter to a new height. In Desert Storm, you know, there were some complaints that some of the space assets didn't play, as well as they should have, down to the operational and tactical level, and I think we corrected a lot of that in Kosovo.

"Some of the areas that space played, of course, were in communications, satellite communications to link the theater with [US European Command], and then back here to the United States. Of course, the Global Positioning System played a very large role, because we finally had weapon systems that could take advantage of the [GPS] timing signals for accurate weapons delivery through all types of weather. So, those are two types.

"The other one, ... besides the intelligence assets that are on orbit that provided intelligence to the warfighter, would be our Defense Support Program satellite, the satellite that was designed initially back in the '60s and '70s to pick up ICBM launches from Russia. That same system was used for battlespace characterization.

"What I mean by that, it was used to pick up events on the battlefield that created an infrared signature—a significant infrared signature—such as bombs going off and secondary explosions and so forth. And we tied the operators of that system directly to the Combined Air Operations Center in Vicenza [Italy] in support of that operation.

"So, those are a few of the ways. I think we have a long way to go to in space support to the warfighter, but we are progressing down that road, I think, fairly rapidly to integrate space into how the warfighter plans his campaigns."

tion entails denying an adversary this capability.

US Space Command's primary mission would be to provide the command, control, and communication architecture necessary to detect and report any unauthorized use and to assess its impact. From that point, US tools for prevention would be political, diplomatic, informational, or economic.

Protection. The Air Force is planning new measures to protect its own systems from compromise or attack. Better warning of natural and man-made threats is desired as is a reporting system for attacks against US satellites.

Most US satellites lack basic self-defense measures. The spacecraft, by and large, can't tell if they are tracked or targeted by ground radar or under attack from laser beams or other types of energy.

To counter that deficiency, the US is now starting to place sensors on satellites to detect attacks and report suspicious events to ground control. They could also provide targeting data for potential counterattack.

Negation. As the value of US space assets grows, so does pressure to be able to carry out negation, a relatively benign-sounding term that covers a controversial and wide-ranging set of capabilities to deflect, disrupt, damage, or destroy satellites of others, whether national or commercial.

Negation of an adversary satellite is not currently permitted under US policy. US Space Command would have to obtain National Command Authority approval before acting.

Technology and systems for nega-

tion are progressing along several fronts, and several ways to accomplish this objective are possible. Officials noted that there are numerous ways to blind or "dazzle" an imaging satellite or to interfere with the operation of the standard communications satellites. A laser on the ground or in space, for instance, can do the job.

There are other creative ways to interfere with an imager. One concept: deployment of a large, umbrella-like vehicle next to the satellite to block its view of Earth. Another: jam its data links and operating frequencies.

Ryals says building such offensive systems is fairly straightforward and simple, but the same cannot be said for other types of space hardware.

Development of a workable Space Based Laser, for example, will require years and billions of dollars, but it could be used in strategic and theater ballistic missile defense missions as well as for space control. The Pentagon has an SBL under development. It could be deployed to shoot down ballistic missiles but also could be used to attack targets in space or on Earth. The Space Based Laser isn't due until 2020, at the earliest.

"Space Based Lasers are inherently flexible because they offer options for reversible and nonlethal effects," reports the US Space Command Long Range Plan, which calls for an in-orbit SBL in about a decade.

High-power microwave weapons are another way to disrupt, degrade, and destroy satellite electronics.

Assessing the cost of developing a

negation capability is difficult, said AFSPC's Anarde. He said national policies and treaties must be taken into account. Nonetheless, space command officials believe commanders need to have options ranging from lethal to nonlethal, in case there is a reversal of US policy.

Said Myers: "We must be in a position to take appropriate self-defense measures, including force, if appropriate, to respond to infringement on our sovereign rights." These measures would include, "if required, negation."

Some are impatient to do more. Gray and Sheldon, for instance, argue, "The United States to date has deployed no—repeat, no—forces to effect many elements of the space-control mission. ... Space control cannot be achieved strictly with conventional terrestrial forces, by electronic means, or by hopes and prayers. Space control, indeed space power, requires the deployment of dedicated space forces."

Assured Access to Space

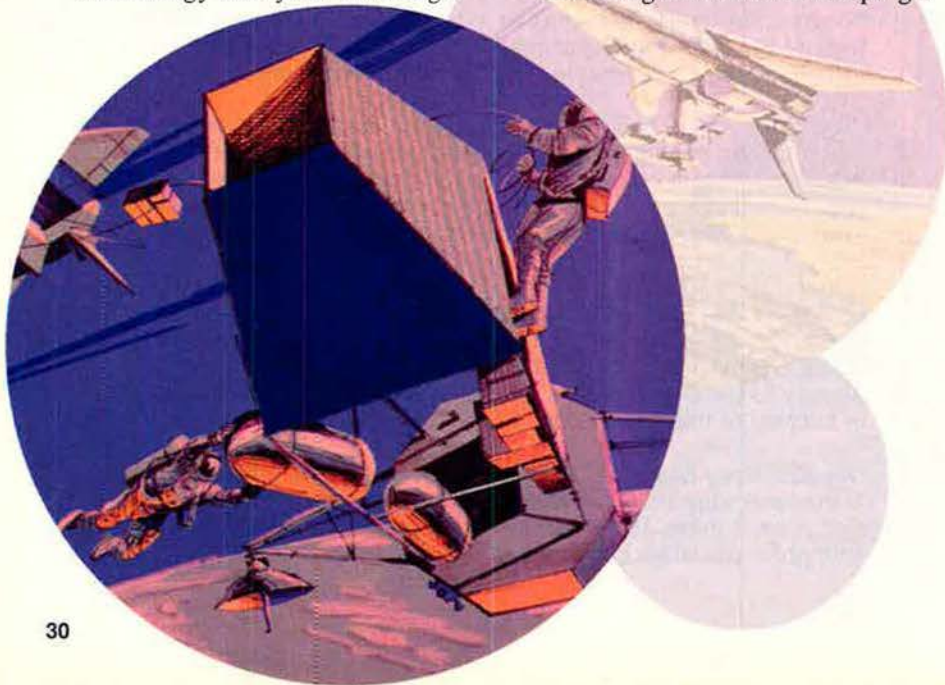
Control of space also depends to a great extent on swift and sure access from Earth.

In coming years, military space operations will move beyond today's limited capability. The new era likely will feature spaceplanes, space tugs, and other new types of vehicles that, with or without pilots, will be able to perform more complex missions in orbit.

Near-term emphasis is on improving current Expendable Launch Vehicles and doing preliminary work that could lead to development of entirely new vehicles. DoD must rely on current Atlas, Delta, and Titan ELVs until around 2003, when the more-efficient Evolved Expendable Launch Vehicle goes into operation.

"We're working hard to make access to space less expensive," observed Gene H. McCall, Air Force Space Command's chief scientist. "It costs \$10,000 per pound to put an object in Low Earth Orbit. We need to reduce that by a factor of 10 to 50 before space becomes an everyday commodity."

Routine military satellite launch operations will rely more and more on the commercial sector and commercial spaceports. By around 2012, extremely large military satellites,



such as the Space Based Radar and Space Based Laser, will require heavy lift launchers.

A Space Operations Vehicle (a concept that superseded the earlier proposed military spaceplane) could enter flight operations around 2012.

Possibly available several years sooner would be a Space Maneuver Vehicle, able to recover sensitive assets in orbit. Space Maneuver Vehicles are in the prototyping stage now. SMV models will undergo two to three years of aerodynamic testing before the concept will be ready to advance. Congress has, however, authorized \$25 million for an SMV program this year, with money to acquire a flight-test article.

For more sophisticated space operations, a space tug would bring the ability to refuel or repair satellites in orbit, saving money. "We spend so much to put things into space, and when they run out of fuel, they're dead," McCall said. "If we develop a capability to service them, it will require a redesign of the satellites as well."

If the military adopts micro-satellites—another concept in the demonstration stage—the Space Maneuver Vehicle would be used to replenish a constellation of a half dozen of the tiny satellites within 12 hours.

Force Application From Space

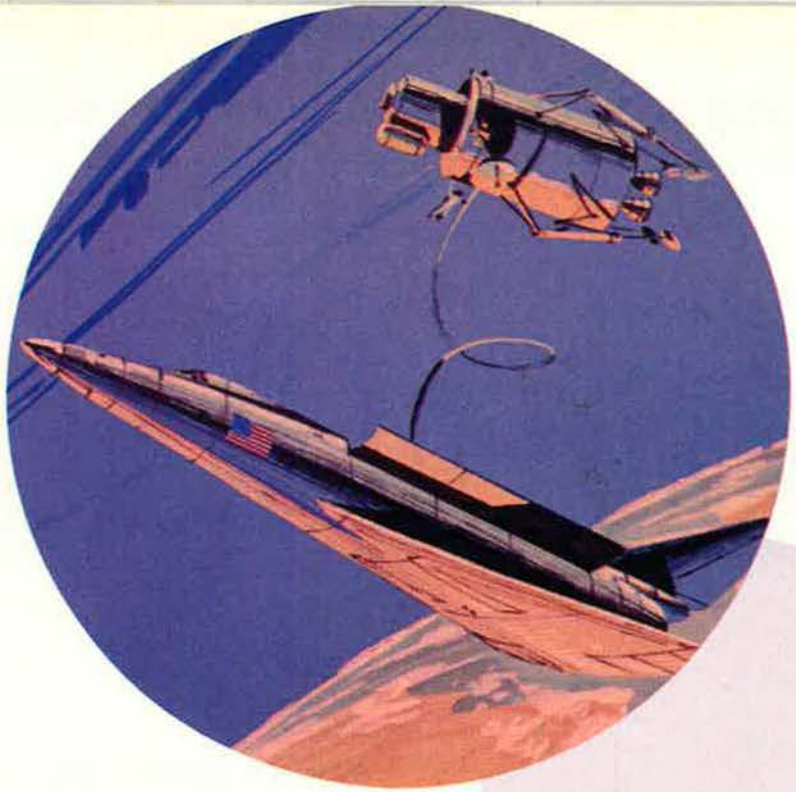
Future military space requirements are closely linked to missile defense programs, since US Space Command is responsible for planning and developing requirements to support the engagement of forces against a ballistic missile attack on the US homeland.

Many of the same tasks for missile defense are key to the concept of force application from space.

Current US policy does not permit warmaking with space systems, but US Space Command's plan maintains the NCA may need to have at its disposal "a means of engagement ... to neutralize threats without widespread destruction."

It goes on to say, "The ability to apply force from space may employ orbital systems or ground-based systems."

No serious development of space weapons could take place without a firm public consensus supporting it. Space Command's operational con-



cept provides a plan to provide alternatives to civilian leaders in case of a policy change.

The command seeks to revolutionize the necessary "high ground" capabilities with more dramatic capability than military aircraft did when they changed the nature of operations decades ago. By 2020, the global engagement concept would provide worldwide situational awareness, an integrated worldwide umbrella missile defense, and a limited ability to apply force from space against high-value, time-sensitive targets.

The Long Range Plan advocates building coalition support for space-based defensive systems and 21st century treaties. "If successful, this construct will allow us to deploy potent defensive systems, but the source of the threat will remain. The next step is deploying systems for force application that add to collective security by strongly deterring rogue states," the plan says.

Computer Network Warfare

Last October, US Space Command was given the mission of the Joint Task Force—Computer Defense Network, established in recent years as the focal point for defense of the Department of Defense computer networks and systems.

The task force monitors incidents and potential threats and coordinates agencies across DoD to act to stop or contain damage and restore normal

computer operations. It gets intrusion data from sources across DoD and from non-DoD agencies, fuses it, and adds information about ongoing operational missions plus intelligence and technical data to give a big picture synopsis of the incident.

Maj. Michael Birmingham, a US Space Command spokesman, said a whole range of intrusions, from mischief to sophisticated attempts to hack into the networks, has been seen. The computer defense task force gets 80 to 100 alerts each day. Of those, about eight to 10 provoke genuine concern. Only about 10 per week lead to investigations.

The command has identified the need for 100 more personnel to plan and manage network attack missions, and these new workers could be added in late 2000. As Myers said, "We believe it's only a matter of time before they [cyber intruders] successfully penetrate the thick walls surrounding our secure systems."

US Space Command has also been given responsibility for the super-secret Computer Network Attack mission—initial standup is slated for October of this year. ■

Theresa Foley, a freelance writer living in Florida, is a former editor of Space News. Her most recent article for Air Force Magazine, "The Battle for Bandwidth," appeared in the October 1999 issue.

A wing-sized task force flies out of Incirlik into the teeth of Iraqi SAMs and AAA.

Northern Watch

By John T. Correll, Editor in Chief

THE first “no-fly zone” was invented in April 1991 to prevent air attacks by Iraqi dictator Saddam Hussein on Kurdish tribesmen in the northern part of his country. A similar zone was created in 1992 to protect the Shiite Muslims in southern Iraq.

The concept has since been used elsewhere. In 1993, for example, Operation Deny Flight established a no-fly zone over Bosnia-Herzegovina. However, the classic example is still Iraq, where coalition forces are in their ninth year of an aerial occupation that now covers about 60 percent of Saddam’s territory.

Operation Northern Watch, conducted out of Incirlik AB, Turkey, works the area north of the 36th parallel. The Southern Watch zone, south of the 33rd parallel, is patrolled by aircraft from bases in Saudi Arabia and other locations in Southwest Asia and from carriers in the Persian Gulf.

The two no-fly zones still protect the ethnic minorities, but the broader objectives are “to control and contain the Saddam Hussein regime and pressure the regime to comply with applicable UN Security Council resolutions,” Brig. Gen. David A. Deptula said in November. Deptula was just back from an 18-month tour as commander of the Northern Watch Combined Task Force.

“The no-fly zones are not unlike a parole officer living in a house with a convicted criminal,” Deptula said. “We are going to stay there until we are convinced that he is not going to commit any crimes anymore.”

From 1991 until recently, the Iraqis seldom challenged the coalition patrols, and operations were mostly uneventful. A year ago, that changed in a big way.

Brig. Gen. David A. Deptula flies this F-15C during a routine patrol over northern Iraq. He commanded the Operation Northern Watch Combined Task Force from its base at Incirlik AB, Turkey, for 18 months.





Saddam Strikes Back

In December 1998, US and British forces struck some 100 Iraqi targets in a limited 70-hour operation called Desert Fox. It was supposed to punish Iraq for obstructing UN arms inspections and “diminish” Baghdad’s ability to threaten its neighbors, but it ended inconclusively. Four days later, Saddam declared the no-fly zones invalid. Iraq sent additional Surface-to-Air Missile batteries into the proscribed areas and announced that allied warplanes would be fired upon.

On Dec. 28, the Iraqis launched three SA-3 missiles at F-15 and F-16 fighters flying a Northern Watch patrol near the city of Mosul, about 220 miles north of Baghdad. It was the first time Iraq had fired on coalition aircraft since September 1996. The US aircraft were not hit and counterattacked with HARM anti-radar missiles and GBU-12 precision guided bombs. On Dec. 30, an SA-6 site near Talil fired half a dozen missiles at Southern Watch aircraft. F-16s promptly took out both the missile battery and its radar.

Since then, the Iraqis have challenged coalition aircraft hundreds of times, either by firing on them or by tracking them with the radars that guide the SAMs and the Anti-Aircraft Artillery. On Feb. 1, Saddam offered a \$14,000 bounty to any Iraqi who could shoot down an American or British aircraft and a reward of \$2,800 for capturing an enemy pilot



USAF photo by SSgt. Vincent A. Parker

SSgt. Rodney Johns, from Spangdahlem AB, Germany, marshals an F-16CJ returning to Incirlik from a northern no-fly zone patrol. The fighter had launched one of its HARM missiles against an Iraqi SAM site.

that he could parade through the streets of Baghdad.

Operation Northern Watch had flown more than 7,500 sorties in the past year, and between December 1998 and November 1999, it employed more than 1,000 weapons against more than 240 targets, Deptula said. As of Nov. 15, the task force at Incirlik logged 95 “combat engagement days,” which he defined as “a day when the Iraqis actually fired at our forces and we responded with lethal force.”

In those 11 months, Northern Watch destroyed more than 140 large

caliber anti-aircraft guns, 30 SAM radars, 15 SAM launchers, 10 SAM control vans, and 10 radar relay, communications, and jamming sites, among other air defense facilities, he said.

“Most of the strategic SAMs, are gone now, either moved or destroyed,” Deptula said. “That doesn’t mean he [Saddam Hussein] can’t move additional SAMs back into the area.” Saddam had begun “hiding his weapons and then using them out of locations that are in close proximity to civilians in an attempt to protect those locations from being fired upon.”

At the start of Operation Allied Force in the Balkans last March, Deptula said, some of the Northern Watch assets, including tankers, jammers, and air superiority fighters were “borrowed” temporarily with the consequence that “there was a period of several weeks when we didn’t fly.”

Is it Working?

Enforcement of the no-fly zones in Iraq—even when only the action since December 1998 is taken into account—is already the longest sustained military operation for US forces since Vietnam. Some people have begun to question the no-fly zone operations.

“Firing Blanks: The plot to oust Saddam and the constant pounding from US jets are going nowhere,” declared the headline on a *Time* magazine article Nov. 8. “Our Un-

USAF photo by TSgt. John Rohrer



An F-16 from the 138th Fighter Wing of the Oklahoma ANG is readied for a Northern Watch patrol. The Guard and Reserve forces have provided about half of the operation’s units since its inception in 1991.

War With Iraq Drags On, No End in Sight," a Newhouse News Service headline said Sept. 23. According to *The New York Times* ("France Voices Dissatisfaction With US-Led Bombing of Iraq") in August, the French Foreign Ministry has three times taken issue with the continuing American and British "bombing raids" on Iraq.

US Secretary of Defense William S. Cohen maintains that the no-fly zone operations are working. "Saddam has been contained since the end of the Gulf War," Cohen said in Doha, Qatar, last March. "He has not been in a position to pose a threat to countries in the region by virtue of the United States, the United Kingdom, and others who have been working to make sure that he doesn't move against Kuwait, Saudi Arabia, or any other country. ... We have helped protect the security of the region."

In testimony to the Senate June 23, Elizabeth Jones, principal deputy assistant secretary of state for near eastern affairs, said that US policy is unchanged and that the objective is still to contain Saddam Hussein while seeking a new regime to govern in Baghdad.

"Operations Northern and Southern Watch deter Saddam from using his air force against the civilian populations north of the 36th parallel and south of the 33rd," Jones said. "We maintain a robust force in the region, which we have made clear we are prepared to use should Saddam



USAF photo by SSgt. Vincent A. Parker

SSgt. Mary Blyer, 48th Maintenance Squadron, RAF Lakenheath, UK, checks munitions on an F-15E at Incirlik. During an 11-month span, Northern Watch fighters employed more than 1,000 weapons against some 240 targets.

cross our well-established redlines. Those redlines include: should he try to rebuild or deploy his weapons of mass destruction; should he strike out at his neighbors; should he challenge allied aircraft in the no-fly zones; or should he move against the people living in the Kurdish-controlled areas of northern Iraq."

Some military people have joined in the criticism, perceiving the operations in Iraq as open-ended and lacking a clear objective. Retired Gen. Merrill A. McPeak, former Air Force Chief of Staff, does not share that view. "The bombing isn't hurt-

ing us, and it is hurting Saddam," McPeak told *Time*.

The Force at Incirlik

The Combined Task Force for Northern Watch at Incirlik consists of about 1,600 people, most of them Americans and the others British and Turkish. The co-commanders are Deptula's successor, Brig. Gen. Bob D. DuLaney of the US Air Force and Brig. Gen. Savas Sanlitürk of the Turkish air force.

The Turkish parliament reviews and renews the Northern Watch mandate semiannually. Last February, the US, British, and Turks agreed on combined rules of engagement for the task force. Northern Watch forces, if engaged, may respond by targeting any element of the integrated air defense system.

The rules, Deptula said, allow "the flexibility to respond, not just against the gun or missile that is firing at us" but also "the whole array of equipment and architecture that goes along with it, which is just as threatening as the missile or the gun."

At any given time, Northern Watch has about a wing's worth of aircraft, a fourth as many as Southern Watch operates. Southern Watch also has more territory to cover, but the percentage of area covered by AAA and SAMs is considerably greater in the North, Deptula said.

Because of the geographical boundaries of the unified commands, the US contingent of Northern Watch



USAF photo by SSgt. Vincent A. Parker

SSgt. William Roop, an F-15E crew chief, finishes his pre-flight inspections. The 1,600-strong task force at Incirlik consists of US personnel with some British and Turkish forces.



The Aircraft of Northern Watch

Mission	US	Turkey	Britain
Combat	<ul style="list-style-type: none"> 1 F-16CJ. Suppression of enemy air defenses. 2 F-15C. Air superiority. 3 F-16CG. Emergency defense suppression. 4 F-15E. Emergency defense suppression. 	<ul style="list-style-type: none"> F-16 F-4 	
Combat Support	<ul style="list-style-type: none"> 5 EA-6B. Electronic jamming. 6 KC-135. Air refueling. 7 HH-60G helicopter. Combat search and rescue. 8 M/K/HC-130. Tankers to refuel the helicopters. 9 EP-3 or RC-135. Signals intelligence. 		<ul style="list-style-type: none"> 10 Jaguar. Reconnaissance. 11 VC-10K. Air refueling for Jaguars and EA-63s.
Command, control, and communications	<ul style="list-style-type: none"> 12 E-3B/C Airborne Warning and Control System. 		
Combat service support	<ul style="list-style-type: none"> 13 C-12. Theater transport. 		

14 Also shown is a Patriot missile unit from the US Army, which became part of Northern Watch for a short time when Iraq threatened to attack neighboring coalition countries.

reports to US European Command while its Southern Watch counterpart reports to US Central Command.

The task forces have sensibly straightened out that wrinkle by means of a hotline that connects them. "It's important that we treat Iraq as an entire system and capitalize on

the advantage we have in applying pressure on the Saddam regime from both north and south simultaneously," Deptula said. "Accordingly, we coordinate some operations between north and south and use the hotline to exchange information of an immediate nature."

The task force at Incirlik ran on an expeditionary model, even before the US Air Force formally implemented its Expeditionary Aerospace Force concept Oct. 1.

"Northern Watch is a TDY [Temporary Duty] organization," Deptula said. "With the exception of the com-

mander, the combined force air force component commander, and the chief of staff, everybody who comes to this operation comes on a temporary basis. ... Forces that fly actually rotate from as short as 14 days for the Air Reserve Component all the way up to 180 days for the Navy and the Marines."

Regular Air Force crews rotate into and out of Incirlik every 45 days. Rotation times for others are as short as 14 days for the Air Guard and Reserve, 60 days for the Royal Air Force, 90 to 120 days for the Combined Task Force staff, to 180 days for the US Navy and Marine Corps. Only the three top officers have the option of long tours.

The operation has yet again shown the flexibility of the reserve components. "Forty-nine percent of all the Northern Watch units since the inception of Northern Watch have been either Guard or Reserve air forces," Deptula said. "I gotta tell you, they roll into this operation seamlessly because they've done the preparation."

About 2,000 Americans are assigned as permanent party to the 39th Aerospace Expeditionary Wing, an element of US Air Forces in Europe whose mission is to support Northern Watch. The commander, Col. Dutch Remkes, also serves as the Air Force component commander in the Northern Watch Task Force.

Deptula said that although Northern Watch "is an aircentric opera-



USAF photo by 1st Lt. Dave Westover

A Kansas ANG KC-135 fuels an RAF Lakenheath F-15E. Fighter, tanker, and electronic support aircraft fly as a composite force from Incirlik 400 miles east to Iraq's border, where the fighters top off fuel then head south for a patrol.

tion, it is a joint task force with components from each of the services participating. When Iraq threatened to attack neighboring coalition countries last year, a Patriot missile unit from the Army became a part of Northern Watch for a period of time for ballistic missile defense."

The Composite Force Package

For a patrol of the no-fly zone, the coalition fighters, tankers, and electronic support aircraft fly out of Incirlik as a large composite force package and proceed to the Iraqi border, 400 miles to the east. The

intelligence aircraft and the tankers hold an orbit over eastern Turkey. The fighters top off their fuel tanks and turn south toward Iraq.

If Iraqi aircraft violate the no-fly zone restrictions or rise up to meet the coalition force, they will be met by the F-15 air superiority fighters. Navy EA-6Bs provide electronic jamming.

The Iraqis will also draw a response if they begin tracking the coalition aircraft by radar, a step presumed to be preparatory to missile launch or anti-aircraft fire. The strike may be conducted by the fighters being painted by the radar beam, or it may be by some other element of the force, perhaps some time later. But there will be a response.

The F-16CJs will use HARM missiles to take out the radar, and the F-15Es and F-16CGs will lay half a dozen or so precision guided bombs on the offending gun, SAM site, or other piece of the integrated air defense system.

Everything that happens is closely monitored, not only by the electronic control and intelligence aircraft orbiting near the border but also by the combined air operations center back at Incirlik, which receives a continuous live feed via satellite from the Airborne Warning and Control System and other platforms.

"Sometimes folks question the training obtained in deployments like Southern Watch and Northern Watch," Deptula said. "We are a small enough



USAF photo by SrA. Jeremy K. Cross

The tent city at Incirlik houses airmen taking part in Operation Northern Watch. With the exception of the senior leaders, the operation is a TDY endeavor—Air Force crews rotate in and out about every 45 days.

operation that we have the opportunity to all brief together, fly together, and come back home and debrief together and build upon the lessons we learn that particular day. ... We fly and execute as a composite force package. Every ONW mission that is flown is a large force employment exercise, which normally folks in training units back in the States would only get at a Red Flag. ... Here, any time we fly a mission, we do all of this."

In addition, he said, about a third of the sorties that are flown every month are training missions on the ranges in Turkey and in the airspace there.

Future of the Zones

Despite the duration of the ongoing operation in Iraq, the armed forces have tended to regard no-fly zones as a temporary phenomenon. Recently, however, some strategists have begun to theorize that no-fly zones in fact represent a new option for power projection in support of foreign policy, and that the concept may be more lasting than previously believed.

At the same time, there are suggestions that the same results might be achieved in different ways.

On the PBS "NewsHour" Aug. 17, Gen. Richard E. Hawley, former commander of Air Combat Command, raised the possibility of operations "to contain Iraq without the requirement to expose our forces daily to those threats from Iraqi defenses and



USAF photo by SrA. Adam Slump

Deptula checks a missile on his F-15C prior to heading to the northern Iraq patrol zone. "We are going to stay there until we are convinced that [Saddam Hussein] is not going to commit any crimes anymore," he said.

still achieve the objective of containing Iraqi aggression."

Hawley said that "as we have advanced our capabilities to respond quickly to aggression in any part of the world, one alternative might be to rely more heavily on our ability to project power rapidly from long distances."

For example, B-2 bombers might fly from bases in the United States, as they did daily during Operation Allied Force, to strike targets in Iraq whenever that is necessary.

Asked about it after his presentation, Deptula said that "there are a

variety of ways that you could execute air exclusion zone operations, and I think we need to explore some of those. Perhaps that is something the Joint Forces Command could experiment with.

"I am open to exploring some of those," but "it depends to a degree on the demonstration that you could apply force rapidly and quickly, when needed to do so, from far away. I think we could do that, personally."

Also looming in the near future is the problem of advanced Surface-to-Air Missiles. So far, Saddam has had only earlier-generation missiles of Soviet design. According to press reports, though, he has been trying to purchase SA-10s from Russia, with shipment and delivery handled by some third country. If he obtains these weapons, to which most US fighters are vulnerable, how would the no-fly zone be enforced?

"It would be more difficult than it is today. You would need to take out the [SAM] site. This is one of the unappreciated stories about how and why it's so important to continue to acquire stealthy aircraft like the F-22. With F-22s operating in a dual role, we could significantly reduce the total number of aircraft required to conduct no-fly zone operations, reduce the number of people deployed, and reduce the dollar cost of operations while increasing the effectiveness of the operation against a wider and more capable spectrum of threats." ■

USAF photo by SSgt. Vincent A. Parker



An F-15E from the 494th Expeditionary Fighter Squadron touches down following its patrol in northern Iraq, where it had been part of a defensive strike against an Iraqi SAM site.

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A celebration of flight brings the past and the present together.

Heritage Flight



Photography by Erik Hildebrandt



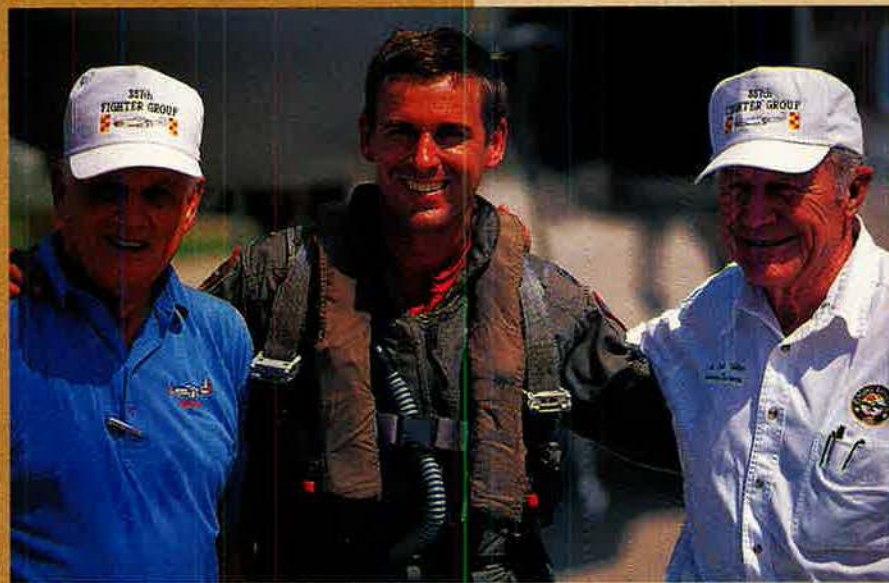


Airpower past and present come together in this P-47, P-51, and F-15 formation over Lake Winnebago in Wisconsin. The Air Force Heritage Flight program brings legendary warbirds and their active duty counterparts together to inspire air show audiences around the nation.

"Air Force 50," the service's golden anniversary celebration at Nellis AFB, Nev., provided the seeds of Heritage Flight. There, vintage airplanes drawn from aviation heritage organizations around the nation flew wingtip to wingtip with their "descendants" now in the inventory.

The parade of 50 years of flying history wowed the crowd.

The unprecedented sight of A-10s, F-15s, and F-16s flying tight formation with their World War II and Korean War-era counterparts proved so popular that USAF officials decided to make it a staple of the air show season. In cooperation with the International Council of Air Shows Foundation and the FAA, a formal program was developed to bring together the diverse aircraft of USAF history. "Heritage Flight" made its debut in April 1999 and is now an official part of Air Combat Command's flying demonstration program.



Participants in the program make up a veritable who's who of aviation. Here, F-15 demonstration pilot Capt. John York is flanked by USAF legends Clarence E. "Bud" Anderson, at left, and Chuck Yeager, at right. New recruits include Apollo 8 veterans William A. Anders and Frank Borman. Above, Regis F.A. "Reg" Urschler shows off his restored P-51 for the camera. Above left, York rolls inverted during a single-ship demo.



One of the best-known air show Mustangs is Big Beautiful Doll, owned and piloted by Ed Shipley, one of Heritage Flight's charter participants. Flying World War II-era aircraft in tight formation with Mach 2+ jets requires tremendous proficiency, and Shipley led the effort to sign up the airplanes and pilots to do the job. In the background is a Korean War-era F-86 wearing a patriotic paint scheme.



Study in contrasts (above): Tom Gregory, flying a gorgeous P-47 owned by the Lone Star Flight Museum of Galveston, Texas, flies lead on York in an F-15. The markings worn by the P-47 warbird represent an actual (and very colorful) World War II fighter from the 366th Fighter Squadron.

Continued on p. 46.



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Above, Shipley's highly polished machine is silhouetted against the waters in Wisconsin. (The original Big Beautiful Doll was flown by World War II P-51 ace John D. Landers.) At left, York noses his F-15 up for the camera with Gregory and his P-47 in trail.

York snaps a salute to his two crew chiefs, SSgts. Tracy Ann Tremblay (left) and Heriberto Padilla. An assignment to a demo bird is highly prized, and these two dedicated technicians understand how important it is that their ship be "Code One" (for no discrepancies) and good to go for every air show hop. Thousands will be watching, and many will gain their first impressions of the Air Force from what they see.

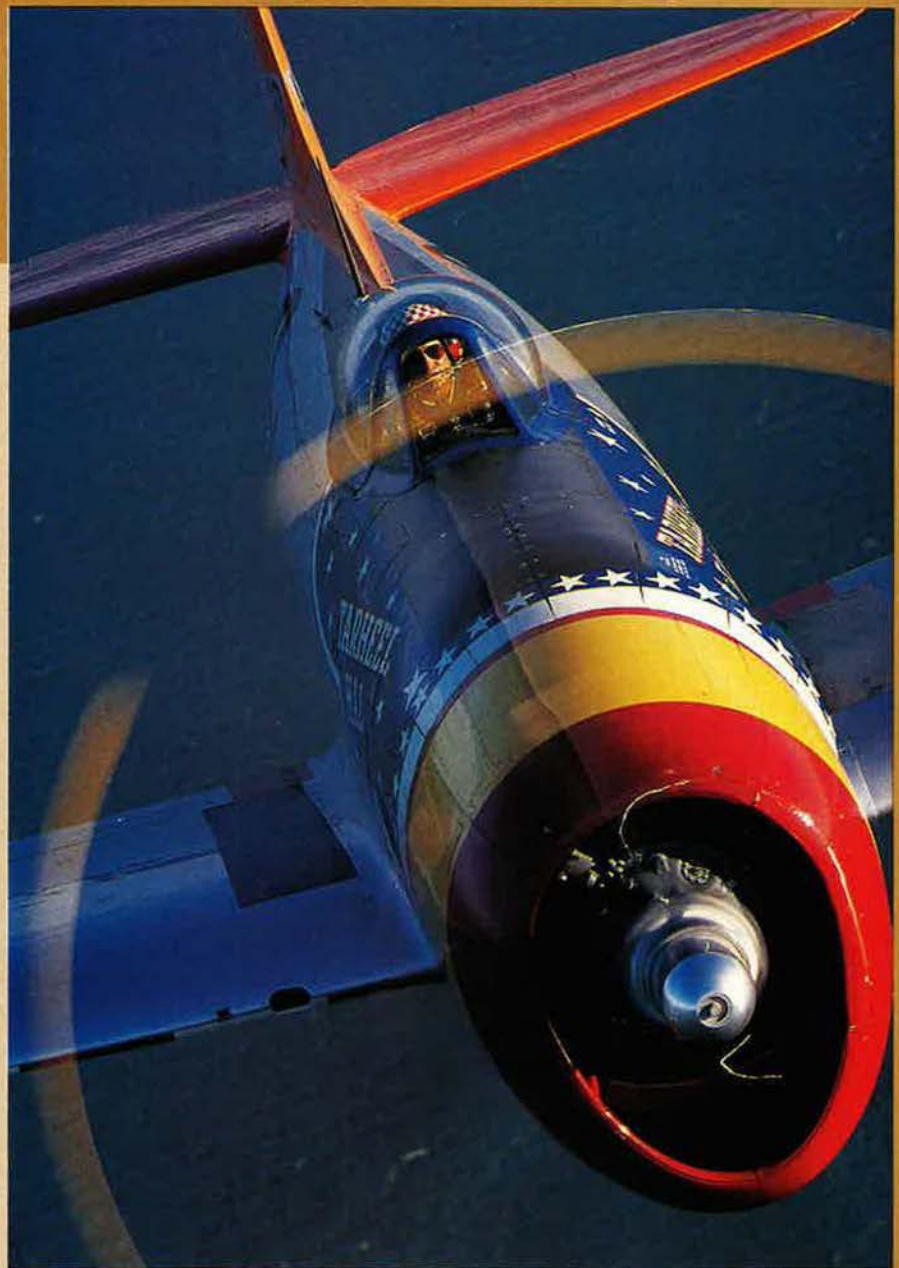




Heritage Flight warbirds receive no logistical or financial support from the Air Force, though some of their costs are offset by air show organizers and sponsors. The year 2000 air show season is slated to feature more than a dozen historic aircraft types.

Flying, maintaining, and caring for warbirds is a labor of love. Those who undertake it know that keeping them in the air is the only way to communicate to younger generations the sights, sounds, smells, and romance of these magnificent machines.

Above, York flashes the high sign to an appreciative crowd, while Gregory, at right, poses Tarheel Hal for the camera. Below, it's York's turn.

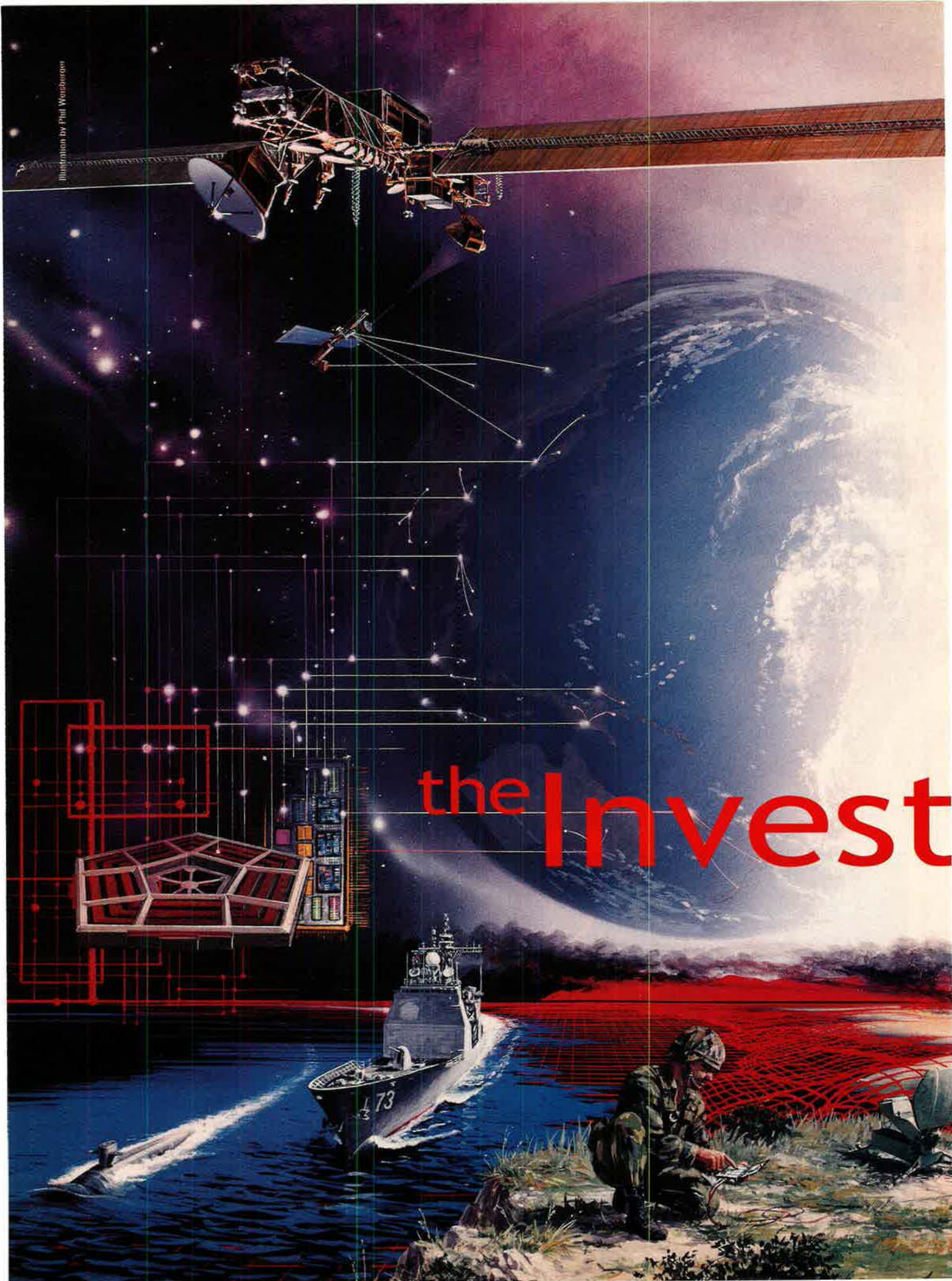


Photos by Erik Hildebrandt



Heritage Flight will participate in air shows around the country this season, allowing thousands to experience the thrill of seeing modern fighter aerobatics as well as the grace and beauty of aircraft from a bygone era. Whether it's the roar of Merlin engines or the awesome thunder of turbofans, audiences will thrill to the "sound of freedom." ■

Illustration by Phil Worsbarrow



the Invest



ment in Space

An AFA symposium explores our stake in space and the need to defend it.

By Peter Grier

Gen. Richard B. Myers

The nation's military space infrastructure is expensive. Within the Air Force, no one disputes that point. Gen. Richard B. Myers told the Air Force Association's Los Angeles National Symposium on Nov. 19.

However, it's worth the price, said the Air Force's top space officer. Take Operation Allied Force. Without space assets, triumph would have taken longer and cost more, both in collateral damage and lives of allied service personnel.

In Los Angeles, Myers spoke as commander in chief of US Space Command and North American Aerospace Defense Command and as commander of Air Force Space Command. He was confirmed in October to become vice chairman of the Joint Chiefs of Staff.

"It is tough to put a price tag on the count of lives that I believe we saved due to space support in Kosovo. ... There is little question that space was vital to the allied victory," said Myers.

That operational experience aside, the last two years have seen some difficult times for military space. A string of launch failures has destroyed payloads worth \$3 billion to \$4 billion, including a Milstar bird lost last April and a National Reconnaissance Office spy satellite that was lost in August 1998.

These experiences have raised a difficult issue for Air Force Space Command: How should the Air Force mitigate the risks associated with spacelift?

"The question is, how much risk can we afford to take in the launch business today?" said Myers.

Mention launch insurance and "everyone shudders," the space chief told the AFA audience. That is because it would cost upward of 30 cents per dollar of asset value—for the Air Force, anyway.

"That is like paying 10 grand to insure a \$30,000 car. It is not a very good option for us," said Myers.

Another way of mitigating launch risk would be to plan for it. Buy more satellites than requirements call for, on the theory that some will be lost in launch accidents.

Or use the Navy's method. The Navy only pays for space assets once they are on orbit and functioning—an acquisition strategy that drives purchase costs significantly higher.

"We must have a plan to mitigate the few failures that we know we are going to have over time. We can't just present the Air Force with a billion dollar bill for Milstar and say, 'Go fund it,'" said Myers.

The Air Force also needs a plan to defend its space capabilities, said the space chief. The nation's control of space remains vulnerable, because space superiority is simply assumed—unlike air superiority, which is planned for.

Several countries already have lasers than can blind optical sensors on US satellites. Others are working on missile warheads capable of dispensing satellite-killing shrapnel in Low Earth Orbit. A nuclear detonation at the right altitude would leave people on Earth unharmed, yet fry every satellite in Low Earth Orbit.

"It is vitally important to protect ground launch and uplink-downlink components as well," said Myers. "Many of our overseas ground sites are remote and potentially vulnerable."

Critical space systems should be able to withstand attacks with little or no damage. They should be able to detect and report when they are under siege and locate and identify the attacking system. Ground controllers need to be able to quickly assess attacks and rapidly restore capability if needed.

Commercial as well as military systems are at risk. Eighty percent of the spaceborne communications used in the Kosovo campaign traveled on commercial systems.

"Clearly, our reliance on commercial space has created a new center of gravity that can easily be exploited by our adversaries," said Myers.

New technology would provide some protection for satellites against attack. But it is impossible to upgrade a system that's already on orbit—and new systems may be a long time coming.

"The bad news is that our GPS [Global Positioning System] satellites are lasting longer than predicted. Bad news because we have capability on orbit designed for a previous era and not responsive to our current needs," said Myers.

At present, 27 GPS satellites are on orbit and another 18 are waiting on the ground. Most are older designs. A version that incorporates newer technology is not currently scheduled for first launch until 2007. The must-have capabilities of the newer satellite include a jam-resistant military signal called the M-code, two additional civil signals, and a much higher power level.

Traditionally, launch schedules have been based on life expectancy, the point being constellation sustainment rather than maximization of capability. That needs to change, said the space chief.

"We need to rethink our launch

and acquisition strategies in order to get the right capability up there when needed," he said.

Gen. Michael E. Ryan

As a nation, the United States has an ever-growing investment and interest in the medium of space, Gen. Michael E. Ryan, Air Force Chief of Staff, told the Los Angeles symposium. All told, space represents about a quarter of the overall US aerospace industry effort, he said. US government spending on space reached \$30 billion last year. Private industry will reach and then surpass this level early in the 21st century.

The Air Force represents a large portion of US space efforts. The service accounts for 90 percent of DoD's dedicated space personnel, 85 percent of its space budget, and 90 percent of its space infrastructure.

"Each year," said Ryan, "space systems and space operations account for a growing share of the Air Force budget. It will continue to grow. That will be both an opportunity and a challenge for the US Air Force."

The military implications of increased US involvement with, and reliance upon, space systems are immense. Space will become a place the nation must be able to control, as it controls the atmosphere, when need be. That will not be easy, and it will not be exact, said the Chief of Staff.

"As the second half of the 20th century has matured the air realm, the first half of the next century will mature the aerospace realm," he said.

For Air Force purposes, space and air are not separate domains, according to the Chief. Instead, they are two parts of the same whole, as closely related as oceans and seas. "We should think of the aerospace domain as a seamless volume from which we provide military capabilities in support of national security," Ryan told the symposium. "Space is a place, not a mission."

Breakthroughs achieved during Operation Allied Force demonstrate the progress already made in integrating space capabilities into the service's overall structure.

For the first time, the Air Force was able to almost instantly calculate the coordinates needed for GPS-guided munitions to hit targets that had been identified with atmospheric

unmanned aerial vehicles. Predator video data was combined with three-dimensional terrain data from satellites, then beamed back to the cockpits of aircraft patrolling over Kosovo and Serbia.

Such efforts required much greater communications capability than was needed only a few years ago. Allied Force used five times as much bandwidth as did Operation Desert Storm, Ryan noted. The Kosovo effort connected 40 different locations in 15 countries using a variety of military and civilian lines and satellites, and many new ones were established.

"We worked over 44,000 spectrum requests, some terrestrial, some atmospheric, some for space systems, and, as you may know, these are very gnarly issues with our host countries," Ryan told the AFA audience.

The Air Force is not the only US military service interested in space, but it is the only one with a full spectrum of aerospace capabilities. Maintaining that edge will be expensive. That is why partnerships are so critical, said Ryan.

Partnerships with industry are already a reality. In the Balkans, one experiment has forward air controllers using commercial satellite telephone systems.

"The first test occurred last December. The forward air controller dialed 911 Air Force and received an immediate close air support aircraft in his area," said the Chief.

The aerospace domain must be integrated into how the service fights, Ryan concluded.

"We are on a journey," he said, "combining and evolving aerospace competencies into a full-spectrum aerospace force."

Gen. George T. Babbitt

All the top officials of the Air Force accept that space capability is a key to fighting and winning in the decades ahead. That raises another issue, said Gen. George T. Babbitt, commander of Air Force Materiel Command. How is the service going to pay for the space modernization that it needs?

Further force reductions are not likely to pay for much. More re-engineering, outsourcing, and privatization won't provide enough money.

Perhaps the military needs of America can no longer be satisfied

Carol A. DiBattiste: The First Three Months

During her first 100 days as undersecretary of the Air Force, Carol A. DiBattiste has flown aerobics in a T-38. She has participated in a three-ship C-17 low-level airdrop mission and pulled seven and a half g's in a two-on-two F-15 air intercept.

She also got to send a navigation command to a GPS satellite—albeit under the watchful eyes of a room full of Space Command officers.

"Hopefully, the millions who use GPS each day didn't know the difference with me giving the commands, but it was truly awesome and a wonderful experience for me to do so," said Undersecretary DiBattiste at an AFA symposium in Los Angeles on Nov. 19.

And while she was getting a taste of all the missions the Air Force performs, DiBattiste listened—and then listened some more. What she heard was that the men and women of the service are excited about what they do—but also remain concerned about pay, health care, housing, retirement, and operations and personnel tempos.

Pay and retirement changes that take effect in 2000 should help, she said. The next step is to make similar improvements in the health care system.

"We are also working fast and furiously to address and to fix our recruiting and retention problems, and we need all of your help to do so," she told the symposium.

Back in Washington, her three months on the job have exposed her to the tremendous pressures on the Air Force budget. She cited four major areas: the cost of the aging fleet, the need to improve quality-of-life programs, unexpected personnel and operational costs, and modernization.

Smaller aspects of modernization can be just as important as big programs such as the F-22, she said.

"We must do our best to keep our space launch range infrastructure modernization program moving forward," she said. "I was told recently when I visited Space Command, as an example, that some of the ranges' electronic patch panels that were used during John Glenn's first spaceflight were still in use during his recent flight on the space shuttle."

Partnering with other agencies and with industry is one way that budget pressure might be eased, said DiBattiste. Another is simply making the case for modernization plans and initiatives.

What is the requirement? What is the threat? Is it cost effective?

"The better we can quantitatively answer these kinds of questions, ... the better we can evolve our aerospace force in the 21st century," the undersecretary said.

by a flat or declining budget, said Babbitt.

"I expect the solution is a little bit of all. More topline and continued cost reduction," said Babbitt.

One initiative that might help save money is greater use of commercial space opportunities, according to the AFMC commander.

A recent study by Air Force Space Command and AFMC's Space and Missile Systems Center said that not many opportunities exist in this area. Babbitt said he was "surprised and a little disappointed" at this conclusion. He believes the subject deserves further debate before it can be dismissed.

Discussions about commercial space typically involve five mission areas, he said: launch services, range support, wideband communication, navigation, and remote sensing. Five obstacles to increased Air Force use of commercial services are also typically raised, he said.

The first is that use of commercial firms will establish a level playing field with adversaries who have

access to the same services. That may be true in regards to navigation, wideband communications, and remote sensing, said Babbitt. But access to services does not automatically translate into combat capability.

"It takes a sustained commitment to tactics, doctrine, training, and hardware to fully exploit these space-based services," said Babbitt.

The second obstacle is that the military requirements and program approval process remains too long and arduous for greater use of civilian-provided services. Also true—but perhaps not insurmountable, according to the AFMC chief.

Third, commercial firms often make use of proprietary technology and nonstandard interfaces and provide little coverage in limited market areas. Perhaps there is a way to lure the civilian world into greater standardization, mused Babbitt.

"What can be done to encourage commercial operators to comply with common user interfaces? What additional investments would be re-

quired to expand coverage into areas of military interest?" he asked.

The fourth obstacle is that industry is interested in commercial operation of ranges but uninterested in range investments. This reluctance should not limit the dialogue in what is one of the more promising areas for commercialization.

The last roadblock is that US government policy prohibits commercial investment in the GPS constellation. It also prevents the Air Force from any cost recovery from industry for its GPS investment. Yet few space systems seem better suited for some sort of commercial participation than the widely used navigation system, said Babbitt.

"GPS has created a thriving commercial market, and ... continued Air Force investment in that constellation diverts resources from systems that will never have a commercial appeal," said Babbitt. "We need to be sure before we rule out commercial options [in this area]."

Perhaps these obstacles are insurmountable and there truly is little room for greater involvement by private firms in providing key Air Force services. But more discussion needs to occur before that conclusion is reached, said the AFMC head.

"I don't believe we have sufficiently explored commercial space options," he said.

Sheila E. Widnall

One commercial-military space partnership that symposium participants all described as a promising start was the Evolved Expendable Launch Vehicle program.

EELV is a unique approach, said former Secretary of the Air Force Sheila E. Widnall in a panel discussion of challenges facing the space industry. The Air Force has been able to leverage a fixed investment several times over due to investments by its commercial partners.

"The goal of all of that is that the military, the Air Force, the national payloads should be able to get access to space at fundamentally commercial prices, and, at the same time, we should be able to get a very vigorous commercial space industry in the United States. It sounds like a win-win," said Widnall.

But EELV aside, a number of important military and civilian launches in recent months have been lose-

lose, in the sense that a string of launch failures has destroyed important payloads intended for both military and commercial uses.

Widnall was the chair of Boeing's recent mission assurance review of two failed Delta III missions. She said that one problem was success. The reliability of the Delta II lured Boeing into applying some of the same engineering and oversight procedures to the Delta III, where they did not work.

The success of Delta II was due to years of incremental improvements, said Widnall. But Boeing underestimated the Delta III design challenge.

"The same kind of processes that were very successful in a mature vehicle, a successful vehicle with incremental improvements, are not adequate to deal with some major changes," she said. "We believe this was a failure of systems engineering."

The review's first recommendation to Boeing was that quality must be the company's highest priority. The group also urged a strengthening of systems engineering activities and more engineering oversight.

"An extremely important issue is to assure that adequate communication exists between design engineering and manufacturing," said the former civilian head of the Air Force. "I think as we looked at some of the recent failures it was very clear that there was a problem of what I would refer to as ambiguous technical orders."

Supplier management is also a big issue, as roughly 60 percent of the EELV is going to be supplier parts and components. Widnall also said her committee felt that launch vehicle teams should think explicitly about risk. Someone needs to consider the risk of failure due to proposed design, engineering, and manufacturing changes, she said.

"Finally, I think everybody who is involved in this EELV issue is thinking very seriously about a first flight that is some sort of a test flight of perhaps a less-than-critical payload," said Widnall.

A. Thomas Young

A. Thomas Young, former president and chief operating officer of Martin Marietta, was the head of a similar assessment team formed by Lockheed Martin last May following Titan IV, Athena, and Theater

High Altitude Area Defense missile failures.

The first conclusion that this team highlighted, said Young, is that military space is different from every other aerospace area, even other defense areas. Oversight is more crucial than anywhere else.

"One person can make one mistake that can [lead to] a total mission failure," said Young.

Second, even when things are going well in the launch business, it is appropriate to worry. The Lockheed Martin-established group looked not only at launch failures but at near-failures as well and came up with a surprising number of what it termed "diving catches" (where heroic action by one person saved a mission) and "escapements" (where problems were caught by normal review processes—but not when they should have caught them).

"There were a large number of near-misses, diving catches, and escapements. In fact, of particular interest, there were many in the Atlas program, which has a record today of 48 consecutive successes," said Young.

Every one of these semifailures should be treated as if they had caused a mission crash, urged Young. That means taking more corrective actions than might otherwise be deemed necessary.


Mission success, not cost, needs to be the top priority.

"You can't get to cost by putting cost No. 1. You get to cost and schedule by putting quality or mission success first," said the former Martin Marietta chief.

Loss of experienced engineers has hurt the space business, said both Young and Widnall. And accountability for mission success needs to be focused, with both senior management and engineers involved in success-related oversight.

"The responsible engineer for a component, a box, a subsystem, a software package really should have cradle to grave responsibility," said Young. ■

Peter Grier, the Washington editor of the Christian Science Monitor, is a longtime defense correspondent and regular contributor to Air Force Magazine. His most recent article, "New World Coming," appeared in the December 1999 issue.



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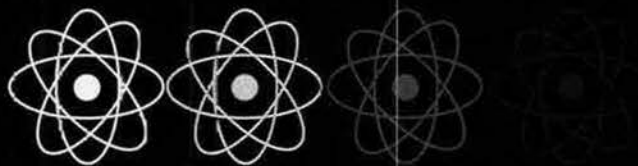


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The Decline of the Nuclear Stockpile



By James A. Kitfield

WHEN the Senate last October voted to reject the Comprehensive Test Ban Treaty, it threw into doubt the future of one of the most expensive, ambitious, and misunderstood science projects in the history of the United States.

The debate hardly touched on the Energy Department's multibillion-dollar Stockpile Stewardship Program. However, that mammoth effort was the subtext to the most stinging treaty defeat since the Senate rejected President Woodrow Wilson's League of Nations in 1920. The underlying issues are profound, and whether and how they are resolved will have major implications for the future of America's nuclear deterrent.

Ever since President George Bush declared a moratorium on nuclear testing in 1992, Washington has staked the reliability of its nuclear arsenal on the science-based Stockpile Stewardship Program, which is designed to accurately replicate the complex phenomenon of thermonuclear explosions and testing, using only computer simulations and various subcomponent tests.

Central to the test ban treaty debate was the wild divergence in answers to a fundamental question: Should the US, in its effort to maintain a credible and safe nuclear deterrent well into the future, rely solely on the use of advanced simulations, subcritical tests, and complex experiments—the functions that lie at the core of stockpile stewardship? In rejecting the test ban treaty, a majority of senators—backed by six former Secretaries of Defense and other senior military and civilian officials—seemed to answer with a resounding, “No.”

Since 1992, the directors of the nuclear weapons labs have stated that confidence in the stockpile has already declined because of weapons aging, albeit slowly, said James R. Schlesinger, who is both a former Secretary of Defense and former Secretary of Energy and who proved to be an influential opponent of the treaty. “By the time the program reaches fruition around 2010, stockpile stewardship might begin to arrest that decline in confidence, but how far it will have already dropped by that point is a matter of judgment.”

Into Purgatory

Although most lawmakers continue to publicly support the moratorium on nuclear testing, the treaty rejection has created a kind of test ban purgatory. The United States doesn't get the insights gained from renewed underground nuclear tests, the stockpile continues to age because no new nuclear weapons are being manufactured, but political support for the \$4.5 billion-a-year Stockpile Stewardship Program will almost surely wane. The nuclear weapons lab directors—who have predicted the program will fail without solid, bipartisan support and steady funding—were badly shaken by an attempt by the House to cut \$600 million from the program for Fiscal 2000.

“In the near term, I think we'll keep funding stockpile stewardship because almost no one wants to argue for a return to nuclear testing right now, but it's a very good question whether we can maintain long-term funding for an expensive program that has been cast [into] such doubt,” said a senior Republican staff member on Capitol Hill. “Once you get beyond the preliminaries of what stockpile stewardship is designed to do, the technological issues just get very murky. That lack of understanding translates into uncertainty and anxiety, which leads to distrust, which translated into opposition to the [test ban treaty].”

After the treaty vote, the Department of Energy conducted a major internal review of the Stockpile Stewardship Program. The review found that while the program is essentially working, DoE needs to place a stronger emphasis on long-term investments in scientific facilities and modernize the infrastructure needed to produce new plutonium pits and refurbish weapons. DoE officials believed that the review may prove their last, best chance to sell the program to a skeptical Congress.

“This [Stockpile Stewardship Program] is very scientifically and technically challenging, and without a thorough grounding in the science, it's clearly very difficult for members of Congress and other observers to reach an independent judgment on the issues raised,” said Undersecretary of Energy Ernest J. Moniz, who headed the internal review. “So, while I think we're well on the path to sustaining long-term confidence in our stockpile without

testing, it's incumbent on us to articulate more effectively what this program is all about.”

To understand what stockpile stewardship is all about, it's necessary to grasp the profound changes that have swept through and reshaped the US nuclear weapons complex.

The Bush Administration's 1989 decision to halt the development and production of new nuclear weapons meant that the US stockpile would progressively age from that moment onward, and it threw into doubt the future careers of the nation's small band of nuclear weapons designers. Now, more than a decade has passed since the US produced a new nuclear weapon. DoE has mothballed or retired much of its capability to produce them.

For instance, of the seven major production facilities that constituted the vast nuclear production complex, only the Pantex Plant in Texas—where US nuclear weapons are being dismantled under the Strategic Arms Reductions treaties—maintains anything close to its Cold War pace of operations. The total nuclear weapons complex is on schedule to shrink from 29.1 million square feet of floor space in 1985 to 6.4 million in 2005.

All the Others Still Test

A number of observers consider the virtual shutting down of US production as a weak link in stockpile stewardship. Except for the United States, all the other nuclear states that endorsed the test ban treaty continue to manufacture new nuclear weapons, largely relieving them of concerns produced by an aging stockpile. DoE is reconstituting the ability to manufacture a limited number of replacement plutonium pits at Los Alamos National Laboratory in New Mexico, but some scientists note that defects in weapons were often created in the transition from the laboratory to the assembly line.

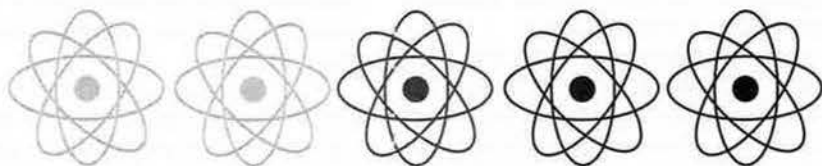
“At some point we're going to have to remanufacture—if not new weapons then major components using new, modern processes,” said a senior weapons designer at Lawrence Livermore National Laboratory in California, a lab that shares stewardship of the nuclear weapons stockpile with Los Alamos and Sandia Laboratories in New Mexico. “Not being able to test at that point could drive us out of our comfort zone into the red zone.”

The change that prompted the most concern at the national weapons labs, by far, was the halt of all nuclear tests in 1992. Testing was viewed as the essential experiment that gave nuclear scientists confidence in their calculations. Nuclear tests were also used as the crucial audition period for all nuclear weapons designers.

"Careers were made and broken at the [Nevada] Test Site," said George H. Miller, associate director for national security at Livermore. "Weapons designers, including myself, were promoted based on our ability to

vada Test Site, nuclear scientists now must look to the science-based program, which is centered on the premise of deconstructing into its component parts the extraordinarily complex phenomenon of a nuclear chain reaction—high-explosive-induced implosion, nuclear fission, tritium boosting, and thermonuclear fusion.

To spotlight each component of the nuclear chain reaction, the Energy Department is funding construction of a series of very expensive experimental facilities that, taken



conduct successful tests. So the organization we evolved to efficiently design, produce, test, and field new weapons, along with our entire reward system, was all swept away at the end of the Cold War."

The anxiety expressed by some of those nuclear scientists reflects the view that testing with a full nuclear explosion had unique advantages. The flaws that would show up from time to time during testing of a new warhead or weapon design, for example, would reveal fundamental gaps in the science of nuclear fission. With the nuclear stockpile now aging without new testing, some experts fear those gaps aren't being detected.

One Los Alamos expert in thermonuclear fusion likened the present challenge to walking an obstacle course in the dark when your last glimpse of light was a flash of lightning back in 1992. "Knowing that we won't be able to open our eyes again and take a peek with a nuclear test, and that there are obstacles and errors out there in the dark, makes you very nervous as a designer," said the scientist. "Nuclear tests proved the inaccuracies and uncertainties in our base of knowledge."

Test Site to Laboratories

Instead of being able to rely on underground nuclear tests at the Ne-

together, represent one of the largest projects in the world.

The \$1.2 billion National Ignition Facility now under construction at Livermore will attempt to achieve fusion ignition at the microscopic tip of giant lasers. The first axis of two enormous X-rays—comprising the dual-axis radiographic hydrodynamic test facility—is now running at Los Alamos. When the second phase is complete in 2002, the total cost is estimated at nearly \$260 million. The X-rays will provide freeze-frame, detailed photos of materials imploding at speeds of more than 10,000 miles per hour. The program also envisions construction of a multi-billion-dollar production facility for tritium, an essential ingredient of modern nuclear weapons with a relatively short half-life of 12 years.

Eventually, data from the experimental facilities will be fed into a developmental supercomputer that (in theory, at least) will operate 100 times faster (100 trillion calculations per second) than today's most advanced computer. The idea is that the data will allow the computer to accurately simulate a nuclear explosion.

Many experts maintain that, for sheer scope, magnitude, scientific complexity, and challenge, the science-based program is rivaled by just two other 20th century endeavors—

the World War II Manhattan Project to rapidly develop the atomic bomb and the 1960s-era Apollo program to land a man on the moon.

"I think this is pretty close to the moon shot in terms of difficulty, because we're requiring increases in computing speed which have never been seen since the invention of the microprocessor," said David M. Cooper, associate director for computation at Livermore and an Apollo program veteran with 30 years supercomputing experience at NASA. "I'm an optimist, so I think we can pull this off, but when you compare trying to simulate an aging nuclear stockpile on a computer to some of the computing problems I worked on at NASA, they were a slam dunk. This is a half-court shot."

The construction of the experimental facilities that are at the heart of stockpile stewardship serves another important function: Weapons lab officials say they are imperative in attracting a new generation of top scientists to the nuclear weapons program and validating their work.

"The way we validated people in the past has disappeared," said C. Bruce Tarter, director of Lawrence Livermore. "Even with the new facilities, the question remains whether we can keep from fooling ourselves about how good we are. I think we can. Without these facilities, my own judgment is there's not a chance in hell we can."

An Aging Stockpile

Perhaps the greatest challenge confronting the labs is the collection of uncertainties produced by an aging stockpile.

Many weapons are already beyond their anticipated design lives of roughly 13 years. To better understand how that process is affecting the stockpile, the labs have instituted the enhanced surveillance regimen, which involves dismantling representative samples of the stockpile each year. While no major problems have yet been identified, experts say the inspections have already led to modifications of some weapons in the stockpile.

The concern is that, with far fewer weapons in the stockpile today (seven essential weapons types vs. 24 at the height of the Cold War), any common-mode failure discovered in the future would involve a much larger

portion of the US stockpile than in the past. "Essentially, we have fewer eggs in far fewer baskets," said one weapons designer.

Nuclear weapons contain plastic high explosives, metal components, and materials that constantly emit high levels of radiation. In fact, to describe what happens to an aging nuclear weapon, experts draw an analogy between the bomb and a car that sits in the sun for years. Over time, the glue on the windshield will pull away, the upholstery will become more brittle, and the dashboard will crack.

"A similar phenomenon occurs inside a weapon, and we really don't know in what time frame that becomes a problem," said one weapons scientist at Los Alamos. "We don't know, for instance, if the sensitivity of high explosives to impact will stay the same despite aging. That's why we're in a race against time to get the data we need from our experiments before any major problem arises in the stockpile or the most experienced designers retire or die."

In an effort to buy time, the weapons labs have begun an aggressive archiving effort as part of stockpile stewardship. Minute data from more than 1,000 nuclear tests going back four decades are being updated and entered into computer data banks. If future experiments and computer simulations are accurate enough to one day explain anomalies in past weapons tests, experts believe that will go a long way toward validating the Stockpile Stewardship Program.

Also troubling the US is the specter of a rapidly aging and surprisingly small fraternity of critical US nuclear weapons designers. Almost since J. Robert Oppenheimer established the supersecret Manhattan Project of the 1940s on a series of isolated mesas at Los Alamos, US nuclear scientists and engineers have moved mountains to keep the United States pre-eminent in nuclear weaponry.

Lab managers are only now beginning to understand how heavily the labs relied on the gut instincts of a small core of very experienced weapons experts. As befits a culture far more analogous to a college campus than a federal bureaucracy, knowledge at the three nuclear labs was often passed along in relatively informal apprenticeships. Now those lessons are being passed to a new

generation of scientists—scientists who likely won't ever design a weapon or conduct a nuclear test, yet who must monitor a rapidly aging stockpile.

As part of stockpile stewardship, archivists are thus conducting extensive videotaped interviews in an attempt to preserve the knowledge of the older generation of weapons designers and engineers. "While we always recognized that much of the expertise in this business resided inside people's heads, we've been surprised at how many of the details existed almost in the realm of folklore that was passed along from one generation to the next," said an archivist at Los Alamos. "So we're trying to lay down the foundation of information that will smooth the path if we ever have to go back to testing."

Raising a Red Flag

Almost from the beginning, Pentagon officials were most concerned that, even if the Stockpile Stewardship Program identified a potential problem in the arsenal, Washington would lack the political will to withdraw from a test ban accord and conduct the necessary testing. Largely to assuage those concerns, the Presidential directive establishing the program also called for a new, annual certification procedure for the nuclear stockpile.

Each year, the Secretaries of Defense and Energy would receive formal assessments from directors of the three weapons labs, the commander in chief of US Strategic Command, members of the Joint Chiefs of Staff, and a Nuclear Weapons Council composed of Congressional representatives. These individuals would have to certify the safety and reliability of the stockpile. The President has pledged that, if that certification is not given, he will invoke a "supreme national interest" clause and resume nuclear testing. Should a problem arise in the stockpile, the process would, in theory, create an internal dynamic to overcome any outside political pressures against resuming testing.

"From the beginning of stockpile stewardship, the nub of the issue

was, if a problem was identified in the stockpile by the annual certification process, would the political pressure not to test override technical and military judgments," said Victor Reis, who until recently was the Department of Energy's assistant secretary for defense programs and a chief architect of stockpile stewardship. Reis said he felt "comfortable" that the annual review process—outlined in treaty addenda called "safeguards"—would succeed in bringing any serious problems with the stockpile to the attention of the senior officials in the Administration and Congress. "But the safeguards and the treaty were never debated as a single package," said Reis. "Whether the Administration or Congress is to blame for that, I think that's why the treaty was defeated."

In terms of the DoE's internal review of stockpile stewardship, officials say it will likely point to some setbacks as well as significant achievements. Because of ineffective management and unforeseen technical problems, for instance, the National Ignition Facility is nearly two years behind schedule and more than \$200 million over budget. On the other hand, progress in the program has given the lab directors and Secretaries of Energy and Defense enough confidence to certify unequivocally, for the fourth year in a row, that the nuclear stockpile is safe and reliable. In a signature success for stockpile stewardship, the weapons labs were even able last year to adapt and deploy an old nuclear warhead on a new delivery system—the B61 Mod 11 deep earth-penetrating bomb—without nuclear testing.

"Our tools under stockpile stewardship are working so well today that we are not only able to certify safety and reliability after giving a complete physical to every single weapon system in our arsenal, but we are also able to meet new military requirements," said Energy's Moniz. "So our review will look at whether stockpile stewardship needs retooling, not whether it's working. It's already working." ■

James A. Kitfield is the defense correspondent for National Journal in Washington, D.C. His most recent article for Air Force Magazine, "Another Look at the Air War That Was," appeared in the October 1999 issue.

Military careerists must now choose between a better retirement plan and a \$30,000 cash bonus.

the New World *of* Retirement Options

By Tom Philpott

AIR Force Maj. George Lamont, 35, isn't sure what he'll decide, but he is thrilled to have the choice. So, too, is SSgt. Rhonda Pelkey, 32. "I think it's great being in the military and having an option like this," she said.

A year ago, both Air Force members understood that their retirement plan, called "Redux," was inferior to the plan provided to peers who had entered military service just a few months earlier.

Now, thanks to the Fiscal 2000 defense authorization act, Lamont and Pelkey not only fall under that more generous retirement plan, known as "High-3," but they also face an unprecedented choice when they reach 15 years of service: They can stay under High-3, or they can return to Redux, enticed by an immediate \$30,000 bonus.

Military members have never seen anything like this option before. While some are anxious about having to make the decision—isn't the military, after all, supposed to take care of its own?—many more seem both surprised and delighted to have the choice.

"What I like about the option is that, depending on how the stock market is at the time, I could take more control of my future by riding out some more of the bull market," said Lamont, an information systems officer at Air Combat Command headquarters, Langley AFB, Va. "Making the present value of \$30,000 work for me, vs. waiting for it to trickle in through higher future annuities, is attractive."

Close Call

Pay officials said that, in general, enlisted members with the discipline to invest long term would be better off returning to Redux and taking the cash bonus. It's less likely, though possible, that an officer would benefit from switching back to Redux.

The first thing the former Redux generation should understand, said Navy Capt. Elliott Bloxom, director of compensation for the Office of the Secretary of Defense, is that they all emerged from 1999 as winners.

Any member who entered service on or after Aug. 1, 1986—about three-quarters of the current active force—saw future retirement benefits climb 12 to 15 percent. Their High-3 benefit package is the same plan available to persons who entered service from Sept. 8, 1980, through July 31, 1986. (Members who entered before Sept. 8, 1980, come under the most generous retirement plan, which is 50 percent of their final basic pay, valued 5 to 7 percent above High-3.)

The second thing new High-3 members should understand, said Bloxom, is that, at the 15-year mark, they will have a choice of retirement plans—and deciding which to take won't be easy. Disciplined enlisted members could invest well and gain a large return on their \$30,000, which represents a larger chunk of their overall retirement benefit than it does for officers.

Additionally, since enlisted income is lower than officer pay, the amount of bonus lost to taxes would be lower than for an officer.

It's a closer call for officers, but many of them, too, could achieve higher lifetime retirement values with Redux plus \$30,000 if they invest wisely and have long military careers.

For members who just stay under High-3, there is a significant gain. By one estimate, the average jump in lifetime retirement benefits in moving to High-3 from Redux is \$220,000 for a typical officer, about half that for an enlisted retiree.

However, to put the bonus offer in perspective, members first should understand key features of both the High-3 and Redux retirement plans.

Under High-3, a member who retires with 20 years of service receives an immediate annuity equal to 50 percent of average basic pay over his or her three highest earning years, usually the final three years. For each year served beyond 20, the annuity climbs by 2.5 percent. Therefore, someone who retires after 24 years receives 60 percent and after 30 years the maximum of 75 percent of average basic pay.

High-3 retirees also receive annual Cost-Of-Living Adjustments to match the inflation rate as measured by the government's Consumer Price Index.

Under Redux, the 20-year retiree gets 40 percent, not 50 percent, of average basic pay over their highest three earning years. The 10-percent-age-point annuity gap narrows over time. For each year served beyond 20 under Redux, annuities climb 3.5 percentage points, vs. 2.5 percentage points under High-3. Therefore, a Redux retiree with 24 years of service would draw 54 percent of average basic pay. That's still lower than 60 percent after 24 years retired under High-3, but the difference has narrowed, from 10 percentage points down to 6.

Equal at 30

The annuity gap continues to narrow with length of career so that at 30 years of service both the Redux and High-3 retiree will draw 75 percent of average basic pay.

Redux also provides less inflation protection, with annual Cost-Of-Living Adjustments capped 1 percentage point below annual inflation. COLAs will match inflation under High-3. The COLA cap accounts for about half of the over-

all benefit disparity between the two plans.

Again, longer careers soften the blow. A Redux retiree who serves 30 years avoids the impact of the COLA cap for 10 years longer than the 20-year retiree.

When a member reaches age 62, Redux benefits will improve in two ways. The more generous annuity formula used under High-3 will kick in for the first time. Also, Redux retirees will see a one-time catch-up raise to restore purchasing power lost to the COLA cap since retirement. "CPI-minus-one" COLAs begin again for Redux retirees at age 63.

When President Clinton signed the Fiscal 2000 defense authorization bill last Oct. 5, all former Redux members were placed under High-3. The switch solved a benefit disparity that the Joint Chiefs warned was harming morale and endangering the services' ability to retain enough members.

Replacing Redux ended the equity issue but how to soften the cost? Lawmakers decided to try to woo members back to the cheaper Redux system with a lump-sum bonus. The \$30,000 is roughly the difference in cost to the government of a 20-year enlisted member (E-7) retiring under High-3 vs. Redux. The government expects to curb retirement costs with every High-3 member who returns to Redux.

When life-stream earnings are compared, said Bloxom, "the member who takes the \$30,000, invests it wisely, and allows compounding [of interest or investment gains] is generally going to be better off than the member who stays under High-3. But it requires not only good financial advice but good financial discipline to not touch that money for any reason. You need to take the long view with the \$30,000 to come out ahead."

Pelkey, an information management specialist at the Pentagon, entered the Air Force in October 1986, two months after Redux was enacted. Last year Pelkey knew a law had passed that offered her a choice of retirement plans. She knew one was High-3, but she thought the other choice was to accept the bonus and leave service at 15 years with reduced annuities, in which case Pelkey intended to stay under High-3 benefits.

Change of Heart

After learning more, however, Pelkey said she leans toward grabbing the bonus and returning to Redux when she hits 15 years in October 2001. She likes the idea of being able to take the lump sum and still remain on active duty at least five more years.

"I would have those years to adjust my spending habits, or whatever I need to do, and still have some money if I decided to get out" at 20, she said.

Pelkey would use a third of the bonus, after taxes, to pay off bills and to add to a college fund for her seven-year-old daughter. Her family, which now pays rent, might also use some of the money for a down payment on a home. The remainder Pelkey would invest, she said, although she has no investment experience.

Pelkey's husband, William, is a senior airman with seven years in. If he stays for a career, too, he would face the same retirement choice in eight years, although Congress presumably would need to raise the bonus over time to preserve its value and appeal.

Service members might have good reasons to spend the bonus rather than invest it. Using it for college or to help buy a home could make sense, said Bloxom. What members should avoid, he cautioned, is using the money on "immediate self-gratification." Buying a sports car or taking an expensive vacation might be fun, but the trade-off would be less financial security in retirement. If a member can't resist such temptations when money is available, sticking with High-3 might be the better choice, Bloxom suggested.

Are military members sophisticated enough financially to handle the bonus option? "By and large, they are," said Bloxom. "There're a lot of people we don't give enough credit to who are wise to the ways of the financial markets. But there will be some people who may not be savvy. It's our responsibility to make sure the educational material we put out fits that population as well."

Defense officials noted, however, that these are not young recruits exercising the option. "These are adults who function in the financial world," said Tom Tower, a retirement analyst in Bloxom's office. "They make

financial decisions every day, taking out loans, buying houses. This is just one more financial decision to make. Some will do better than others."

Decision time will start six months before that first group from the former Redux members reaches 15 years of service. That means information packages will be provided and briefings will begin in February 2001. Pay officials plan to provide seminars, counselors, and brochures.

Defense officials already have established a web site at <http://pay2000.dtic.mil/>. It includes an explanation of the options and typical case illustrations to show relative values. Plans call for it to include an online calculator so members can compare the value of each plan, plugging in their own set of assumptions. Members also will be encouraged to discuss options with family, friends, and personal financial advisors because, for many of them, it will be one of the most important financial decisions of their lives.

"If you think you can be savvy with money, the \$30,000 is going to be much more attractive to you," said Tower. "It gives you flexibility—money in your pocket today—and it's about an equal dollar amount to what you lose by accepting Redux."

Thrift Savings Plan?

One piece of the puzzle still not in place is a military Thrift Savings Plan. Military members, including those who elect the \$30,000 bonus and Redux, could shelter 5 percent of their basic pay and any amount of special and incentive pays, up to a maximum of \$10,500, if and when the government begins a military TSP.

Congress authorized TSP last year but then delayed its start until the President proposes and Congress enacts legislation to offset the cost to the Treasury from deferral of taxes, about \$480 million through 2009.

Another challenge is administrative fees. The Federal Retirement Thrift Investment Board, which administers TSP for federal civilian employees, said in 1997 it could add the military and still keep the administrative fee per participant at 0.06 percent. But it had not anticipated trying to include drilling

reservists as the law directs. To do that, the board said, it would need \$10 million to accommodate reservists. Without that, it would have to charge individual reservists an 8.4 percent annual fee and 1.5 percent for active duty, according to DoD. Defense officials are weighing options to hold down military TSP fees so they don't exceed those paid by federal civilian participants.

Whatever is decided, a military TSP won't start before Oct. 1, 2000, or when offset legislation can be enacted, whichever is later. Bloxom said he doesn't want members to view TSP as intrinsic to a retirement plan. "The two are separate," he said. "TSP is a savings vehicle, not a defined contribution part of the member's retirement."

No matter how it is perceived, TSP could make the Redux bonus more attractive as an option by deferring taxes on contributed amounts. Any part of the bonus not sheltered will face a federal tax bite, about 15 percent for enlisted and 28 percent for officers.

Congress and defense officials aren't sure how many members from the Redux generation will exercise the bonus option and return to Redux. "It's just a unique offering," said Tower. "Nobody's had the opportunity to make a similar choice before."

For budget planning, lawmakers assumed 40 percent of officers and 50 percent of enlisted. Defense pay officials suspect the bonus take rate could be a lot higher. Ironically, officials anticipate some envy among service members who entered before Aug. 1, 1986. So far, they have no choice but to stay under High-3.

"There's not been a great hue and cry," said Bloxom, but, he added, "I've heard some hard questions from that population." After all, he said, having a choice "is a desirable capability." Lamont, who reaches his 15th year of service in February 2002, agreed. "This," he said, "is just a great opportunity." ■

Tom Philpott, the editor of "Military Update," lives in the Washington area. His most recent article for Air Force Magazine, "With Tricare, Even the Boss Gets Confused," was published in the September 1999 issue.

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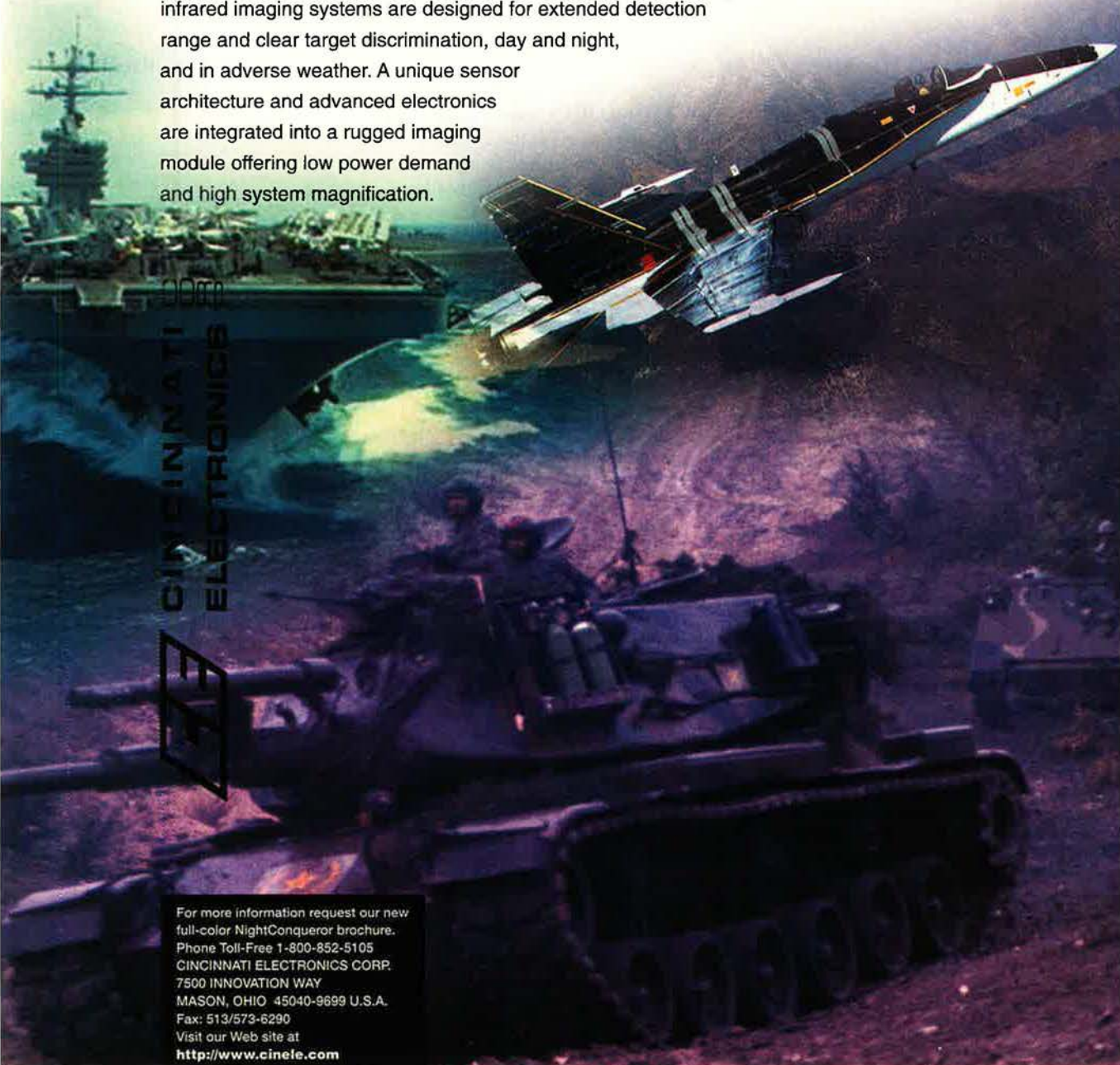
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The California Congressman discusses his side of the controversy.

Jerry Lewis on the F-22

By Otto Kreisher

In the Capitol Hill office of Rep. Jerry Lewis (R-Calif.), one finds a glistening model of the Air Force's top modernization priority, the F-22 air superiority fighter. Indeed, the Raptor enjoys a place of prominence among numerous representations of warships and military aircraft displayed by the lawmaker.

Lewis laughingly assures an interviewer that the fighter model was not put there for target practice. He calls the Raptor a "fantastic" airplane, adding that, "from what we've seen so far, it's got phenomenal potential." Then, he quickly adds, "We're just saying maybe we should test it first."

Lewis's view about the F-22 is significant because he chairs the House Appropriations Committee's subcommittee on defense, one of the handful of panels with life-and-death control over defense programs.

From that influential position, the 11-term Southern California Republican led a surprise attack on procurement of the F-22 during last year's deliberations on the Fiscal 2000 defense budget. USAF officials said he could have killed the program.

In a closed-door vote last July, with no warning, the subcommittee unanimously accepted Lewis's proposal to eliminate \$1.8 billion in funding for the first six full-production F-22s, leaving only \$1.2 billion for continued testing. That view was accepted later by the full appropriations committee and then by the full House of Representatives.

Although about \$1 billion, to buy six test aircraft, was restored in the subsequent House-Senate conference on the defense appropriations, the House action technically delayed the start of production of the Raptor for at least a year. Future production funding was made contingent on the results of a prescribed level of flight testing.

"Serious Pause"

"We did not, as a result of the conference, get 100 percent of what we were asking for in our bill," Lewis said, "but we did get all of the expenditures that go to the F-22 [put] in the R&D [Research and Development] line. We caused a serious pause as far as the production was involved. That's important. We have to get the testing done."

The unexpected move against the Raptor generated lots of speculation, in the

Pentagon and in the news media, about Lewis's motives. Some reports indicated he had a secret agenda, perhaps even nursed a personal vendetta against Lockheed Martin, the F-22 prime contractor.

In an interview with *Air Force Magazine*, the lawmaker dismissed all of the theories. He specifically noted that he has supported Lockheed Martin projects repeatedly in the past and has received generous campaign contributions from the firm. "I don't have any battle with them," said Lewis. "Generally speaking, I've been supportive of defense and supportive of their interests."

Instead, he said, the action on the F-22 was an attempt to open a debate on defense priorities and a response to what he claimed to be the mounting costs of the program and the lack of flight testing. He said, "The key to the F-22 decision, when we called for a pause, was the reality that we have done so little of the real testing ... that involves significant stuff, beyond [the question of] can the thing fly."

Lewis said he and his subcommittee members believed that imposition of a delay in production was essential to keeping the Raptor from repeating the mistakes of the B-1 and B-2 bomber programs. "It doesn't take a genius to go back and look at why we had the problem with the B-1 that we had," Lewis said. Because the B-1 was rushed into production without adequate testing nearly two decades ago, Lewis argued, "we're reinventing that baby again every year. And it still doesn't work like we wanted it to. Why can't we learn these things?"

Lewis presented another rhetorical question. If the F-22 is indeed the best in the world by far, would anyone want it to become so expensive that the Air Force can only afford a handful of them, as was the case with the B-2? With more than \$20 billion already invested, the F-22 program could go as high as \$70 billion with the planned buy of 339 fighters.

"I don't think so," he said, "but nobody was willing to push that edge. And we pushed it. Now we have a debate going on, the healthiest debate we've had for a long, long time" over the proper priorities for using limited defense funds, Lewis said.

"Suddenly, the [Defense] Department, as well as the other branches,

has realized that Congress is serious about oversight," he continued.

Praise for Some—Not All

In the interview, Lewis praised most of the leaders of the armed services for their willingness to discuss new ideas and priorities with his panel. He was particularly pleased with the attitude of Gen. Eric K. Shinseki, the new Army Chief of Staff.

However, Lewis did not express such positive sentiments about the Air Force leadership. He commented, "To this point, I can't say that the Air Force has been forthcoming or very responsive." He called that attitude "disappointing" and indicated that it could hurt the Air Force in the next budget cycle, which he said is going to be even tougher.

Lewis's assault on the high-visibility F-22 program clearly shocked the Air Force leadership, Lockheed Martin, and most Capitol Hill observers. No one had anticipated such a move from a relatively low-profile lawmaker with a moderate to conservative image and a solid record of support for defense spending.

The 65-year-old former insurance executive had served in the California Assembly for 10 years before winning an open House seat in 1978. In both the state legislature and in Congress, Lewis has shown a knack for working with people on both sides of the aisle to get things done.

In the past, he took controversial stands only on issues that deeply concerned his district, which runs from the populous exurbs east of Los Angeles into the lightly settled high desert. For example, he stunned conservatives early in his career by pushing strong clean-air measures. He did so because of the life-threatening smog in his district, and he created a minor stir in 1995 by trying to delete funding for the National Park Service because of constituent opposition to the efforts to tie up more of the California desert as parks or wilderness.

The district also includes the Marine Corps Air Ground Combat Center at Twentynine Palms, the Army's Ft. Irwin, and China Lake Naval Weapons Center, giving Lewis a natural interest in defense spending.

Although Lewis was ousted from a GOP House leadership position in 1992 because he was not considered

conservative enough, he brags that the appropriations subcommittee he chaired in the previous session cut spending more than any other panel. When he took over the defense subcommittee last year, Lewis said he felt the weight of "this very serious new responsibility" and began the year "by doing a lot of homework."

That included a lot of reading and talking to national security experts, including some previous defense secretaries and retired generals, he said.

When he asked them what they would do if they had his job, Lewis said, "more than one" suggested that he should look at the three different fighter programs currently under development or in early production.

The total cost of the three fighters—the F-22, the Navy's F/A-18 Super Hornet, and the Joint Strike Fighter—could run as high as \$350 billion, he said.

"It was suggested by more than one that, if we reduced one, or did some rethinking, it might save \$60 to \$80 billion.

"We don't have enough defense money to go around. So you really have to do the homework that's necessary if we're going to begin to make sure that America is the strongest country well into the next century," he said.

Lewis said the proposal to stop F-22 production "was very quickly a unanimous decision by the subcommittee—a subcommittee that has been, by far, the strongest supporter of national defense systems in the entire Congress."

He noted that the move was supported by Rep. Randy "Duke" Cunningham, R-Calif., a former Navy fighter pilot whose district includes a TRW facility, one of the major suppliers for the F-22's integrated avionics systems.

The Military Responds

Surprised by the subcommittee's action, the Air Force responded with a public information campaign to nip the revolt in the bud. In briefings for members of Congress and the news media, Air Force leaders argued that the F-22 was essential to national security and that the program was being tightly managed.

The Air Force was supported in public statements by Defense Secretary William S. Cohen and in a letter

by all of the Joint Chiefs of Staff, including its Chairman, Army Gen. Henry H. Shelton. The Air Force and Lockheed Martin also rallied the chain of subcontractors to pressure the House members who represent their workers.

F-22 advocates warned that delaying production could kill the program by sending the cost soaring and by driving some of the suppliers out of business. "It was a lobbying game that was too little, too late," Lewis said, referring to the attempt to head off an adverse vote in the full House.

The Senate, however, already had approved the full \$3.1 billion funding request, including the money to start production. That set up a prolonged and heated battle in the House-Senate conference between Lewis and Sen. Ted Stevens, R-Alaska, who chairs both the Senate Appropriations Committee and its defense appropriations subcommittee.

Although the compromise provided money for the six test aircraft, it also included \$300 million for termination if the Raptor cannot meet the test goals set in the bill. Lewis attributes the low level of flight testing to the Congressional cost cap on the F-22 program. "To stay under the cap, they eliminated testing," he said.

Lockheed Martin has been flight-testing the Raptor's avionics and computers in a modified jetliner. Lewis predicted that, when it tries to take those critical components and "stuff them in the nose of an F-22, [the contractor] is going to have some problems."

He added, "Let's find out what the problems are before we go out into the production line and have to come back and retrofit it."

The veteran Congressman indicated that the F-22 had been exerting a too-powerful influence on USAF. "The Air Force has been so concentrated on this one asset that they have been letting all other major areas of needs, procurementwise, almost fall off the table," said Lewis. "There were a lot of things that weren't done. Upgrading the F-15, for example. It was the F-15 and other things, other assets, that did so well in Kosovo. The weakness of our air campaign in Kosovo was that we were very close to being too short" of some critical aircraft and weapons.

He went on, "It was a clear illus-

tration that we were behind the eight ball in terms of the number of immediate airpower assets. And it makes our point, to me, that we need to have balance, instead of having those [other] procurement lines almost dying because of a fixation on fighter aircraft."

Delivering a Message

He noted that his subcommittee used some of the money cut from F-22 production to buy other assets, including more F-15s and F-16s. "We attempted to deliver the message to the Air Force that, in terms of assets, you can do better," Lewis said.

But, he added, "I must say, we have not had the same kind of responsiveness to serious questions about the future of the military from the Air Force that we've had from the other branches, and that's a disappointment."

Lewis particularly contrasted the Air Force's attitude with the flexibility and cooperation shown by Shinseki when the subcommittee denied the Army some of its multiyear procurement funds.

"He worked with us, decided there were things that could be done," he said of the new Army leader. "The Army's been very responsive, very forthcoming, and I'm very excited about this new vision of the new Chief." Lewis said he was not sure why the Air Force was unwilling to discuss the subcommittee's concerns. "But I do know that the Army has benefitted a lot from interaction and responsiveness," he said.

Shinseki has not yet provided a full picture of his vision for a lighter, more mobile Army. However, Lewis said, "We had enough communications that I was able to lay a foundation in this bill so that the [Fiscal] 2000 bill is doing an awful lot to help him do what he's looking to do" in the future.

He continued, "There is little doubt that the Air Force has been so wedded to the idea that swirls around the F-22 that they were thinking of almost nothing else in terms of priorities, and it is beyond their imagination that someone might one day have the audacity to question that."

Looking ahead, Lewis expressed confidence that the F-22 program would meet the requirements set by Congress and go into production. "We're going to have it. Period. No doubt about it, we're going to be using those technologies.

"But we need to examine and re-examine just how much of X or Y asset we can take," he added.

Other Targets

In the next budget cycle, Lewis said his subcommittee would take a hard look at major programs from all the services. He cited as examples the Army's RAH-66 Comanche helicopter and the Navy's program of scrapping ships and submarines with useful life to gain money to buy new vessels so the shipyards can stay open.

He also planned to study the JSF program, which is a major priority for the Air Force, Navy, and Marine Corps. Lewis could not predict what would happen to the JSF, but he observed that "we do need to have a [future] replacement for the F-16 mission."

He also called for more money for defense Research and Development. "I think we have to continue on the edge of R&D. That's what will make us the strongest."

Lewis said the committee would make sure "that we continue training and retraining the wonderful people that we have" and expressed concern about "this ever-shrinking force."

In Lewis's words: "My bias tells me we've gone too far with all of our branches. So we have to do a better job in figuring out how we deal with that." And, he said, "It's probably time that we begin examining what is the real threat out there."

Although he was "very optimistic" about an emerging consensus between Congress and the Administration on the need for more defense spending, Lewis warned, "Next year is going to be a lot tougher than this year."

And the following years will not be any easier because the taxpayers "like this suggestion that we might be on a path to eliminate the national debt," he said. ■

Otto Kreisher is a Washington-based military affairs reporter and regular contributor to Air Force Magazine. His most recent article, "A Talk With Chief Finch," appeared in the December 1999 issue.



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The major Presidential candidates—Bradley, Bush, Gore, and McCain—state their views on issues affecting national security.

The Candidates on Defense

WHAT follows are excerpts from recent campaign speeches and statements. The candidates—Democrats Bill Bradley and Albert Gore and Republicans George W. Bush and John McCain—are presented in alphabetical order. Some have discussed defense and foreign affairs more extensively than others, a fact reflected in the length of comments quoted herein. The key to the sources can be found on p. 73.

AP photo / File



Bill Bradley

The military threat

"There's a disturbing paradox. We are more powerful than ever before, yet we are also more vulnerable to a variety of threats. The great risk of nuclear holocaust with the Soviet Union has receded, but there are a multitude of smaller threats, from a troubling dictatorship like Iraq to the poorly safeguarded nuclear warheads in Russia, to the increasingly dangerous situation on the Korean peninsula, to transnational terrorists who view the US as their No. 1 enemy." [1]

Defense spending

"I don't think we need to increase the defense budget as much as the President [Bill Clinton] has proposed, particularly if we are able to eliminate those unnecessary weapons systems [the military doesn't want]." [2]

Pork-barrel projects

"First, we must re-examine our military policies and objectives in light of the fact that we live in a post-Cold War era. That will help us define our defense needs. We must also be careful about funding weapons systems that powerful Congressional sources want but the military doesn't." [2]

America's real interests

"For 50 years after the end of World War II and until the fall of the Berlin Wall in 1989, we were sure about one thing: We knew where we stood on foreign policy. We were against the Soviet Union and all that it stood for. We were against communism, Marxist-Leninism, and totalitarianism and repression of freedom, and we were right to be. For 50 years in America we always knew what we were against, but the challenge today is a little different. We need to figure out what we are for." [1]

"Too often these days, our policies, even our military, are designed for a world that no longer exists." [1]

"America is the sole superpower in the world today. That means we have to conduct ourselves in a way that is commensurate with our values. We have to be sure that we have a strong international economy that takes more and more people to higher ground. I think our challenge for the country is to get more middle-class people in the world. And if we had more middle-class people in the world, they'd be buying more of our exports. Achieving that means prudent management of international economic policy as well as our domestic economy. The key to our foreign policy is to have the right policy and the right relationship with five countries in the world—that is, Mexico, Japan, China, Russia, and Germany. If we get those big questions right, then the world is going to be a safer place." [2]

"The next President has ... to try to create a comprehensive framework for peace, security, and prosperity that's not only in the interests of America but everyone, everywhere. ... This is one of the big and essential jobs of the next President and it's one we must do well." [1]

Use of military power

"I don't think the United States can be the policeman to the world. I don't think we have the resources nor the wisdom. I think we cannot give an open-ended humanitarian commitment to the world. It has to be made on a case-by-case basis. I also believe that if you're talking about the 32 ethnic wars that are in the world, that it is much better to deal with those situations in a multilateral context, and that means more and more authority

through the UN being used. I believe that if we did more of that, we'd have better results. I think that the United States can get spread very thin over a wide territory in the world and not have the impact that we seek to have in the places that we do get involved." [1]

"The criteria I use is it would have to be in the national interest for that involvement to take place, and it would have to be consistent with our values as a country. In some places the national interest is clear: Iraq, 1991. In some places the values seem clear: genocide in Kosovo or in Bosnia. But the remedies often come too late, and the key is to get multilateral efforts to intervene earlier, before things reach the point where there is only a military option, and that would require partners in the world to do this—you require alliances, you require international organizations to do that." [1]

"I made the call [to oppose Operation Desert Storm in 1991] as I saw it at the time. I was not against the use of force. The question was whether we should use force at that time or continue sanctions. I voted to continue sanctions. And my sense is if they hadn't worked, there would have been a vote before us later and I would have voted for it. ... I think that—my judgment is that it turned out—that it worked well, but I made the call, and I'll stand by that call." [3]

Dealing with Russia

"We need to move at a very direct pace to engage Russia in a further negotiation on reduction of strategic weaponry. As you know, the START II agreement has been ratified by the United States, not by Russia. It's still waiting. I would be in favor of moving beyond START II, even in the absence of ratification by Russia, to a negotiation on START III, with the aim of reducing weaponry to about between 1,000 and 2,000 warheads. I think that that would be a significant reduction." [1]

"I have thought that [in] our policy toward Russia at the end of the Cold War, we missed a real opportunity. ... At that time, Russians came to the United States and were seeking advice, counsel, suggestions, ideas, about the new day that was dawning. And there I thought we, at those moments, acted more as missionaries than we did acting in our national interest in those early years. For example, instead of immediately pushing for much lower strategic weaponry, instead of pushing for a much lower level of destruction of nuclear weapons, instead of pushing for making sure that Russian scientists were happy in their science cities and not up for export to our countries, instead of replacing Chernobyl-style nuclear reactors, instead of attempting to deal with what was clearly in our national interests, we became missionaries for a particular kind of international economics. And I think that the result has been that the economy has sputtered, we have not made as much progress as we could have on these issues, and we were left with a situation in Russia where, in the best of worlds, it seems we're irrelevant to the average Russian, in the worst of worlds we are blamed for their economic circumstance, and our relationship with the Russian people has become, instead, our relation with the Yeltsin government." [1]

"We should seek to reduce the nuclear stockpile of Russia in negotiations in START III, on much higher funding of attempts to secure the scientists so they are not export material. I think that we should try to speak to the Russian people. I think on the economy we should reward results, not rhetoric. Promises aren't good enough; progress and the rule of law and other things are absolutely critical. And I think that if we engaged Russia in a longer-term discussion over their strategic view of the world, that would also be helpful, and I would think that the more military-to-military contacts that we could have, the stronger and better that dialogue would be." [1]

"Recent allegations of Russian money laundering by American banks are disturbing. ... Although I am drawing no conclusions on these current developments, I have argued since the early 1990s that American assistance and lending policies toward Russia have been misdirected and ineffective." [2]

"Russia is struggling with its transformation to an open, free-market nation. Several factors, including shortsighted US policy,

have contributed to this struggle. Our assistance and lending policies have done very little to further our strategic goals, the needs of the Russian people, or the cause of Russian reform. Billions of dollars have been promised to Russians, but far too much money has been siphoned off by untrustworthy Russian 'capitalists.'" [2]

"As we examine these allegations, we should consider the impact of such policies on our overall relationship with Russia and their noticeable effect on individual Russians." [2]

"The United States has a great deal at stake in Russia's future, and our Russia policy has failed to properly address such issues as control of nuclear weapons, environmental degradation, ethnic disputes, and foreign debt. Each can have a major impact on the United States. Determining how to ensure American interests and assist Russia's ongoing transformations will be a critical task for the next Administration." [2]

Dealing with allies

"I have always supported Jerusalem as the capital of Israel. As you know, the status in Jerusalem is the last item on the negotiations. The last seems to be the most contentious, and I think that ought to be worked out among the negotiating parties themselves." [1]

"I think that hopefully we have learned something from our previous experiences in Latin America, not the least of which was El Salvador, as you pointed out, where the provision of assistance without any conditions leads sometimes to the misuse of that assistance. So I think if we do provide assistance [to the military of Colombia], we should have strong checks on human rights and that we should be able to enforce those and that the recipient should be accountable on how they use the funds." [1]

"I would make the point that the military option in terms of combating drugs in the United States is another example of attempting to control supply. I believe that the answer ultimately rests in the United States and that is controlling demand for drugs. The reason drugs arrive is because there's a demand. And in a country as big as ours, with as much coastline as ours, with as much open space as ours, with as long a border as we have with Mexico, I think the idea of putting up a wall around the country is not going to succeed in preventing drugs from coming in if there is a strong demand for those drugs." [1]

Conduct of foreign policy

"A President has a singular role when it comes to foreign policy, where only he can lead. The next President must be able to help America and all Americans navigate in this new world. ... That in itself won't be easy. A President also has some very basic and fundamental things that he must always manage. You might call it the President's job description. He must first protect our national security, maintain our leadership in the world, and talk honestly with the American people. That is always the President's job." [1]

"The next President must have a few principles to guide him to manage these new threats and new opportunities. He must understand how to protect our security in response to our growing interconnectedness. He must have a policy countering small threats so they don't grow into larger ones. He must maintain a strategic stability in the world that prevents the start of a new and deadly arms race around the world. He must gear our policies to the world as it is, not the Cold War world that no longer exists. And finally, he must understand our deep American attachment to human rights and that our values and our interests are very often one and the same." [1]

"Once in America, there was a consensus in Washington about foreign policy. Men and women of good will in both parties joined together to do what was in America's best interests. There was an old saying that political division stopped at the water's edge. Sadly, that consensus has vanished. Foreign policy has become more a political football or is made through polling or focus groups to score domestic political points. I deplore that, and one of the things I will try to restore if I become President of the United States is a bipartisan foreign policy consensus." [1]



George W. Bush



The military threat

"This is still a world of terror and missiles and madmen. ... I will rebuild our military power—because a dangerous world still requires a sharpened sword." [1]

"American defense ... must be the first focus of a President, because it is his first duty to the Constitution. Even in this time of pride and promise, America has determined enemies, who hate our values and resent our success—terrorists and crime syndicates and drug cartels and unbalanced dictators. The empire has passed, but evil remains." [4]

Missile defense/Anti-Ballistic Missile Treaty

"I will move quickly to defend our people and our allies against missiles and blackmail." [1]

"My ... goal is to build America's defenses on the troubled frontiers of technology and terror. The protection of America itself will assume a high priority in a new century. Once a strategic afterthought, homeland defense has become an urgent duty." [2]

"At the earliest possible date, my Administration will deploy anti-ballistic missile systems, both theater and national, to guard against attack and blackmail. To make this possible, we will offer Russia the necessary amendments to the Anti-Ballistic Missile Treaty—an artifact of Cold War confrontation. Both sides know that we live in a different world from 1972, when that treaty was signed. If Russia refuses the changes we propose, we will give prompt notice, under the provisions of the treaty, that we can no longer be a party to it. I will have a solemn obligation to protect the American people and our allies, not to protect arms control agreements signed almost 30 years ago." [2]

"We will still, however, need missile defense systems—both theater and national. If I am commander in chief, we will develop and deploy them." [4]

Military reform

"[An opportunity] is created by a revolution in the technology of war. Power is increasingly defined not by mass or size but by mobility and swiftness. Influence is measured in information, safety is gained in stealth, and force is projected on the long arc of precision guided weapons. This revolution perfectly matches the strengths of our country—the skill of our people and the superiority of our technology." [2]

"Our military is still organized more for Cold War threats than for the challenges of a new century—for industrial age operations, rather than for information age battles. There is almost no relationship between our budget priorities and a strategic vision. The last seven years have been wasted in inertia and idle talk. Now we must shape the future with new concepts, new strategies, new resolve." [2]

"As President, I will begin an immediate, comprehensive review of our military—the structure of its forces, the state of its strategy, the priorities of its procurement—conducted by a leadership team under the Secretary of Defense. I will give the Secretary a broad mandate—to challenge the status quo and envision a new architecture of American defense for decades to come. We will modernize some existing weapons and equipment, necessary for current tasks. But our relative peace allows us to do this selectively. The real goal is to move beyond marginal improvements—to replace existing programs with new technologies and strategies, to use this window of opportunity to skip a generation

of technology. This will require spending more—and spending more wisely." [2]

"On land, our heavy forces must be lighter. Our light forces must be more lethal. All must be easier to deploy. And these forces must be organized in smaller, more agile formations, rather than cumbersome divisions." [2]

"On the seas, we need to pursue promising ideas like the arsenal ship—a stealthy ship packed with long-range missiles to destroy targets from great distances." [2]

"In the air, we must be able to strike from across the world with pinpoint accuracy—with long-range aircraft and perhaps with unmanned systems." [2]

"In space, we must be able to protect our network of satellites, essential to the flow of our commerce and the defense of our country." [2]

"When our comprehensive review is complete, I will expect the military's budget priorities to match our strategic vision—not the particular visions of the services, but a joint vision for change. I will earmark at least 20 percent of the procurement budget for acquisition programs that propel America generations ahead in military technology. And I will direct the Secretary of Defense to allocate these funds to the services that prove most effective in developing new programs that do so. I intend to force new thinking and hard choices." [2]

"The transformation of our military will require a new and greater emphasis on Research and Development. So I will also commit an additional \$20 billion to defense R&D between the time I take office and 2006." [2]

Defense spending

"Not since the years before Pearl Harbor has our investment in national defense been so low as a percentage of GNP." [2]

Pork-barrel projects

"To the Congress I say: Join me in creating a new strategic vision for our military—a set of goals that will take precedence over the narrow interests of states and regions. I will reach out to reform-minded members of Congress, particularly to overturn laws and regulations that discourage outsourcing and undermine efficiency. ... And once a new strategy is clear, I will confront the Congress when it uses the defense budget as a source of pork or patronage." [2]

Commitment to veterans

"Those who want to lead America [are obligated] ... to honor our commitments to veterans who have paid those costs [of war]." [2]

"The veterans health care system and the claims process need an overhauling from top to bottom. It needs to be modernized, so that claims are handled in a fair and timely fashion. Veterans need advocates in the Veterans Administration, people sympathetic to their interests instead of suspicious. If I am elected, that is the kind of veterans official I intend to appoint." [3]

Military personnel

"Rarely has our military been so freely used. ... Something has to give, and it's giving. Resources are overstretched. Frustration is up, as families are separated and strained. Morale is down. Recruitment is more difficult. And many of our best people in the military are headed for civilian life." [2]

"A volunteer military has only two paths. It can lower its standards to fill its ranks, or it can inspire the best and brightest to join and stay." [2]

"Recently, after years of neglect, a significant pay raise was finally passed. My first budget will go further—adding a billion dollars in salary increases. We also will provide targeted bonuses for those with special skills. Two-thirds of military family housing units are now substandard, and they must be renovated. And we must improve the quality of training at our bases and national training centers. Shortfalls on the proving ground become disasters on the battlefield." [2]

"We must restore the morale of our military—squandered by shrinking resources and multiplying missions—with better training, better treatment, and better pay." [4]

Combating terrorism

"Let me be clear. Our first line of defense is a simple message: Every group or nation must know, if they sponsor such attacks, our response will be devastating." [2]

"We will defend the American homeland by strengthening our Intelligence Community—focusing on human intelligence and the early detection of terrorist operations both here and abroad." [2]

"And there is more to be done preparing here at home. I will put a high priority on detecting and responding to terrorism on our soil. The federal government must take this threat seriously—working closely with researchers and industry to increase surveillance and develop treatments for chemical and biological agents." [2]

Use of military force

"Those who want to lead America [are obligated] ... to use our military power wisely, remembering the costs of war." [2]

"Let us resolve never to multiply our missions while cutting our capabilities. Let us resolve to restore a belief in American interests, American character, and American destiny. And let us resolve to keep faith with our past by being vigilant in our time." [3]

"In the defense of our nation, a President must be a clear-eyed realist. There are limits to the smiles and scowls of diplomacy. Armies and missiles are not stopped by stiff notes of condemnation. They are held in check by strength and purpose and the promise of swift punishment." [4]

"America must be involved in the world. But that does not mean our military is the answer to every difficult foreign policy situation—a substitute for strategy. American internationalism should not mean action without vision, activity without priority, and missions without end—an approach that squanders American will and drains American energy." [4]

Nuclear test ban

"In the hard work of halting proliferation, the Comprehensive Test Ban Treaty is not the answer. I've said that our nation should continue its moratorium on testing. Yet far more important is to constrict the supply of nuclear materials and the means to deliver them—by making this a priority with Russia and China. Our nation must cut off the demand for nuclear weapons—by addressing the security concerns of those who renounce these weapons. And our nation must diminish the evil attraction of these weapons for rogue states—by rendering them useless with missile defense. The Comprehensive Test Ban Treaty does nothing to gain these goals. It does not stop proliferation, especially to renegade regimes. It is not verifiable. It is not enforceable. And it would stop us from ensuring the safety and reliability of our nation's deterrent, should the need arise. On these crucial matters, it offers only words and false hopes and high intentions—with no guarantees whatever. We can fight the spread of nuclear weapons, but we cannot wish them away with unwise treaties." [4]

Isolationism

"America will not retreat from the world. On the contrary, I will replace diffuse commitments with focused ones. I will replace

uncertain missions with well-defined objectives. ... We must be selective in the use of our military, precisely because America has other great responsibilities that cannot be slighted or compromised." [2]

"America's first temptation is withdrawal—to build a proud tower of protectionism and isolation. In a world that depends on America to reconcile old rivals and balance ancient ambitions, this is the shortcut to chaos. It is an approach that abandons our allies and our ideals. The vacuum left by America's retreat would invite challenges to our power. And the result, in the long run, would be a stagnant America and a savage world." [4]

"International organizations can serve the cause of peace. I will never place US troops under UN command—but the UN can help in weapons inspections, peacekeeping, and humanitarian efforts. If I am President, America will pay its dues—but only if the UN's bureaucracy is reformed and our disproportionate share of its costs is reduced." [4]

"The lessons learned are that the United States must not retreat within our borders, that we must promote the peace. In order to promote the peace, we've got to have strong alliances: alliances in Europe, alliances in the Far East. In order to promote the peace, I believe we ought to be a free trading nation in a free trading world, because free trade brings markets, and markets bring hope and prosperity." [5]

America's real interests

"Our military ... needs the rallying point of a defining mission. And that mission is to deter wars—and win wars when deterrence fails. Sending our military on vague, aimless, and endless deployments is the swift solvent of morale." [2]

"As President, I will order an immediate review of our overseas deployments—in dozens of countries. The long-standing commitments we have made to our allies are the strong foundation of our current peace. I will keep these pledges to defend friends from aggression. The problem comes with open-ended deployments and unclear military missions. In these cases we will ask, 'What is our goal, can it be met, and when do we leave?' As I've said before, I will work hard to find political solutions that allow an orderly and timely withdrawal from places like Kosovo and Bosnia. We will encourage our allies to take a broader role. We will not be hasty. But we will not be permanent peacekeepers, dividing warring parties. This is not our strength or our calling." [2]

"These are my priorities: An American President should work with our strong democratic allies in Europe and Asia to extend the peace. He should promote a fully democratic Western Hemisphere, bound together by free trade. He should defend America's interests in the Persian Gulf and advance peace in the Middle East, based upon a secure Israel. He must check the contagious spread of weapons of mass destruction and the means to deliver them. He must lead toward a world that trades in freedom. And he must pursue all these goals with focus, patience, and strength. ... [It is] a distinctly American internationalism. Idealism, without illusions. Confidence, without conceit. Realism, in the service of American ideals." [4]

Dealing with China

"We must see China clearly—not through the filters of posturing and partisanship. China is rising, and that is inevitable. Here, our interests are plain: We welcome a free and prosperous China. We predict no conflict. We intend no threat. And there are areas where we must try to cooperate: preventing the spread of weapons of mass destruction, attaining peace on the Korean peninsula." [4]

"The conduct of China's government can be alarming abroad and appalling at home. Beijing has been investing its growing wealth in strategic nuclear weapons—new ballistic missiles, a blue-water navy, and a long-range air force. It is an espionage threat to our country. Meanwhile, the State Department has reported that 'all public dissent against the party and government [has been] effectively silenced'—a tragic achievement in a nation of 1.2 billion people. China's government is an enemy of religious

freedom and a sponsor of forced abortion—policies without reason and without mercy.” [4]

“China is a competitor, not a strategic partner. We must deal with China without ill will—but without illusions. By the same token, that regime must have no illusions about American power and purpose.” [4]

“We must show American power and purpose in strong support for our Asian friends and allies—for democratic South Korea across the Yellow Sea, for democratic Japan and the Philippines across the China seas, for democratic Australia and Thailand. This means keeping our pledge to deter aggression against the Republic of Korea and strengthening security ties with Japan. This means expanding theater missile defenses among our allies.” [4]

“And this means honoring our promises to the people of Taiwan. We do not deny there is one China, but we deny the right of Beijing to impose their rule on a free people. As I’ve said before, we will help Taiwan to defend itself.” [4]

“They [Clinton Administration officials] believe in what’s called a strategic partnership. I believe in redefining the relationship to one of competitor, but I believe competitors can find common ground. I think it’s in our nation’s best interest to open up Chinese markets to Arizona farm products, to Iowa farm products, to high-tech manufactured goods. It’s in our best interest to sell to the Chinese.” [5]

“But let me make this clear to you and to the Chinese: I will enforce the Taiwan relations law, if I am the President. If the Chinese get aggressive with the Taiwanese, we’ll help them defend themselves.” [5]

Dealing with Russia

“We can hope that the new Russian Duma will ratify START II, as we have done. But this is not our most pressing challenge. The greater problem was first addressed in 1991 by Sen. [Richard] Lugar and Sen. Sam Nunn. In an act of foresight and statesmanship, they realized that existing Russian nuclear facilities were in

danger of being compromised. Under the Nunn–Lugar program, security at many Russian nuclear facilities has been improved and warheads have been destroyed.” [4]

“Even so, the Energy Department warns us that our estimates of Russian nuclear stockpiles could be off by as much as 30 percent. In other words, a great deal of Russian nuclear material cannot be accounted for. The next President must press for an accurate inventory of all this material. And we must do more. I’ll ask the Congress to increase substantially our assistance to dismantle as many of Russia’s weapons as possible, as quickly as possible.” [4]

“Dealing with Russia on essential issues will be far easier if we are dealing with a democratic and free Russia. Our goal is to promote not only the appearance of democracy in Russia but the structures, spirit, and reality of democracy. This is clearly not done by focusing our aid and attention on a corrupt and favored elite. Real change in Russia—as in China—will come not from above, but from below. From a rising class of entrepreneurs and business people. From new leaders in Russia’s regions who will build a new Russian state, where power is shared, not controlled. Our assistance, investments, and loans should go directly to the Russian people, not to enrich the bank accounts of corrupt officials.” [4]

Dealing with allies

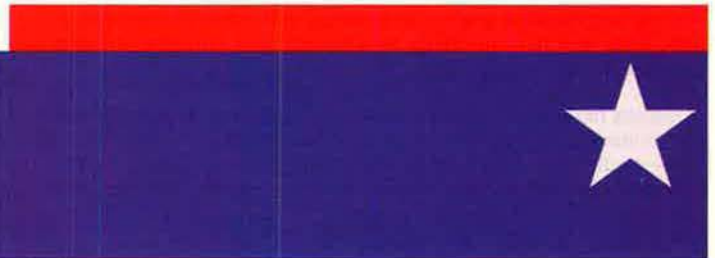
“For NATO to be strong, cohesive, and active, the President must give it consistent direction on the alliance’s purpose; on Europe’s need to invest more in defense capabilities; and, when necessary, in military conflict.” [4]

“We have partners, not satellites. Our goal is a fellowship of strong, not weak, nations. And this requires both more American consultation and more American leadership. The United States needs its European allies, as well as friends in other regions, to help us with security challenges as they arise. For our allies, sharing the enormous opportunities of Eurasia also means sharing the burdens and risks of sustaining the peace. The support of friends allows America to reserve its power and will for the vital interests we share.” [4]

AP photo / File



Al Gore



Military spending

“We are now fighting for the first long-term, sustained increase in defense spending in a decade.” [1]

“We want our armed forces ready to deploy in any crisis. We want our forces to be the best equipped in the world well into the next century. And we want our forces to be strong enough to meet and overwhelm traditional forms of aggression, as well as newer threats such as terrorism and nuclear proliferation.” [1]

The military threat

“It is still a very dangerous world—and a strong military has to be the cornerstone of our security. ... American diplomacy is a crucial foundation of our freedom and security.” [2]

Military service

“I was honored to wear my country’s uniform during the Vietnam War. ... I know ... what it’s like to leave home for a war zone. I don’t claim that my military experience matches in any way what others here have been through or that my skills as a soldier rival those now standing guard on the [demilitarized zone] in Korea or patrolling the streets of Kosovo. But I can and do understand

what many others feel in their hearts as they leave their families to defend their country.” [2]

Military personnel

“I was honored to wear my country’s uniform during the Vietnam War. It is for this reason that my commitment to the veterans of America has always been more than a policy position. It is a personal and moral standard to bear.” [1]

“We are going to reinstate military retirement benefits that were taken away over a decade ago.” [1]

“As we strengthen Medicare, we must do more to allow veterans to take their Medicare benefits to veterans’ hospitals. We’re working to do that—and I urge you to join me in urging Congress to pass our plan into law.” [1]

“We’ve already brought health care closer to [veterans’] homes, by adding hundreds of outpatient clinics—to a total of over 600—so even more veterans get the care they need when and where they need it.” [1]

"We owe our soldiers, sailors, airmen, and Marines a decent salary, decent living conditions, decent health care, and a secure retirement. We owe a debt to those whose service is done. And let's be clear: We don't give our veterans anything. You have earned it." [2]

"If our servicemen and -women should be called on to risk their lives for the sake of our freedom and ideals, they will do so with the best training and technology the world's richest country can put at their service." [2]

Use of military power

"For all my public life, I have stood for a strong America—from my consistent advocacy of military forces second to none, to my vote in favor of the Gulf War in 1991." [1]

Isolationism

"I will fight to maintain American leadership in the world. And I will fight against those who would wall us off from our own security and prosperity." [2]

"It is time for America to pay its UN dues in full. ... If we lose our seat at the table, we will be shut out of a crucial forum for defending our interests in the world—and for sharing the security burden with our allies." [2]

"We need a firm commitment to foreign affairs in our budget. Right now, foreign affairs adds up to just one penny for every dollar in our federal budget." [2]

Dealing with rogue nations

"Well, we're going to prevent him [Saddam] from acquiring weapons of mass destruction with the sanctions, which will remain in place, with the measures to prevent the flows of technology into

Iraq. And let me just say, Tim [Russert], that I want to see him removed from power. ... Well, we have the sanctions in place, Tim. We would like to—we just won a vote in the United Nations two days ago to reaffirm the world community's insistence that he abide by the UN resolutions and to get inspectors back in there." [3]

Test ban treaty

"Our next President must resubmit the Comprehensive Test Ban Treaty and demand its ratification by the Senate." [2]

Emphasis on diplomacy

"We have been rebuilding a consensus in our country for a strong national defense policy. But we also need a strong national consensus on the other great pillar of American foreign policy: waging peace through serious and sustained diplomacy. Diplomacy, together with military might, is how we are fighting the spread of nuclear weapons around the world." [2]

"Just as we had the wisdom to emphasize diplomacy in the wake of World War II, we must have wisdom and determination to emphasize diplomacy in the wake of the Cold War." [2]

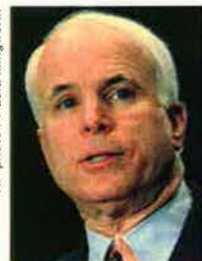
"We must redouble our commitment to fighting terrorism through diplomacy and international cooperation." [2]

Dealing with Russia, China

"We must engage Russia and China, not pretend we can turn our backs on them. The greatest threat to America is not the strength of Russia and China but their weakness." [2]

"In my years in the House and in the Senate, one of the issues I worked hardest on was arms control—reducing the danger of nuclear war." [2]

AP photo / Paula Illingworth



John McCain



Defense spending

"As President, I won't ask how much security we can afford. I'll ask how much security do we need, and I will find the resources to pay for it." [1]

"Given our global commitments and strategy, we need to increase defense spending. Today we spend barely 3 percent of our gross domestic product on defense." [5]

"We must spend whatever it takes—not one penny more nor one penny less. For too long we have asked our armed services to do much more with much less. It's time to give them enough." [5]

Pork-barrel projects

"I won't tolerate one dime of our defense budget being wasted to re-elect shortsighted politicians who put their own ambitions before the national interest." [1]

"Both parties in Congress have wasted scarce defense dollars on unneeded weapons systems and other pork projects, while 12,000 enlisted personnel, proud young men and women, subsist on food stamps." [1]

"The defense budget passed by Congress this year, like every other in recent memory, was a disgrace, crammed with over \$6 billion of wasteful spending unrequested by the military." [5]

"Fully funding our defense requires that we aggressively eliminate wasteful defense spending. I have identified nearly \$20 billion that could be saved." [5]

Missile defense/Anti-Ballistic Missile Treaty

"It's time we tell our friends and adversaries alike that ballistic missile defense is now a national priority, not just another Pentagon program." [5]

"I will withdraw from a treaty that has become a relic of the Cold War if it cannot be made relevant to our current security needs. Our Cold War pledge to remain defenseless against missile attack is the single greatest incentive for rogue state proliferation." [5]

"In a world that is becoming more unpredictable and dangerous, the indispensable defense against rogue states and terrorists—and even against larger powers who might become reckless in their ambitions—is ballistic missile defense." [5]

"We must defend the United States itself from ballistic missile attack." [5]

The military threat

"Ethnic and religious hatreds, violent expressions of nationalism, proliferation of weapons of mass destruction and the means to deliver them, and international terrorism now constitute the clear and present danger." [4]

"The incumbent Administration admits 'new age' transnational problems into the ranks of premier threats—a status they do not merit. They deserve attention, of course, but not so much that they claim political and material resources needed to combat the most serious and near-term dangers." [4]

"The world is still home to many tyrants, dictators, haters, and aggressors who are hostile to the interests of the United States and the rights of man." [5]

"Information warfare, such as an attack on our private sector's computer grids, [could] cause critical failures in vital services that we take for granted. If we do not more effectively guard our communications, including the Internet—our powerful economic engine—utilities, transportation, financial systems, and other essential services, tiny fiber-optic threads might carry viruses as incapacitating as an armed attack." [5]

Military personnel

"Reductions in the number of military personnel and the demands of excessive deployments are overburdening our servicemen and -women to the breaking point. Time away from home and loved ones has increased, while military pay, relative to private sector compensation, has decreased. And quality health care for veterans and for active military personnel has become just another broken promise." [5]

"Modernizing weapons systems is vitally important, but personnel issues must come first. It is the training, the preparedness, and morale of Americans in uniform that is the stout heart of our national defense. If I am the next President, I will end the days of a food-stamp Army once and for all." [5]

"We must eliminate the gap between military pay and comparable civilian pay by raising military wages an additional 3 percent each year for three years and by eliminating federal income taxes for military personnel who are deployed overseas." [5]

US military sufficiency

"Our military today is struggling in virtually every category that measures preparedness. ... The fault ... rests with political leaders, on both sides of the aisle and at both ends of Pennsylvania Avenue, who ask the military to do too much with too little and who misdirect scarce defense dollars to their political priorities, rather than to vital defense needs." [5]

"In strategy, personnel, and procurement—the total package that defines America's ability to defend itself—the United States does not have the modern force and defense posture we must have to meet the threats to America's interests and values in the 21st century." [5]

"It is time to end the disingenuous practice of stating that we have a two-war strategy when we are paying for only a one-war military. Either we must change our strategy—and accept the risks—or we must sufficiently fund and structure our military." [5]

"We have neglected modernization—failing to deploy the weapons and systems needed to maintain our technological superiority and a decisive edge on the battlefield. ... We must begin immediately to buy the equipment on which our future security depends." [5]

Force readiness

"We should re-evaluate the readiness requirements of our military forces, based on two conditions: the likelihood that forces will be called upon to respond to a military crisis and the time frame in which those forces would be deployed. Forces could then be categorized in readiness tiers premised on the degree of day-to-day readiness at which they should be maintained." [5]

"Forward deployed and crisis response forces would be maintained at the highest level of readiness. Follow-on forces necessary to mount a large-scale offensive in a theater of operations to halt an escalating crisis would be maintained at the second highest level of readiness. Conflict resolution forces that deploy late in the conflict to ensure that we have the force superiority to prevail would be maintained at the lowest level of readiness." [5]

Military reform and change

"New threats require innovative and forward-thinking approaches to utilizing lighter, more flexible, and rapidly deployable forces.

We need to support and accelerate technological improvements that help make our forces smaller, more automated, and easier to deploy." [5]

"Our military planning focuses on maintaining the force structure that proved effective in winning the last war, while too little attention has been given to the changing and uncertain nature of future conflicts." [5]

"We should honestly reassess the roles and missions of each of the military services, including the Guard and Reserve components. And we should eliminate forces and weapons systems that have no place in the modern, post-Cold War world." [5]

"We must be prepared to eliminate units for which there is either no identified requirement under our national military strategy or which cannot be deployed to a theater of operations until the crisis has passed." [5]

Isolationism

"There is no safe alternative to American leadership. The history of this violent century has surely taught us that." [1]

"We are the world's only superpower. We must accept the responsibilities along with the blessings that come with that distinction." [1]

"Isolationism and protectionism are a fool's errand. We should build no walls in a futile attempt to keep the world at bay. Walls are for cowards, not for us." [2]

"It is offensive to me ... to be called isolationist because we view an arms control initiative as flawed or because we believe that sound foreign policy consists of something more than arms control, foreign aid, and settling our UN arrears." [4]

Nuclear test ban treaty

"Let's be clear: This [Comprehensive Test Ban] Treaty was bad for the United States. The fact that it would have prevented us from ever testing the safety and reliability of our nuclear defenses was reason enough to insist that the treaty at least be reviewed and reratified every several years. Moreover, we lack the technological capability at the present time to verify compliance with a test ban. That's another argument for delaying this treaty at least until technology catches up to the treaty's purpose. Most absurd, is the President's argument that countries like Iran, Iraq, and North Korea will now feel free to pursue their nuclear ambitions. When have they not felt free?" [3]

"The CTBT was a flawed arms control agreement, not a referendum on the US role in the world." [3]

Dealing with Russia

"At fault in Russia is not the failure of free market and democratic principles but rather their corruption by weak leaders, militant nationalists, and greedy profiteers. For too long, we have indulged systemic dishonesty in Russian politics and in our relationship." [4]

"We should feel no reluctance to stand up to Russian leaders when they challenge our interests and values. We should demand action on START II. We should denounce corruption. We should reject Russian demands to dictate the size or mission of NATO and we should brook no interference at all in the means we use to defend our allies' security and ours." [4]

Dealing with China

"They [China's leaders] are determined, indeed ruthless, defenders of their regime, who will do whatever is necessary, no matter how inhumane or offensive to us, to pursue their own interest." [4]

"As President I will continue to recognize one China, but I would not accept a forced reunification with a democratic Taiwan. I do not think it useful to publicly identify the means by which we would oppose such aggression, but China must be made to understand that the use of force would be a very serious mistake in judgment, a serious mistake with grave consequences." [4]

Dealing with rogue states

"The next President should join with those Republican and Democrat members of Congress who support providing real military aid to Iraqis committed to ending Saddam's reign of terror." [4]

"From the Persian Gulf to the Korean peninsula to the Balkans, rogue states are the main threat to peace and freedom, and they require a strong, comprehensive policy response—a policy of 'rogue state rollback.' We must use both public and private diplomacy, targeted economic measures, and military assistance to aid forces seeking freedom from rogue regimes. But we must be prepared to back up these measures with American military force when the continued existence of such rogue states threatens America's interests and values. And, most importantly, state sponsors of terrorism must know not the specifics of our response but the certainty that it will be swift and sure." [5]

Relations with allies

"Our [NATO] allies are currently spending too little on their own defense. They are increasingly indifferent to the serious problems inherent in developing a defense identity separate from NATO, and they persist in avoiding coming to terms with the necessity of forging a mutual defense against threats to our interests outside Europe." [4]

"I will tend with care to our 'special relationship' with [Israel], our best friend and only true democracy in the Middle East. That means I will speak out forcefully and immediately when blood libels are spread about Israel by those with whom we expect Israel to make peace. That means I will participate in a Middle East peace process only in pursuit of genuine peace and not as a means to embellish my own profile as a statesman. ... I will maintain a strong military presence in the Middle East and help finance Israel's defense against missile attack and honor our commitment to their security. ... As President, I will never ask Israel to sign onto any peace agreement that endangers the

lives of Israelis for a false promise of peace. I will never ask them to sacrifice tangible land in exchange for intangible promises. And I will never ask them to finalize any peace accord until all the provisions of Oslo and subsequent agreements have been met." [4]

Clinton foreign policy

"The Administration has pursued a feckless, photo-op foreign policy with little or no effort to define a coherent plan for US engagement in the world or to establish a set of strategic priorities to guide us in a post-Cold War era." [4]

"We didn't have to get into Kosovo. Once we stumbled into it, we had to win it, and the fact is that this Administration has conducted a feckless, photo-op foreign policy for which we will pay a very heavy price in American blood and treasure." [6]

"Credibility is a strategic asset. The world's only superpower must never give its word insincerely. We should never make idle threats." [5]

America's real interests

"American power and purpose should be marshaled to preserve our current pre-eminence even if strategic rivals and some of our more irksome allies complain. We should do what we can to prevent others from emerging as hostile military and ideological rivals to us, and we should do so with pride." [4]

"Our core strategic interests, like our founding ideals, remain constant: protecting our homeland and hemisphere from external threats; preventing the domination of Europe by a single power; strengthening our alliances; securing access to energy resources; and sustaining stability in the Pacific Rim." [5]

"We must never ask our troops to risk their lives for purposes not directly related to our vital national interests and values. We must not send them on missions for which we have no measure of success nor into conflicts we are not prepared to win." [5]

Key to Selected Speeches

Bill Bradley

- | | | |
|---|---------------------------------------|----------|
| 1 | Tufts University Town Meeting, Boston | 11-29-99 |
| 2 | Bill Bradley on the Issues, Web site | Various |
| 3 | Interview, NBC's "Meet the Press" | 12-19-99 |

George W. Bush

- | | | |
|---|--|----------|
| 1 | Announcement, Cedar Rapids, Iowa | 06-12-99 |
| 2 | The Citadel, Charleston, S.C. | 09-23-99 |
| 3 | Veterans Day Speech, Manchester, N.H. | 11-10-99 |
| 4 | Ronald Reagan Library, Simi Valley, Calif. | 11-19-99 |
| 5 | Arizona Republican Primary Debate, Phoenix | 12-06-99 |

Al Gore

- | | | |
|---|---|----------|
| 1 | American Legion Convention, Anaheim, Calif. | 09-08-99 |
| 2 | Iowa Veterans Home, Marshalltown, Iowa | 11-11-99 |
| 3 | Interview, NBC's "Meet the Press" | 12-19-99 |

John McCain

- | | | |
|---|--|----------|
| 1 | Announcement Speech, Manchester, N.H. | 09-27-99 |
| 2 | Ronald Reagan Library, Simi Valley, Calif. | 09-29-99 |
| 3 | Vietnam Vets Memorial Fund, Washington | 10-18-99 |
| 4 | National Jewish Coalition, Unknown | 12-01-99 |
| 5 | Intrepid Freedom Award, New York City | 12-07-99 |
| 6 | Arizona Republican Primary Debate, Phoenix | 12-06-99 |

Billy Mitchell assembled the largest air fleet ever committed to battle and established the Air Service as a true combat arm.

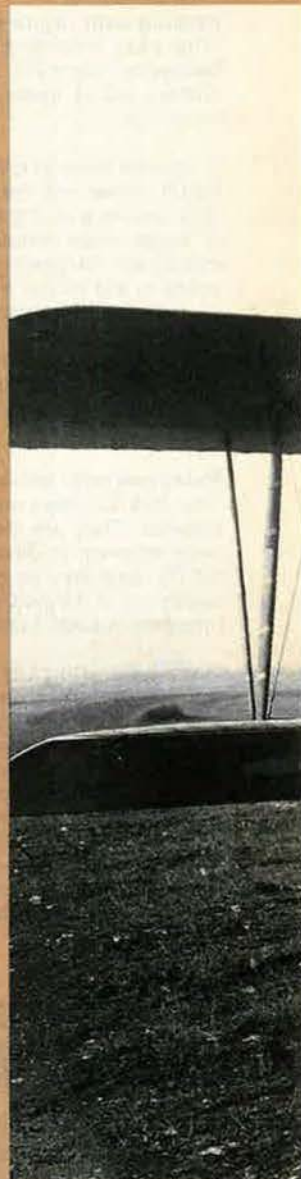
The St. Mihiel Salient

By Walter J. Boyne

THE reputation of airpower pioneer Billy Mitchell will be forever tied to the World War I Battle of St. Mihiel, and that is as it should be. It was during that critical engagement in France in September 1918 that the world got its first clear view of Mitchell's developing airpower creed.

The visionary airman believed that a nation should mass its airpower assets and concentrate their use against the enemy right from the start of an engagement. This was true of observation, pursuit, and bombing aircraft alike. At St. Mihiel, Mitchell's principles were applied and vindicated, even if not to the degree that he might have wished.

In fact, the airpower portion of the battle of St. Mihiel was important more for its preparation and planning than for its actual execution, which was hampered by poor weather. The future of American airpower was charted in the way Mitchell and his staff





Billy Mitchell (leaning against a Spad at left above) gathered more than 1,400 American and Allied aircraft for the Battle of St. Mihiel in September 1918. At left, among those at his command were 11th Bomb Squadron aircraft, shown in an impressive lineup at Maulan, France, in 1918.

planned the engagement and in the gallant manner in which his equally inexperienced fliers fought it. It was a pattern seen again and again in the decades to come.

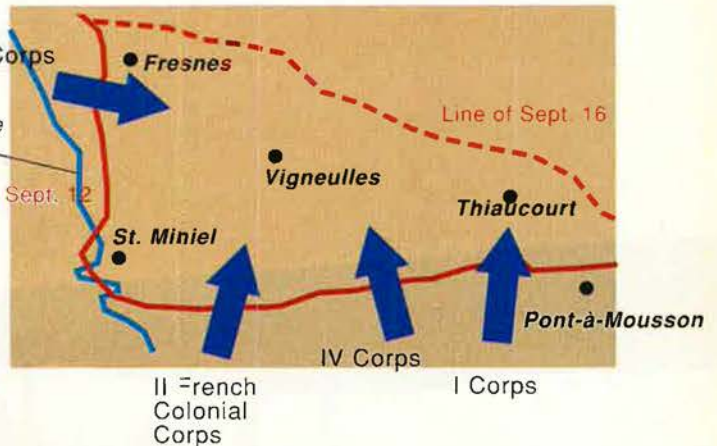
"Aerial operations at St. Mihiel made the battle an important event in the history of US military aviation," wrote Maj. Gen. John W. Huston, chief, Office of Air Force History, in the Air Force's official history of World War I. "It was, primarily, ... Mitchell's show. He put together the largest air force ever committed to battle and drew up the plan for its employment."

Shock on the Western Front

In March 1918, German forces launched their last great offensive on the Western Front and seemed destined to finally win the war. It was during this attack that US Army Gen. John J. "Black Jack" Pershing lost his battle to keep the American Army together as a single entity under his command. So great was the Allied need that he had to allow piecemeal use of American troops to stiffen French and British lines all the way through the Battle of Château-Thierry in May and June 1918.

St. Mihiel Offensive Sept. 12–16, 1918

On the ground, the battle for the St. Mihiel salient pitted AEF's First Army—three American corps and one French corps—against 8.5 German divisions.



Because they thought a precedent had been set, Pershing's British and French counterparts were taken aback when he insisted that the American Army fight the next battle as a unit and under his command. Pershing's demand provoked a pointed argument with Field Marshal Ferdinand Foch, the Allied Supreme Commander in Chief. However, the Pershing view prevailed.

On Aug. 10, Pershing combined his 16 US divisions into the US First Army, which was supplemented by a French army corps. He promised that the American force would reduce the German salient in the Allied line at St. Mihiel. Each American division had approximately twice as many troops as French or German divisions, but they lacked artillery and tanks, which had to be borrowed from their Allies. However, Pershing had no lack of talent to depend on. Col. George C. Marshall helped with planning. Brig. Gen. Douglas MacArthur was a brigade commander in the 42nd (Rainbow) Division. Col. George S. Patton Jr. commanded the 304th Tank Brigade.

The American Army would im-

prove rapidly in the crucible of combat. Under Mitchell, the Air Service would mature as rapidly—and suffer a similarly horrendous casualty rate.

On Sept. 12, the First Army began its five-day fight to reclaim the St. Mihiel salient, which had been created almost by accident in the first rush of the war. In late September 1914, the Germans had captured St. Mihiel during an attempt to envelop the fortress of Verdun. They failed in this effort, and the salient remained relatively quiet from that point on. Rising terrain made the salient easy for German forces to defend, but it was too narrow for Germany to use as a jump-off point for an offensive. French forces made a minor attempt to cut off the salient in 1915, but they were repulsed.

The salient was 25 miles wide at its base and 15 miles deep, extending from about 10 miles southeast of Verdun to the town of St. Mihiel on the Meuse River. The salient angled eastward for 40 miles to Pont-à-Mousson on the Moselle River.

In the course of four years, the German forces had diligently forti-

fied the whole area with the usual trenches, wire barricades, and concrete pillboxes in the front line, backed up by a second line of similar works. If the Allies broke through all this, they would then be faced with the Hindenburg Line, a heavily wired series of trenches and strongly built dugouts that the Germans had equipped elaborately.

Behind the Hindenburg Line there loomed the formidable fortress system of Metz and Thionville. The salient was defended by 8.5 divisions of ground troops, including a large Austro-Hungarian element.

Despite these fortifications, Pershing readily agreed to have the Americans try to pinch off the St. Mihiel salient as the initial step in a series of Allied offensives to end the war. He was not an airman, but Pershing believed that control of the air was necessary, and he entrusted the job to Mitchell. Mitchell was ready.

Mitchell's formal estimates indicated that Germany would oppose the American offensive with 2,000 aircraft. He insisted on gathering as many airplanes as possible under his command. (His estimate was for effect; he had intelligence reports showing that the enemy had 150 pursuit aircraft, 120 reconnaissance aircraft, and 25 "battle airplanes" [ground attack types] available.)

To the Offensive

Mitchell ordered the Air Service to take the offensive at all points, with the object of destroying the enemy's air service, attacking his troops on the ground, and protecting its own air and group forces. His planning called for simultaneous



The Germans flew the Fokker D.VII, the most advanced German single-seat fighter to see action in World War I. It had been produced for a fighter competition in early 1918 and went into immediate production.

strikes from as many as 500 airplanes. The mass formations were to alternate their attacks on each side of the salient in what he called “brigade tactics,” never allowing the enemy to rest.

Mitchell eventually was given command of 1,481 aircraft, though not all were in service. It was the largest air force ever assembled for a single operation, consisting of 366 observation airplanes, 323 day bombers, 91 night bombers, and 701 pursuits. Also on hand were 15 US and six French balloon companies.

Of the total, the Americans would provide about 40 percent of the aircrews and aircraft, including at least 288 Spad XIII pursuits, 144 Salmson observation airplanes, 54 de Havilland DH-4 and 18 Breguet 14 observation airplanes, and 36 DH-4 and 18 Breguet 14 day bombers.

These were the nominal squadron strengths and were supplemented by additional staff and spare aircraft. The other 60 percent of the aircrews and aircraft belonged to French, British, and Italian units.

France provided Spad XIII and Spad XVI fighters, Salmson and Breguet observation airplanes, and Breguet/Renault bombers. Italy gave 30 Caproni Ca 450s to the bombing effort. Both France and Italy placed their units under Mitchell’s direct command. The British, while cooperative, retained command of their D.H. 4 and D.H. 9 day bombers and Handley Page night bombers but used

them against tactical targets in support of the operation.

Mitchell insisted on secrecy. The first mission of his pursuit units was to deny the enemy any reconnaissance of areas behind the lines at St. Mihiel while airfields and depots were prepared. The Americans, many on their first missions, were very successful, and he was able to move large numbers of aircraft into several newly prepared airfields without detection.

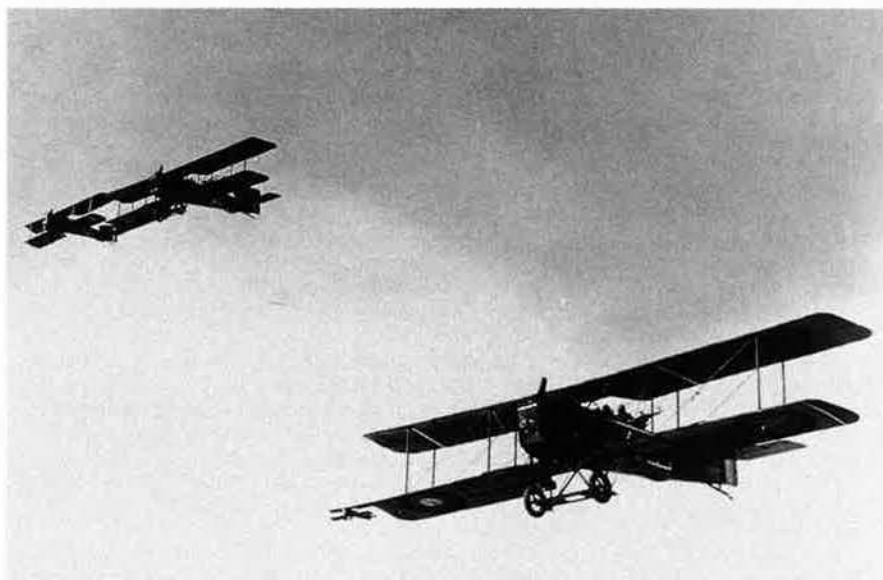
The time span from the authorization of the offensive and the kickoff date was breathtakingly short and

required immense effort on the part of both the staff and the operational units. The staff work generated in preparation for the offensive was far more sophisticated than Pershing had any right to expect, given that air warfare was itself new. Fortunately, Mitchell had some top-notch staff.

Detailed Planning

The plans were incredibly detailed. They laid out exactly how the army observation, corps observation, bombardment, and pursuit units were to operate. These instructions included everything from orders for daily procedures to how formations would be flown to the exact format of the mission reports and the chain of command through which they would be forwarded. There were even explicit instructions on how pilots and observers were to conduct themselves in case of capture.

The plans were also quite sophisticated in many respects. An extensive radio warning network was set up to monitor and report on enemy and Allied air activity. A pursuit aircraft was kept airborne over each of the airfields at all times during the day, an early use of the combat air patrol intended to prevent any enemy reconnaissance airplane that had broken through the barrier from learning of the buildup. The logistics elements were tasked to provide a special high-grade “fighting gasoline,” colored red, for high-altitude work.



These Breguet aircraft on patrol sport American markings, but British, French, and Italian units provided 60 percent of the crews and aircraft—most placed under Mitchell’s command—used in the operation.

Mitchell was farsighted in his choice of operational commanders. The experienced Maj. Bert M. Atkinson was selected as wing commander, 1st Pursuit Wing. Maj. Lewis H. Brereton was appointed wing commander, Corps Observation Wing. Maj. John N. Reynolds, a veteran of the 1st Aero Squadron's activities against Pancho Villa in Mexico, became group commander of the Army Observation Group. A Canadian veteran of the Royal Flying Corps, Maj. Harold E. Hartney, became commanding officer of the 1st Pursuit Group. There were many other future luminaries at lower levels, including Eddie Rickenbacker.

Pursuit and bombardment aviation were secondary to the observation units in importance. This was true in all armies during World War I, because while aviation had not yet gained the power to be decisive in itself, aerial observation was crucial for the successful conduct of both artillery and infantry operations.

Observation and reconnaissance were the primary tasks, with artillery registration coming second to these. The front was photographed daily, with photo-interpreters checking to see where artillery was emplaced, the condition of the trenches, and other near-term events. Sorties were also flown deep behind enemy lines, photographing and observing traffic on

roads and railways, checking the activity at ammunition dumps, and establishing targets for both day and night bombardment operations.

Artillery registration—observing the effect of battery fire and calling in necessary changes—was hazardous duty, for the job took long enough for enemy pursuit aircraft to appear on the scene and attack. There was also the unseen but ever-present danger of being hit by an artillery shell in flight.

Communication to the ground was done by means of radios, lights, sound (klaxon or bursts of fire from the machine gun), and weighted message bags, the last proving to be the most reliable. Radio communication from the ground was generally more difficult, and reliance was placed on a coded series of cloth panels or signal rockets or flares and makeshift methods, such as waving a handkerchief.

Composite Wings

The air arm's bombardment aviation was assigned the task of destroying and harassing the rear areas of the battlefield and attacking military and industrial objectives beyond the range of artillery. Given the primitive bombsights and sometimes total lack of training, it's not surprising that German records record little serious damage and few casualties. Yet the bombers, like the observa-

tion airplanes, were attractive targets for enemy fighters. In another glimpse of the future, Mitchell called for composite wings, in which one or more pursuit groups would always be combined with one or more bombardment groups under a unified command.

Pursuit aviation was intended to secure air superiority, prevent enemy reconnaissance and bombing airplanes from operating, and support the troops with both reconnaissance and strafing.

By Sept. 11, 1918, Mitchell had in place the aircraft, people, tactics, and plans for a major battle. He accepted that many of the American units were inexperienced, and he counted on their numbers and enthusiasm to carry the day. The only aspects of the air battle that were not under his control were the weather and the enemy's reactions.

The battle began at 0500 hours on Sept. 12 after a blistering four-hour artillery barrage of German positions. The Germans were caught by surprise. Bad weather halted Mitchell's ambitious plans for an aerial offensive by flights of several hundred aircraft. Rain, high winds, and fog kept most aircraft out of action as American ground forces swept forward, doing well in the center but being held up on the flanks.

Instead, fighter and bomber aircraft flew at low altitudes (some reports indicate they never exceeded 50 meters) and strafed enemy trenches and road traffic. It was extraordinarily hazardous work, given the sheer mass of artillery, machine-gun fire, and rifle fire to which they were exposed. There was little initial German air opposition, a situation that would change when the weather broke two days later.

Headquarters relaxed all restrictions on flying in bad weather. Missions were to be launched in all but the thickest fog or heaviest down-pour. The mission reports of those pilots who did get off the ground cited balloons destroyed, aircraft shot down, and roads shot up. They were signed by names that became familiar—Joseph F. Wehner, Frank Luke Jr., Sumner Sewall, Edward P. Curtis, Ralph A. O'Neill, and Charles R. D'Olive among them. The American ace of aces at the time, Lt. David E. Putnam, credited with 13 victories, was shot down and killed.

Starting From Scratch

When the United States entered the Great War on April 6, 1917, the Army's Signal Corps Aviation Section had 55 aircraft, only half of which were in commission. None were worthy of combat as conducted on the Western Front.

The Aviation Section also possessed 65 officers and about 1,100 enlisted men but had no plans for fighting or even preparing for a war. The American aviation industry was virtually nonexistent. With the exception of the Curtiss Aeroplane and Motor Co., there was no major supplier of aircraft, and an industrial base from which to create one did not yet exist.

By the summer of 1918, however, the United States had established a new and growing industry, with several plants mass-producing aircraft and engines. Training facilities were thriving and the necessary industrial infrastructure was being created.

All of the fruits of this effort would not be seen by the end of the war, but by Nov. 11, 1918, thousands of aircraft had been built, thousands of pilots trained, and an operating Air Service established.

Billy Mitchell's rise to power was equally remarkable. He paid for his own flying training and, as a major, wangled his way to France as a military observer in March 1917. Endowed with a diplomat's charm and fluent in French, he ingratiated himself with his counterparts in both the French and British air forces including the commander of the Royal Flying Corps, Maj. Gen. Hugh M. Trenchard.

Promoted to lieutenant colonel in May, and to colonel in August, Mitchell became the ranking US aviation officer in France—until the arrival of tough Brig. Gen. Benjamin D. Foulois.

The two fought bitterly and Foulois won, becoming Chief of Air Service American Expeditionary Force. Yet Foulois had both the grace and the brains to recommend to Pershing that Mitchell be made Chief of Air Service, First Army—the top combat position.



At the battle of St. Mihiel, Billy Mitchell (third from left in this photo taken in Germany, just after World War I) applied his principles of airpower—amass airpower assets and concentrate their use on the enemy right from the start.

On the first day of battle, the Americans flew 390 sorties and dropped 14,300 pounds of bombs. Although there were only 11 aerial combats reported, there were two unconfirmed victories. Among the American airmen, 11 pilots and four observers were listed as missing.

The weather remained bad on Sept. 13. US troops began muscling enemy forces out of the salient, and the Americans began extensive use of patrols of one or two aircraft to do armed reconnaissance. There was a moderate increase in enemy aircraft, reflected in the 12 combats out of 393 sorties. Nine pilots and six observers came up missing. Two enemy airplanes were confirmed shot down, and there were claims for five others.

The First Team

On Sept. 14, as Pershing's First Army slogged forward, two things changed for Mitchell. The weather, at last, was good, and the Germans had moved in one of their best air units, the Royal Prussian Jagdgeschwader Nr. II, commanded by Oberleutnant Freiherr Oskar von Boenigk. Boenigk would score four of his 26 victories in the Battle of St. Mihiel. Jagdgeschwader II was made up of four seasoned Jagstaffeln, each commanded by veteran aces.

The units led by this formidable crew were, for the most part, flying the Fokker D.VII, generally considered to be the best fighter airplane of World War I.

By the third day of the offensive, the American First Army had captured 15,000 enemy troops at the cost of 7,000 casualties. However, more than 250 heavy guns had been captured and 200 square miles of battered French territory had been liberated.

As the weather improved, the attacks increased in intensity. By the night of Sept. 16, the Americans had flown a total of 2,469 sorties, engaged in 145 aerial combats, and dropped 44,118 pounds of bombs. Claims for 52 victories were submitted, but most of these were unconfirmed. Twenty American aircraft were lost. The daily casualty reports from the period are misleading, in that they underestimate the number of persons killed in action and overestimate the number missing. An analysis of later reports indicates that there were at least 40 crew members killed in action and another 16 taken as prisoners of war. It was a terrible toll to pay.

The American Air Service was inexperienced and was undertaking an ambitious campaign against the veteran German air force. Most of the units had not become operational until

June of 1918, with some not achieving that status until the battle had already begun. The pursuit units were the most experienced of the forces that Mitchell had at his disposal; proportionally, they suffered the fewest losses of the battle. The real lack of experience came in the observation and bombing units. There was only one bomber unit, the 96th Bomb Squadron, in the line until Sept. 12, when it was joined by the 11th and 20th. The observation airplanes were considered by the Germans to be the most valuable and the most vulnerable, and they suffered the heaviest losses.

"Despite handicaps of weather and inexperience, the Air Service contributed all in its power to the success of this St. Mihiel operation," said the official USAF history of the engagement. "The staff was kept informed of developments practically hourly by clear and intelligible reports. The hostile air forces were beaten back whenever they could be attacked, the rear areas were watched, photographed, and bombed. Our airplanes participating in the battle, by the material damage and confusion which they caused, helped to increase the total prisoners."

There would be other battles in the months to come, and more casualties as well, but St. Mihiel had established the Air Service as a fighting command, willing to take losses to learn its job and able to take on both aerial combat and ground attack duties. For the remainder of the war, the observation airplanes and the bombers continued to take the most losses against German opposition, which began to weaken only in the latter part of October.

The Battle of St. Mihiel became a signature note for Col. Billy Mitchell in his long, and ultimately successful, crusade to create a powerful independent Air Force. It also established an Air Force tradition that whatever the odds and whatever the opposition, no mission would ever be turned back. ■

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 400 articles about aviation topics and 29 books, the most recent of which is Beyond the Horizons: The Lockheed Story. His most recent article for Air Force Magazine, "The Rise of Air Defense," appeared in the December 1999 issue.

AFA/AEF National Report

By Frances McKenney, Assistant Managing Editor

AFA Highlights the Space Partnership

"A Space Partnership for the 21st Century—Military, Civil, and Commercial" served as the theme for the annual Los Angeles Space Celebration, several days of Air Force Association activities held in Los Angeles in November, sponsored by the **Gen. B.A. Schriever Los Angeles Chapter**, **General Doolittle Los Angeles Area Chapter**, and the **Orange County/Gen. Curtis E. LeMay Chapter**.

Events kicked off with the Los Angeles Space Social, organized for the third year by the Schriever Chapter, honoring corporate presidents and chief executive officers and senior Department of Defense leaders.

The symposium followed the next day and, along with a lineup of distinguished speakers from the Air Force and the defense industry, featured a luncheon speech by Undersecretary of the Air Force Carol A. DiBattiste.

She credited AFA with keeping her informed on Air Force issues over the years.

"We need to encourage people outside of this room—other members of the Air Force, other members of the Air Force Association—to get more people involved in the Air Force Association so it can be an even stronger and a more unified voice," DiBattiste told the audience. "I am very proud to tell all of you that I have been a lifetime member since I was commissioned as a second lieutenant in September of 1976. ... Actually it was my membership in the Air Force Association that kept me so well connected to the Air Force since I retired in 1991 until I was so honored and privileged to get this appointment [as undersecretary]. It was the Air Force Association that gave me that connection."

DiBattiste, who enlisted in 1971 and was commissioned in 1976, said that in her 20-year USAF career she served as a recruiter three times—once recruiting enlisted personnel, a second time recruiting officers, doctors, nurses, pilots, navigators, and engineers, and a third time as a judge advocate general recruiter.

Taking note of USAF's shortfall in recruiting, she challenged the audi-



Undersecretary of the Air Force Carol DiBattiste makes a point during her address to the luncheon gathering at the AFA National Symposium in Los Angeles in November.

ence: "If you can recruit one individual during this next year, and retain one individual, we will be well on our way to keeping our aerospace force the finest—without question—in the world."

That evening, the 28th annual Air Force Ball took place at the Beverly Hilton Hotel. The black-tie event honors USAF men and women and this year also recognized the movie industry for its support of the armed forces. In keeping with this theme, look-alikes of movie stars Marilyn Monroe, Lucille Ball, and Tom Cruise mingled with the guests before the ball. Later, Jack Valenti, president and chief executive officer of the Motion Picture Association of America, accepted an AFA Distinguished Service Award on behalf of his organization.

A highlight of the evening came with the presentation of the 1999 Gen. Thomas D. White Space Award to Lt. Gen. Lance W. Lord, commander, Air University, Maxwell AFB, Ala. The prestigious AFA national award recognized his leadership as Air Force Space Command vice commander, 1997–99. Lord guided development of the command's Strategic Master

Plan and developed partnerships between military and civilian agencies involved in space operations. AFA National President Thomas J. McKee was joined by James L. Grogan, Schriever chapter president, and G. Wesley Clark, chapter chairman of the board, in the presentation. The Schriever Chapter sponsors the award.

Michael R. Brown, chairman, president, and chief executive officer of Litton Industries, Inc., served as general chairman of the Air Force Ball. Military host was Lt. Gen. Eugene L. Tattini, commander of Space and Missile Systems Center, Los Angeles AFB, Calif.

At the gala's conclusion, Harry Halamandaris, Litton's executive vice president, presented a check from Litton to the Aerospace Education Foundation for \$80,000, the proceeds from this year's ball. Jack C. Price, AEF president; Michael J. Dugan, AEF chairman of the board; Grogan, in his capacity as Schriever Foundation president; and Clark, as Schriever Foundation chairman of the board, accepted the donation.

The Air Force Ball in Los Angeles has raised \$2.9 million for aerospace

USAF photo by Ron Hall



education and scholarships since 1971.

Pledge for the Memorial

In December, Northrop Grumman Corp. pledged \$1 million to help build the Air Force Memorial.

Kent Kresa, Northrop Grumman chairman, president, and chief executive officer, presented the donation to Charles D. Link, AFM Foundation president, at a ceremony at the Pentagon.

Carol A. DiBattiste, undersecretary of the Air Force, Gen. Michael E. Ryan, USAF Chief of Staff, and Joseph Coors Jr., chairman of the foundation's board of trustees, attended the presentation.

Kresa said, "We make this pledge to honor these courageous people, and all who have gone before them, and those who will follow, who have made this the greatest air force in the world." He also noted that the company's first Air Force program was the World War II—vintage P-61 Black Widow night fighter.

New Chapter Formed

AFA gained a new chapter in November when the **Brig. Gen. Pete Everest Chapter**, centered around Fairmont, W. Va., received its charter.

AFA's newest chapter is named for Brig. Gen. Frank K. "Pete" Everest Jr., who was commander, Aerospace Rescue and Recovery Service, Military Airlift Command, Scott AFB, Ill., before his retirement in 1973. Everest was born in Fairmont and attended Fairmont State College. He entered US Army Air Forces pilot training in November 1941 and flew 94 combat missions in Africa, Sicily, and Italy. He later commanded the 17th Fighter Squadron in China and completed 67 combat missions before becoming a prisoner of war.

He went on to head the Flight Test Operations Division of the Air Force Flight Test Center, Edwards AFB, Calif., and took part in fighter and bomber test programs. On Oct. 29, 1953, he established a world speed record of 755.149 mph in a YF-100. In later flights in the Bell X-2 rocket, he



AFA National President Thomas McKee (right) presents the Gen. Thomas D. White Space Award to Lt. Gen. Lance Lord (second from left) at the Air Force Ball in Los Angeles, joined by G. Wesley Clark (left) and James Grogan, both from the Gen. B.A. Schriever Los Angeles Chapter.

attained an unofficial speed record of 1,957 mph. Today, Everest is a member of the **Tucson (Ariz.) Chapter**.

At the Everest Chapter's first meeting, John E. Craig II, region president (Central East Region), and R. Donald Anderson, national director, presented the document and an AFA banner to Paul E. Parker, who had been serving as the chapter's interim president since it began organizing in January 1999. The chapter had 35 members by the end of 1999.

Clyde S. Judy, Max Murray, and David A. Nuzum were also on hand. Judy was later elected chapter president.

The chapter met at the NASA Software Independent Verification and Validation Facility in Fairmont and received a tour of the building, guided by John G. Griggs, manager, technology transfer and community service. The facility houses software V&V projects for such programs as the international space station and the space shuttle's flight software and launch processing systems.

Veterans Day in Florida

AFA National President Thomas J. McKee attended Veterans Day activities in Daytona Beach, Fla., that were sponsored by the **Brig. Gen. James R. McCarthy (Fla.) Chapter**, Embry-Riddle Aeronautical University's AFROTC detachment, and its Arnold Air Society.

Conducted on the university's athletic field, the Veterans Day ceremony featured a keynote speech by McKee. Members of the Bethune-Cookman College marching band from Daytona Beach, the Gen. William W. Spruance Championship Det. 157 Special Operations Precision Rifle Drill Team from ERAU, and a combined Air Force-Army ROTC color guard participated in the event. Afterward, more than 300 veterans, cadets, and guests attended a reception.

McKee arrived in Daytona Beach the day before Veterans Day to visit the university's campus and meet with its president, George H. Ebbs, and community leaders. At a luncheon including chapter members, community leaders, and representatives of veterans organizations, McKee presented

USAF photo by Ron Hall

Photo by J. Kent Eckles



AFA region presidents met in downtown St. Louis in November. Left to right: AEF President Jack Price, Thomas Kemp (Texoma), Barbara Brooks-Lacy (Northwest), Rich Taubinger (Far West), David Cummock (Florida), AFA National President Thomas McKee, Boyd Anderson (Rocky Mountain), Charles Nelson (North Central), AFA Chairman of the Board Doyle Larson, W. Ron Goerges (Great Lakes), Scotty Wetzel (Southwest), Raymond "Bud" Hamman (Northeast), John Craig II (Central East), Billy Boyd (South Central), Robert Williams (Midwest), Zack Osborne (Southeast), and AFA Executive Director John Shaud. (Eugene D'Andrea (New England) was unable to attend.)

several awards. Ebbs received a Jimmy Doolittle Educational Fellowship, representing a \$1,000 donation in his name, from Spruance, an AFA national director emeritus, to AEF. McKee also presented AFA national-level awards to Col. John J. Mitchell and James W. Council, chapter secretary.

Fall Scholarships

The leadership qualities and achievements of the late Gen. Bruce K. Holloway, who died in September in Florida, were remembered at the University of Central Florida in Orlando, Fla., in November, when Det. 159 AFROTC cadets gathered at a formation to receive fall scholarships from the **Central Florida Chapter**.

Richard A. Ortega, AFA vice president for aerospace education in Florida, and James J. Burns of the Central Florida Chapter joined Lt. Col. Carol L. Judge, professor of aerospace studies, in presenting \$7,000 in scholarships to 17 recipients.

Cadet Greg Berry received the \$1,000 Gen. Bruce K. Holloway Scholarship. As part of the presentation, Ortega spoke about Holloway, a Flying Tiger who went on to become USAF vice chief of staff and commander in chief of Strategic Air Command. An AFA chapter in Tennessee is named after him. Holloway is a lasting model for all Air Force officers to emulate, Ortega said.

Det. 159 cadre officers Judge, Maj. Bill Fiedler, Maj. Gregory J. Mang, and Capt Brian P. Zeitz participated in the formation and are all Central Florida Chapter members. Zeitz told the cadets that the chapter donates more than \$8,000 to the AFROTC unit each year for operating expenses and sponsors \$14,000 in scholarships each year.

Guest Teacher for "Visions"

Also in November, Ortega volunteered to be a guest teacher for a fifth-grade "Visions of Exploration" classroom at Dr. Phillips Elementary School in Orlando.

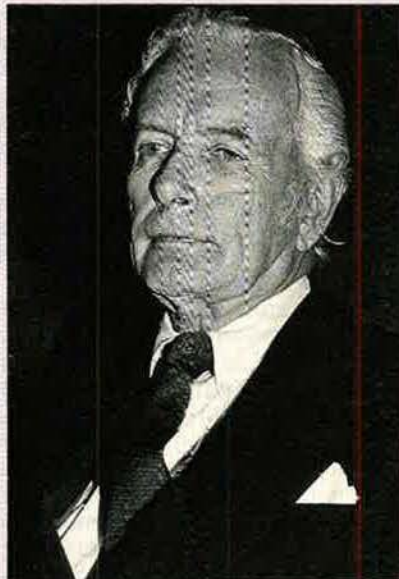
Pay attention, he told teacher Maria Blackmore's 20 students; he was going to ask them a three-part question at the end of his presentation and reward the right answer with a prize. Ortega, a retired teacher, then explained the history and mission of AFA and AEF.

To prepare the students for watching a NASA video called "Eagle and Columbia," Ortega talked about the July 16-24, 1969, Apollo 11 mission that took astronauts Neil A. Armstrong, Col. Edwin E. "Buzz" Aldrin Jr., and Lt. Col. Michael Collins to the moon. Ortega, who was involved in the research and development of the Saturn V launch vehicle for Apollo 11 during his active duty USAF career, told the children about the moon's environment, the challenges the astronauts faced, and Armstrong's first step onto the lunar surface.

In his quiz at the end of his teaching session, Ortega asked the students to name the three astronauts, the modules and who manned them, and Armstrong's statement when he stepped onto the moon. Winner Alia Saleh's prize was a new \$2 bill.

Visions of Exploration is a cooperative program between the *USA Today* newspaper, AFA state organizations and chapters, and AEF. It encourages elementary school chil-

J. Gilbert Nettleton Jr., 1916-1999



J. Gilbert Nettleton Jr., an AFA national director emeritus, died Nov. 8, 1999, in Los Angeles. He had turned 83 four days earlier.

A charter member of AFA, Nettleton had served as AEF chairman of the board from 1969 to 1973 and was a longtime AEF trustee. He had also been president of an AFA chapter in California and vice president of the Iron Gate (N.Y.) Chapter.

Born in Phoenix, Nettleton went to St. Albans School in Washington, D.C., and Princeton University and later earned a master of business administration degree from Harvard. He entered military service in 1942 and served until 1945 with Fourth Air Force and with Training Command as a night fighter pilot, gunnery instructor, and in personnel administration, attaining the rank of captain.

In his civilian career, he was an executive for companies such as Fairchild Industries and Northrop Aircraft.

dren to develop the skills necessary for success in math and science.

Baltimore Symposium

Lt. Gen. Michael V. Hayden, director of the National Security Agency, Ft. George Meade, Md., delivered the keynote address at an Information Operations symposium sponsored by the **Baltimore (Md.) Chapter** in October.

Titled "Info Ops Challenges and Capabilities," the two-day classified symposium was held at an NSA annex and was attended by representatives of all four armed services, defense contractors, and government agencies such as the CIA and FBI. It was a comprehensive, top-notch symposium, noted AFA Chairman of the Board Doyle E. Larson, who was among the 120 attendees.

Air Force Maj. Gen. Tiuu Kera, assistant deputy director for operations, production, and strategic issues at the NSA, served as chairwoman for the first morning's session. It included a roundtable on Information Operations as a national security and law enforcement challenge. Moderated by retired Air Force Brig. Gen. James A. Jaeger, former director of intelligence at US Atlantic Command (now Joint Forces Command) and now with Lucent Technologies, the roundtable involved Air Force Maj. Gen. John H. Campbell, Defense Information Systems Agency vice director, and retired Air Force Maj. Gen. John P. Casciano, former director of intelligence, surveillance, and reconnaissance, now with Litton-TASC.

The first afternoon's session featured a talk on conflict in the information age by retired Lt. Gen. Kenneth A. Minihan, former NSA director, as well as topics such as Chinese thinking on information warfare and cyberspace technologies.

The second day offered presentations on topics ranging from human intelligence operations to cryptologic architecture issues.

Baltimore Chapter members Maj. David W. Elsaesser and Lt. Col. Arley Huggins organized this second annual IO symposium, along with other chapter members who handled administrative and logistical support.

Stearman Roundup

The **Palm Springs (Calif.) Chapter** sponsored a Stearman Roundup in November, attracting nine restored versions of the Stearman World War II trainers, mostly coming from Phoenix, Ariz.

During the roundup, the PT-17s and Stearman Navy models flew in formation over seven cities in the

Coachella Valley, from Palm Springs, east to Indio, Calif. The formation flew at 1,500 feet, led by Roger Parrish, a former Air Force Thunderbirds pilot and now a **Phoenix Sky Harbor (Ariz.) Chapter** member.

John W. Lynch, Palm Springs Chapter chairman and fly-in manager, said the formation and publicity in a local newspaper brought about 300 people to the Palm Springs Air Museum to look at the aircraft on display and listen to a presentation by Tony Farhat, Stearman Restorers Association vice president. Dedicated to preserving, presenting, and interpreting airpower in World War II, the museum claims to have one of the world's largest collections of flying WWII warbirds.

The chapter co-hosted a luncheon for the Stearman pilots, who also competed for a "Best of Show" trophy. Their aircraft were all so well-maintained that the top three contenders for the trophy were separated by only one vote each, Lynch said. Visitors to the air show voted for the trophy to go to Bill Allen, owner of a black and grey Stearman once owned by movie actor Steve McQueen.

But Allen did not take it home. The success of the roundup convinced the chapter that it should be an annual event and that the trophy should

go on display at the museum and be awarded annually.

El Dorado Canyon Revisited

Retired Col. Arnold L. Franklin Jr., who led the April 1986 Operation El Dorado Canyon attack against targets in Libya, presented a briefing about the raid to the **Lexington (Ky.) Chapter** in November.

As commander of the 493rd Tactical Fighter Squadron at RAF Lakenheath, UK, Franklin flew his F-111 on the 6,400-mile round-trip from the UK to Libya. It was, at the time, one of the longest and most demanding combat missions in history, against alerted defenses and involving as many as 12 air refuelings and coordination with a US Navy force 3,000 miles away. (See "El Dorado Canyon," March 1999, p. 56.) In his presentation, Franklin covered not only the raid itself but also the military and political challenges and the detailed planning that began on Jan. 1, 1986, after a series of terrorist incidents convinced President Ronald Reagan to mount a military response.

Franklin is today the senior aerospace science instructor for AFJROTC at Warren East High School in Bowling Green, Ky. The Kentucky native is a member of the **Gen. Russell E. Dougherty (Ky.) Chapter**.

AFA Awards




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E9 AFA Cherry Wedge Wood Clock. 5" x 4" **\$43**

E10 (Not shown) AFA Brass Medallion. (As seen on E8 clock) **\$15**



At the first official meeting of the new Brig. Gen. Pete Everest Chapter, R. Donald Anderson (second from left), AFA national director, presents the chapter's charter to Paul Parker Jr., interim chapter president. Joining in the presentation are (l-r) David Nuzum, Max Murray, John Craig II, region president (Central East Region), and Clyde Judy, chapter president.

Lexington Chapter President Col. James S. "Steve" Parker said Franklin's El Dorado Canyon presentation—to 25 chapter members and guests gathered at the Aviation Museum of Kentucky in Lexington—was so remarkable because of its detailed behind-the-scenes viewpoint that he has invited him back for an encore.

Helping the Red Cross

The Scott Berkeley (N.C.) Chapter hosted a Southeast Region Workshop in October at Seymour Johnson AFB, N.C. More than 40 members of chapters from Georgia and North and South Carolina attended.

Brig. Gen. Norman R. Seip, commander of 4th Fighter Wing at Seymour Johnson, delivered the keynote address on the status of USAF's Expeditionary Aerospace Force. The 4th FW is one of two on-call, rapid response aerospace expeditionary wings.

The Little German Band, from Raleigh, N.C., provided entertainment to

open the two days of workshop activities. The following day was devoted to meetings and briefings, including opening remarks from Jack H. Steed, AFA 1999 Member of the Year.

Blue Ridge (N.C.) Chapter member Sara M. Bishop and the Eiltmore Estates in Asheville, N.C., donated a gift basket for a raffle. Blue Ridge Chapter President Larry E. Fowler combined the proceeds from the raffle with a donation from the Berkeley Chapter, presented by President Stephen R. Pingel, and a \$100 donation from James E. "Red" Smith, national director emeritus, to provide a combined total of \$300, which was donated to the local American Red Cross chapter. The donation went to aid the victims of flooding caused by last September's Hurricane Floyd.

Guard 101

ANG MSgt. Kenneth Stanton, 171st Air Refueling Wing recruiter from Pittsburgh IAP/ARS, gave a

slide presentation, "Guard 101," at the Altoona (Pa.) Chapter's annual dinner and chapter officer installation. His lecture covered the basics, describing the Air National Guard's mission and its relation to the active duty Air Force.

Clair J. Smith, AFA Pennsylvania board chairman, conducted the installation ceremony for Charles R. Harker, president, Donald E. Leipold, vice president, Thomas G. Baker, secretary, and Frances J. Chatham, treasurer.

Chatham received a plaque and AFA Citation at the event. It recognized 15 years' service as chapter treasurer and 19 years of Civil Air Patrol participation.

Special guests at the annual event, held at the Greater Altoona Career and Technology Center in October, included Karl Miller, president of the Gen. Carl A. "Tooney" Spaatz (N.Y.) Chapter, and AFA member Col. Steven M. Paladini, ROTC Det. 720 commander, Pennsylvania State University.

More AFA/AEF News

■ Norman S. Collard of the John C. Meyer (Fla.) Chapter recently received his national-level AFA Presidential Citation, presented by David S. Cummock, region president (Florida). Collard earned the award for his liaison work with CAP and local Air Force JROTC programs, his service as a former area vice president, and support for other AFA chapters.

■ Michael J. Nisos, former managing director of AEF from 1967 to 1985, died Jan. 4 in Bethesda, Md. He was 77. A retired Air Force lieutenant colonel, Nisos had been AEF's first staff member.

Have AFA/AEF News?

Contributions to "AFA/AEF National Report" should be sent to *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: afa-aef@afa.org. ■

Unit Reunions

reunions@afa.org

2nd Ferrying Gp (WWII), Wilmington Warriors Assn. May 18-22, 2030, at the Holiday Inn in Newark, DE. **Contact:** Herman G. Benton, 6513 Sandia Vista Pl. NE, Rio Rancho, NM 87124 (505-892-2344).

7th ACS and 7th SOS, Ramstein and Rhein-Main ABs, Germany, and RAFs Alconbury and Mildenhall, UK. June 15-18, 2000, at the Ramada Plaza Beach Resort in Fort Walton Beach, FL. **Contacts:** Max Friedauer (850-243-1343) (maxfriedau@aol.com) or George Ferkes (850-581-4953) (beachfly@aol.com) (www.ramadafwb.com).

12th TRS. Sept. 28-30, 2000, in Huntsville AL. **Contact:** W.F. Wickett, 380 Douglass Rd., Huntsville, AL 35806 (wwickett@aol.com).

19th BG Assn. May 7-11, 2000, at the Hanalei Hotel in San Diego. **Contact:** Robert E. Ley, 3574 Wellston Ct., S mi Vallay, CA 93603 (818-703-7717).

33rd TCS, 374th TCG, 5th AF, southwest Pacific (WWII). April 6-9, 2000, in Grapevine, TX. **Contact:** Mo Berg, 202 Oak Ln., Euless, TX 76039 (817-267-6814) (moveraberg@aol.com).

58th FG/Pursuit Gp (WWII); 58th Fighter-Bomber Wg/Gp (Korea); and Mexican 201st FS. June 15-18, 2000, in St. Louis. **Contact:** Ellis Stanley, 2645 Chandafern Dr., Pelham, AL 35124 (205-663-4236).

82nd FG, 12th and 15th AAF (WWII). Sept. 20-23, 2000, in Detroit. **Contact:** Monty Powers, 202 Hillcrest Ct., Jonesville, MI 49250 (517-849-9114).

89th Attack Sq and 90th BS. May 8-12, 2000, at the Holiday Inn City Center in Tucson, AZ. **Contacts:** Chief, PO Box 823, Thatcher, AZ 85552

Unit Reunions

(520-428-1426) or Bill Beck (havocbill@uswest.net).

99th BG, 15th AAF (WWII). May 2-7, 2000, at the Holiday Inn in Jacksonville, FL. **Contact:** Edmond O. Marlow, 1992 Gunstock Dr., Stone Mountain, GA 30087 (770-938-3587).

310th FS, 58th FG (WWII), and **310th Fighter-Bomber Sq**, 58th Fighter-Bomber Gp (Korea). June 15-18, 2000, in St. Louis. **Contact:** Bob James, 13083 Ferntrails Ln., St. Louis, MO 63141-6136 (314-878-5953).

311th FS (WWII), **311th Fighter-Bomber Sq** (Korea), **58th FG** (WWII), and **58th Fighter-Bomber Gp** (Korea). June 15-18, 2000, in St. Louis. **Contact:** Tony Kupferer, 2025 Bono Rd., New Albany, IN 47150 (812-945-7649).

410th BG (ETO, WWII). April 26-29, 2000, at the Comfort Inn Airport in North Linthicum, MD. **Contact:** Bill Lorimer (412-741-0697).

456th BG, Fifteenth AF, Italy (WWII). May 24-28, 2000, at the Holiday Inn Select Briley Parkway in Nashville, TN. **Contact:** Ed S. Moore, PO Box 507, Hays, KS 67601 (phone: 800-424-7515 or fax: 785-625-7574).

6166th AWRP, 11th/12th TRS, Korea (1950-54). April 27-30, 2000, in Mobile, AL. **Contacts:** Dave Lehtonen, 988 Spanish Wells Dr., Melbourne, FL 32935 (407-254-6736) (delehtonen@ibm.net) or Dave Gibbs, 4004 Sherlock Ct., Raleigh, NC 27613 (919-781-2920).

7330th Flying Training Wg (MAP), Germany (1953-60). June 22-25, 2000, at the Doubletree

Hotel in San Antonio. **Contact:** John McRae, 2115 Oak Wild St., San Antonio, TX 78232 (210 494-2569).

Class 43-E Assn. May 20-25, 2000, at the Sheraton West Port Hotel Lakeside Chalet in St. Louis. **Contacts:** Robert Arstingstall, 3606 Bella Vista Dr., Midwest City, OK 73110 (405-732-1489) or Murray Strong, 2608 W. Broadway, Columbia, MO 65203 (573-445-8135).

Freeman AAF, IN, personnel. April 28-30, 2000, in Seymour, IN. **Contacts:** Ted Jordan or Jane Henley, Freeman Municipal Airport, PO Box 702, Seymour, IN 47274 (phone: 812-522-2031 or fax: 812 523-3925).

Lutheran chaplains (retired), all services. April 28-29, 2000, in Goodyear, AZ. **Contact:** Carl C. Reiter (623-856-5138) (ccr@phnx.uswest.net).

P-38 National Assn. May 24-28, 2000, in Palm Springs, CA. **Contact:** Armed Forces Reunion, Inc., PO Box 11327, Norfolk, VA 23517.

P-47 Thunderbolt Pilots Assn. May 14-17, 2000, at the Hilton Savannah DeSoto in Savannah, GA. **Contacts:** John Hartshorn, 18 Rookery Rd., Savannah, GA 31411 (912-598-1333) or Bob Richards, PO Box 3299, Topsail Beach, NC 28445 (910-328-8781) (bobr@wilmington.net).

Pecos AAF, TX, personnel. May 11-13, 2000, in Pecos, TX. **Contact:** Arthur Howarth, 5619 Hamill Ave., San Diego, CA 92120-1811 (619-287-6706) (ahnhshd@juno.com).

Society of SAC. July 12-16, 2000, at the Holiday Inn Hotel and Convention Centre in Omaha, NE.

Contacts: Steve Blackburn (402-293-7433 or 800-952-2053) or SAC 2000 Headquarters, PO Box 1244, Bellevue, NE 68005-1244.

UPT Class 70-5. April 7-9, 2000, in San Antonio. **Contact:** Bill Royce, 3216 218th St. SE, Bothell, WA 98021 (425-486-4422) (roycewf@gte.net).

Seeking former members of the **47th Air Police Sq**, 47th BW, Langley AFB, VA, 1950-52, and RAF Sculthorpe, UK, 1952-55, for a reunion in Virginia in fall 2000. **Contact:** Richard M. Gibson, 4054 Rigel Ave., Lompoc, CA 93436 (rmgibson@member.afa.org).

Seeking **6911th RGM or Det. 1** veterans, Darmstadt or Rhein-Main AB, Germany (May 8, 1995-present), for a reunion March 12-15, 2000, at the Imperial Palace Hotel and Casino in Biloxi, MS. **Contact:** Don Watson, 6805 NW 20th St., Bethany, OK 73008-5803 (405-787-4371) (dwat@mmcable.com).

Seeking **Panama Canal veterans** to join association and attend reunion Oct. 11-14, 2000, in Myrtle Beach, SC. **Contact:** Frank Ryan, 1440 Lake Shore Dr., Massapequa Park, NY 11762-1501 (516-541-3891) (dolphindriver@3pc.com). ■

Mail unit reunion notices well in advance of the event 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.

Bulletin Board

bulletin@afa.org

Seeking information on an air force base near **Chitose**, Japan, and an F-86 unit stationed there about 1952-54. **Contact:** Dave Swift, 210 Fairway Dr., Bloomington, IL 61701-2109 (bls@aol.com).

Seeking pilot **Capt. James Kershaw Wilson**, who retired in the 1970s and knew Bill, Dave "COMSUBPAC," and Al Crocker of Fall River, MA. **Contact:** Al Crocker, 11 Goose Point Rd., Centerville, MA 02632 (alccc@mediaone.net).

Seeking information on **TSgt. John Lipski**, of the 364th Sq, 2nd BG, 15th AAC, at Foggia, Italy, 1943-45. **Contact:** Stephen Lipski, 152 Maple Shade Ave., Trenton, NJ 08690.

Seeking contact with any member of the **903rd Air Refueling Sq**, 1963-68. **Contact:** Ron Girouard, 207 Briarfield Dr., Carencro, LA 70520-5810.

Seeking stories, photos, and personal anecdotes on the history of the **3rd Photo Mapping Sq**, USAAC, that was stationed at MacDill Field, FL, during WWII. **Contact:** Stanley J. Smith, 1426 W. Bloxham St., Lakewood, FL 33462 (561-582-0093).

Seeking contact with pilots who flew **unusual military aircraft** or aircraft that set **speed or altitude records**, especially early jets and vertical takeoff aircraft. **Contact:** John Ford, 3630 S. Barrington Ave., Los Angeles, CA 90066 (310-397-6745) (johnandsue@loop.com).

Seeking **Sgt. Harry "Jake" Jacobs**, of Kansas City, who was stationed at Boxted Airfield, near Colchester, UK, and was a member of Eighth AF in WWII and knew Kitty Grimsey. **Contact:** Rosemary Mayo, 35 Taylor Dr., Lawford Dale, Manning Tree, Essex, UK CO11 2HO.

Seeking military **memorabilia** for donation to museum. **Contact:** The Aviation Museum of Texas, PO Box 453, Uvalde, TX 78802 (800-278-2552).

Seeking anyone who knew **Maj. Robert Otis Neighbors** of Talihina, OK, who served with the 13th BS and played baseball in 1939 with the St. Louis Browns. He died in August 1952 in North Korea. **Contact:** Cecil W. Williams, PO Box 627, Fraser, CO 80442 (phone or fax: 970-726-5673) (granmarty@rkytmnhi.com).

Seeking contact with families of **2nd Lts. James L. Dyar**, from Brashear, TX, and **Alvis D. Noble**, from Carnesville, GA, both of the 365th FTG, Ninth AF, who were killed July 18, 1944, in Normandy, France. **Contact:** Stephane David, 61210 Rabodanges, Normandy, France.

Seeking friends of **Col. Jean A. Jack** to attend a Middle Tennessee State University building dedication ceremony March 6, 2000. **Contact:** Mike Schukert, MTSU Box 67, Murfreesboro, TN 37132-0067 (schukert@bigfoot.com).

For a book, seeking contact with anyone who was helped by the resistance group **KP Aalten**, east of Arnhem, Netherlands, during WWII. Also seeking papers and records of downed Allied officers, debriefings, and personal anecdotes. **Contact:** Herma-Jozé Blaauwgeers, 721 Gibbon St., Alexandria, VA 22314 (phone: 703-837-8993 or fax: 703-837-8994) (hermajoze@aol.com).

For a book, seeking contact with anyone who knew **Gen. Jerome F. O'Malley**, former commander of Tactical Air Command, killed in an airplane crash April 20, 1985. **Contact:** Aloysius G. Casey, 630 Palo Alto Dr., Redlands, CA 92373 (909-792-1636) (agcasey@worldnet.att.net).

Aviation artist from 19th BG seeking details for painting of the Aug. 26, 1942, mission to Milne Bay, New Guinea, and the crash of **Capt. Clyde Webb's B-17**. **Contact:** Paul Eckley, 2695 Augusta Dr. N., Clearwater, FL 33761 (727-797-1705) (eckstudio@aol.com).

For a book, seeking copies of after action reports from the **464th BG**, 15th AAF, April 30, 1944-Aug. 15, 1944. **Contact:** Bill Millar, 7908 Donegal Ln., Fort Worth, TX 76180 (817-281-2119) (marbill@flash.net).

Seeking contact with crew members of **C-141 or C-5** aircraft that carried members of the 18th Airborne Corps headquarters and the 82nd Airborne Div. from Pope AFB, NC, to Saudi Arabi Aug. 7-14, 1990. **Contact:** Lane Toomey, 670 Fort Bragg Rd., Southern Pines, NC 28387-7311 (910-695-8852) (toomey1@pinehurst.net).

Seeking information on **Odell Turley**, who served with the 308th FS during WWII in Italy and was a side gunner on B-17s. **Contact:** Tom Vanderburg (tdv75098@msn.com). ■

If you need information on an individual, unit, or aircraft, or want to collect, donate, or trade USAF-related items, write to "Bulletin Board," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Items submitted by AFA members have first priority; others will run on a space-available basis. If an item has not run within six months, the sender should resubmit an updated version. Letters must be signed. Items or services for sale, or otherwise intended to bring in money, and photographs will not be used or returned.

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By Robert S. Dudley, Executive Editor

Eye of Knute

"A 'W' is a 'W.' In sports, a win is a win. Even a close win is preferable to losing. For instance, if a college football team like Notre Dame beats Slippery Rock 70-0, that is exactly the sort of lopsided victory one would expect from such a mismatch. But if Notre Dame beats Slippery Rock by a score of only 7-6, about all 'Fighting Irish' fans would be able to say is, 'Well, it's a W and not an L.' That is the kind of victory airpower delivered in Operation Allied Force."—**Retired USAF Maj. Earl H. "Butch" Tifford Jr., former editor of Air University Review, now director of research at the US Army War College's Strategic Studies Institute, in winter 1999-2000 issue of Parameters.**

Gore's Litmus Test....

"I would insist, before appointing anybody to the Joint Chiefs of Staff, that that individual support my policy [to let gay and lesbian Americans serve openly in the US armed forces]. And yes, I would make that a requirement."—**Vice President Al Gore, in remarks at Jan. 5 campaign debate in New Hampshire.**

... McPeak's View ...

"I regard that as a ridiculous assertion—that that should be a qualification for office. I suppose winning the nation's wars should be the primary qualification."—**Gen. Merrill A. McPeak, USAF (Ret.), former Chief of Staff, quoted in Jan. 7 New York Times.**

... and Krulak's ...

"To demand a litmus test regarding gays in the military, a social issue, instead of concentrating on what is really important, which is sound military advice, misses the mark. I personally don't understand why he made a comment like that, because I can't imagine a commander in chief having a litmus test for a military officer that would reduce the number of candidates you can pick from. I, for one, would be

unable to compete."—**Gen. Charles C. Krulak, USMC (Ret.), former Commandant, in Jan. 7 Washington Times.**

... And a Backpedal

"I did not mean to imply that there should ever be any kind of inquiry into the personal political opinions of officers in the US military, nor would I ever tolerate such inquiries."—**Gore, to reporters in West Des Moines, Iowa, the evening of Jan. 7, as reported in Jan. 8 Washington Post.**

Democratic Russia

"Russia, for objective reasons, is forced to lower the threshold for using nuclear weapons, extend the nuclear deterrent to smaller-scale conflicts, and openly warn potential opponents about this."—**Col. Gen. Vladimir Yakovlev, chief of Russian strategic missile forces, quoted in Dec. 18 Washington Times.**

Hands Off the Guard

"[The DoD] commitment towards the National Guard has been found wanting year after year, with great gaps between the need and what is proposed. Historically, we in Congress then must act to fill in the gaping holes. It's time for the Pentagon to get it right the first time. And to be clear, what a strong majority of the Senate is saying is—no further cuts in the Army National Guard."—**Sen. Christopher "Kit" Bond (R-Mo.), quoted in Dec. 13 issue of Inside the Army.**

Is it Major Major ...

"Fighting and winning major theater wars is the ultimate test of our armed forces—a test at which they must always succeed. ... For the foreseeable future, the United States, preferably in concert with allies, must have the capability to deter and, if deterrence fails, defeat large-scale, cross-border aggression in two distant theaters in overlapping time frames."—**From the White House's "A National Security Strategy for**

a New Century," dated December 1999.

... or Major Minor?

"I think [the strategy's] probably unrealistic, and [the strategic requirement] ought to be a major and a minor [war], rather than two majors. I just don't think it's realistic, even with the 'nearly simultaneous' qualification."—**Sen. Carl Levin (D-Mich.), Senate Armed Services Committee, in Dec. 6 issue of Defense Week.**

Next: May Day Parades!

"Yesterday, Clinton took the liberty of putting pressure on Russia. He obviously must have forgotten for a few seconds, a minute, or a half a minute, what Russia is and that Russia possesses a full arsenal of nuclear weapons. He's forgotten it, and that's why he's decided to flex his muscles, as they say."—**Boris N. Yeltsin, then Russian president, in Dec. 9 interview with reporters in Beijing.**

The Space-Money Continuum

"If you look at where we're spending our money, the single largest increase has been in space. Now a lot of people say we've ignored space. Space is the only element of my budget that has gone up proportionately every year at the same time that the Air Force budget has gone down by 40 percent. We have an upgrade for every single space system we have, from launchers through satellites, on the books, being fielded, in work right now. I don't know what else people want to do in space. We are funding it to meet all current requirements that are Air Force requirements. ... [C]ould I use more money in space? Sure. I've got a DSP [Defense Support Program, an early-warning satellite constellation] that I could replace. I've got a Milstar [communications satellite system] that I could replace. If they wanted to give me the money, I would replace those."—**Secretary of the Air Force F. Whitten Peters, quoted in Dec. 13 issue of Defense Week.**

Pieces of History

Photography by Paul Kennedy

Ballooning



A balloon observer in World War I hung in a basket anywhere from 1,000 to 4,000 feet over the battlefield, tethered to the ground by a steel cable. Using a telephone, he directed artillery fire and spotted enemy airplanes, artillery sites, and military traffic. The average balloon lasted only two weeks at the front line. Truck-mounted winches could reel in the balloon at 1,600 feet per minute, but the

observer was nevertheless quite vulnerable to enemy aircraft that could shoot incendiary bullets to explode the hydrogen-filled balloon. Thus the observer had to be prepared to quickly bail out with a parachute. Army Air Service Capt. Charles L. Hayward, whose uniform and equipment are shown here, served as a frontline balloon observer for the 4th Balloon

Co., one of the first four US balloon units to reach France in December 1917.

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